

PERMANENT WAY
ROLLING STOCK
AND
TECHNICAL WORKING

RAILWAYS

BY

CH. COUCHE

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PRÉSIDENT DU COMITÉ CONSULTATIF DES MACHINES A L'EXPOSITION UNIVERSELLE DE 1878, ET DE LA CLASSE 64
(MATÉRIEL DES CHEMINS DE FER) DU JURY INTERNATIONAL, ETC.

VOLUME III WITH ATLAS OF 21 PLATES

TRANSLATED FROM THE FRENCH BY

J. EDWARDS WILSON

LATE ENGINEER IN CHIEF OUDR AND ROHILKUND RAILWAYS

— ATLAS —

Vol. III, in-quarto, with Atlas. — Price £ 3. — The Whole to be completed in three Volumes.

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PARIS

1882

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PLATES

OF THE

THIRD VOLUME

PRODUCTION AND DISTRIBUTION OF STEAM.
MEANS OF DESTROYING AND MODERATING VELOCITY.
POWER AND USEFUL EFFECT OF THE LOCOMOTIVE.
SUPPLEMENT : REVISION, ADDITIONS.

- Pl. I — Locomotives. — Boiler — Evaporation. — Various details.
Pl. II — Locomotives. — Boiler — Stays — Smoke-consuming apparatus — Condensation.
Pl. III — Locomotives. — Erosions — Stays — Smoke-consuming apparatus.
Pl. IV — Locomotives. — Boilers — Regulators — Valves — Blowers.
Pl. V — Locomotives. — Exhaust — Chimneys — Distribution.
Pl. VI — Locomotives. — Different valve-motions.
Pl. VII — Locomotives. — Different valve-motions.
Pl. VIII — Locomotives. — Some details of the machinery.
Pl. IX — Locomotives. — Effort of traction at the dead point and up to a certain limit of reverse admission — Counter-Steam.
Pl. X — Means of stopping. — Reversing the valve motion — Injection. — Landsie, Krauss Systems.
Pl. XI — Divers brakes.
Pl. XII — Divers brakes.
Pl. XIII — Tender and wagon — Brakes.
Pl. XIV — Various brakes. — Resistance of trains.
Pl. XV — Various brakes. — Tachometer — Resistance of trains — Influence of curves.
Pl. XVI — Brake with counterpoise and transmission of the Northern of France — Newall's brake.
Pl. XVII — Useful effect of locomotives. — Supplement.
Pl. XVIII — Work of expansion and of compression. — Steam and water — Supplement.
Pl. XIX — Supplement.
Pl. XX — Supplement.
Pl. XXI — Supplement.

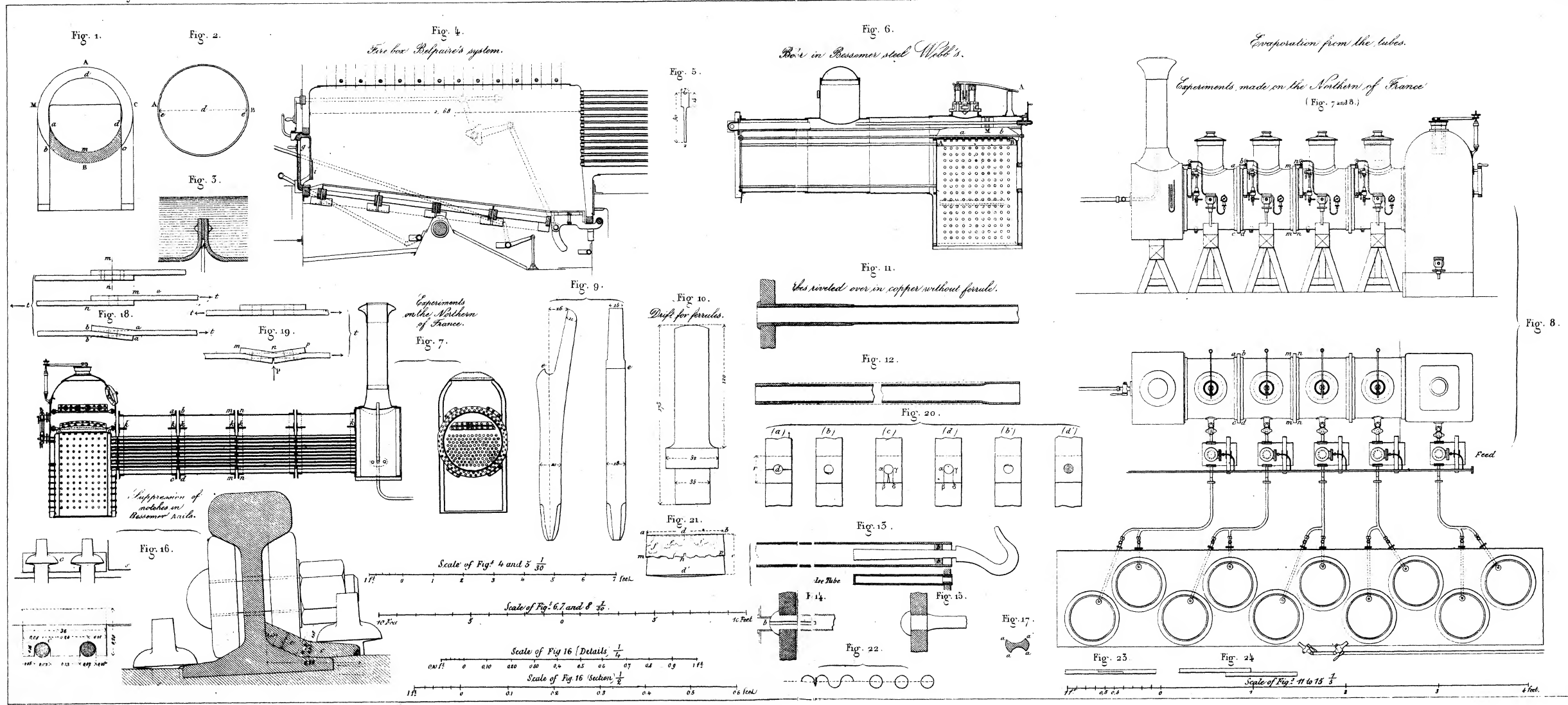


Fig. 1. Mr. Fairlie's boiler.

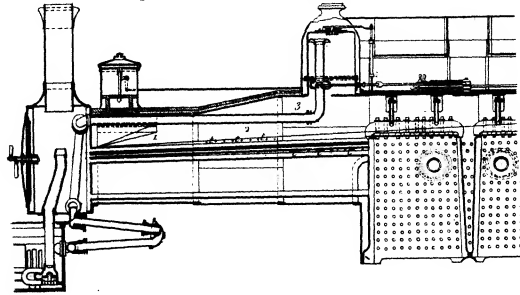


Fig. 2. Fire-box with circular crown.

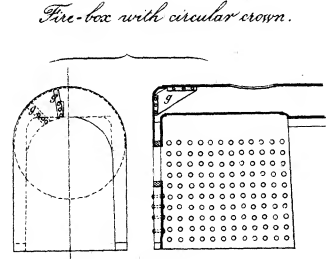


Fig. 6. Fire-box of compound shape by Mr. Becker. (Northern of Austria line) steel boiler with two shells.

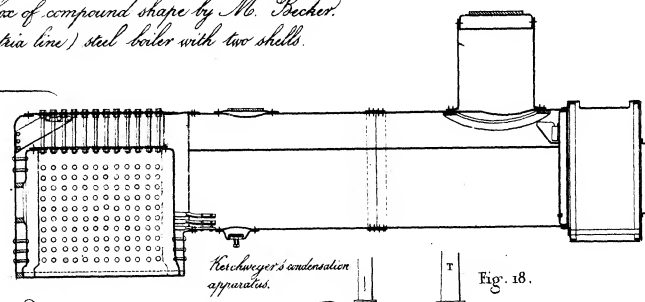
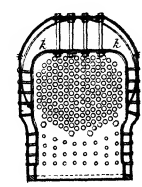


Fig. 5. Mr. Connell's fire-box with water spaces and stays across the roof.

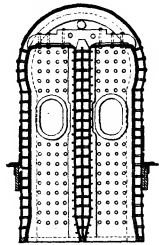
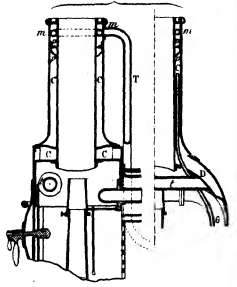


Fig. 14.

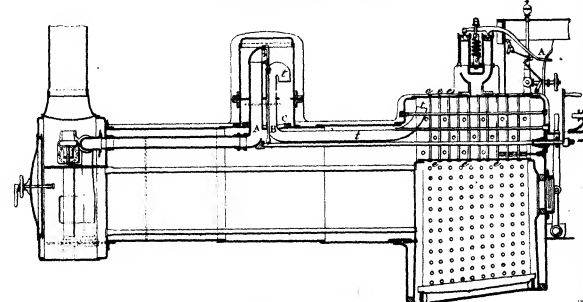


Condensation of exhaust steam (Cessons line.) (Figs. 16 and 17)

Fig. 16.

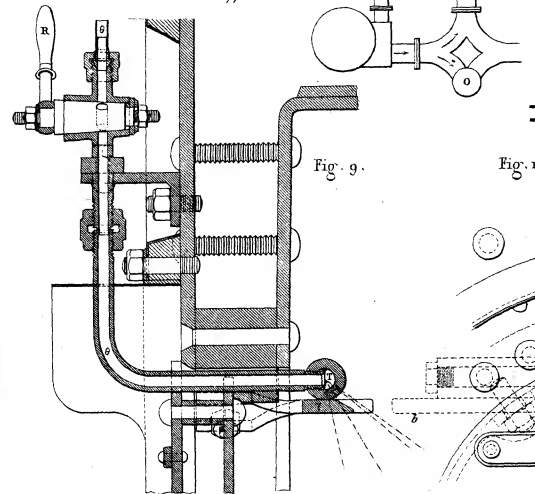
Fig. 17.

Fig. 4. Boiler of the Société de construction of Besançon. (Exhibition of Vienna in 1873)



Reschwyger's condensation apparatus.

Fig. 18.



Cherry's smoke-consuming apparatus (Figs. 8 to 12.)

Fig. 8.

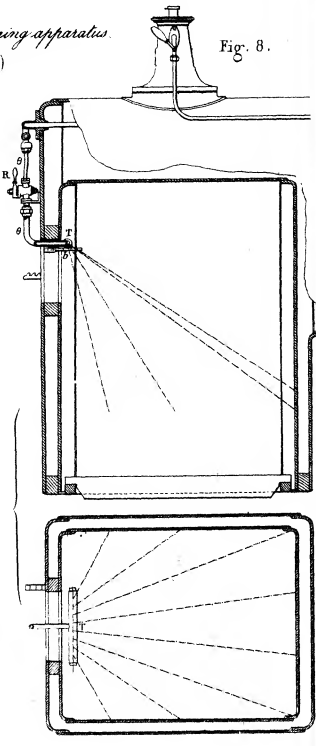


Fig. 3. Evaporator engine. Curved stays.

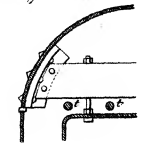


Fig. 13.

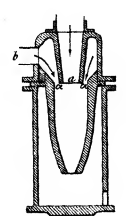


Fig. 15. Condensation of the steam (Metropolitan)

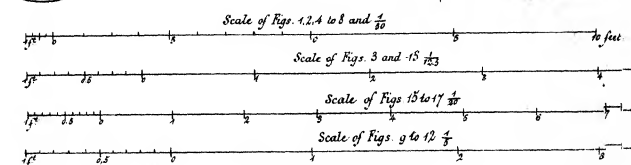
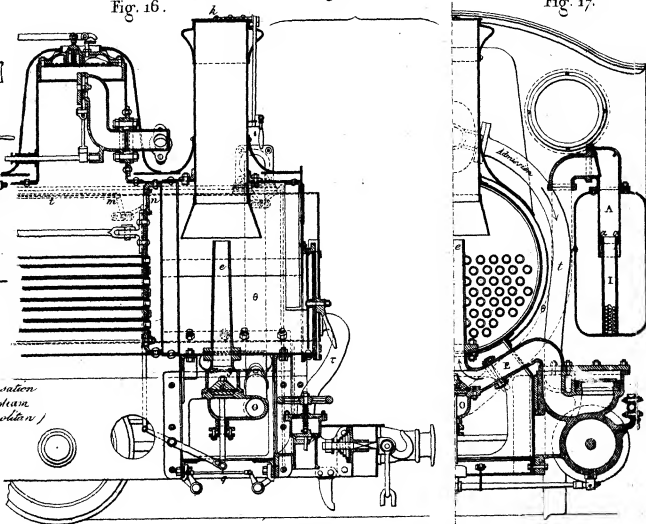
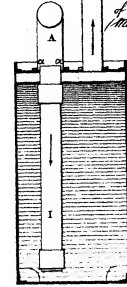


Fig. 19.



Fig. 12.

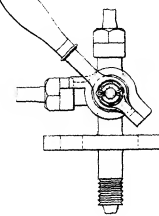


Fig. 7. Ordinary blow-off.

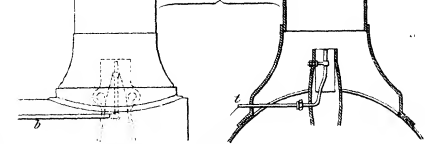
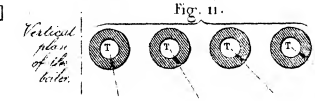
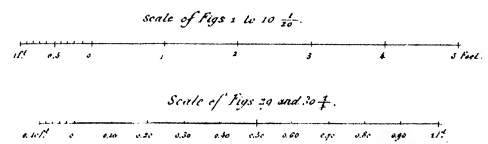
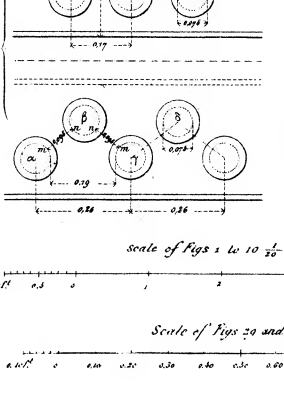
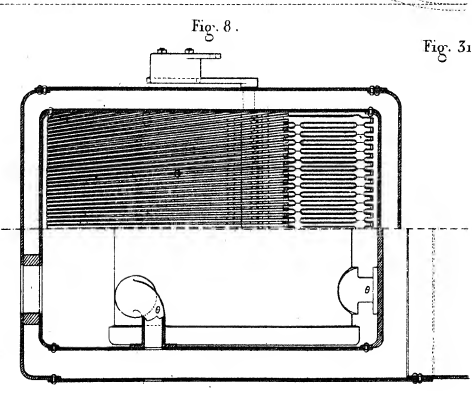
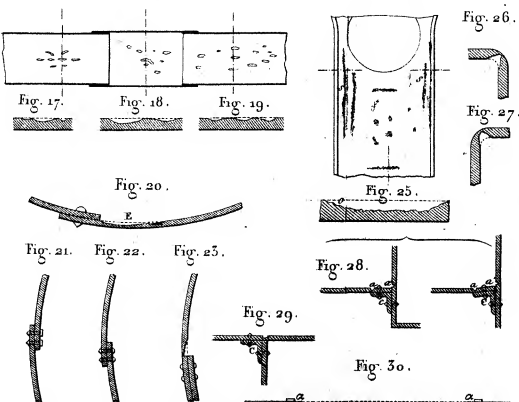
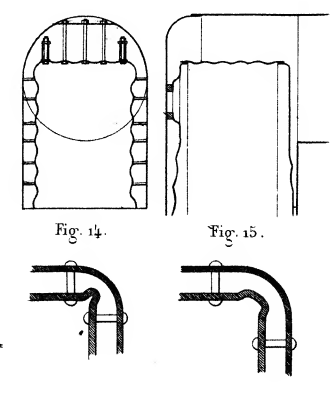
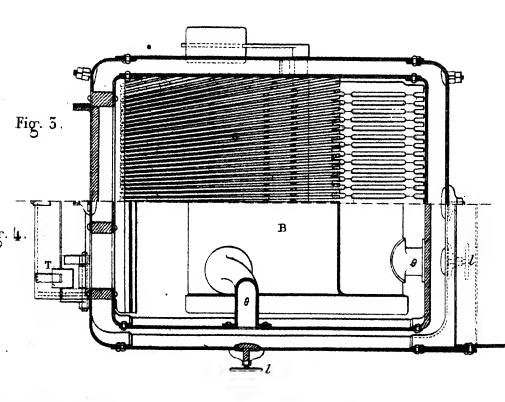
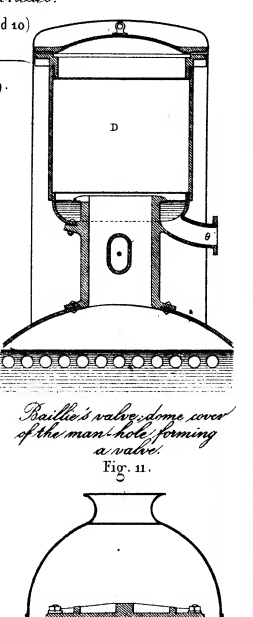
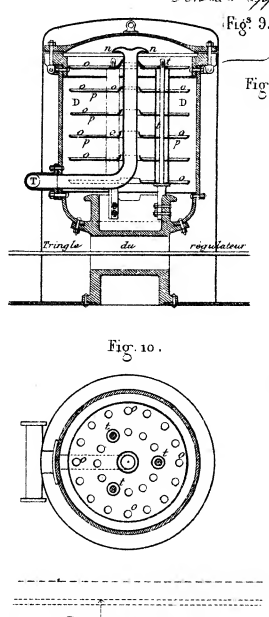
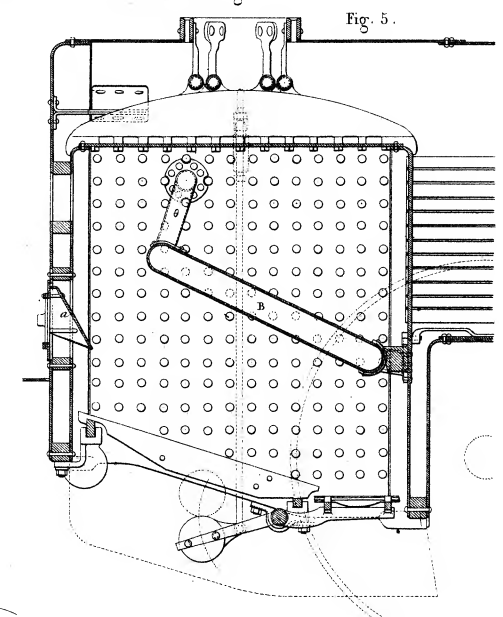
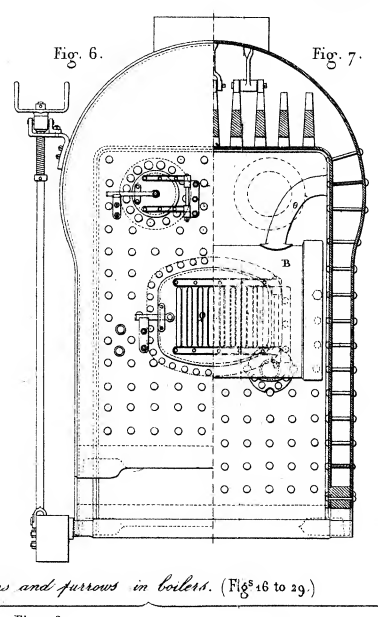
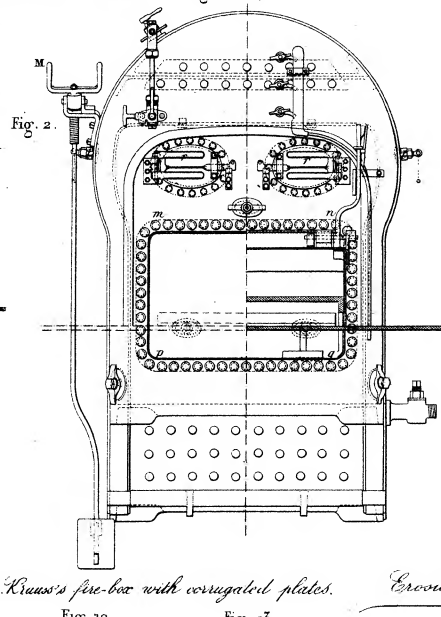
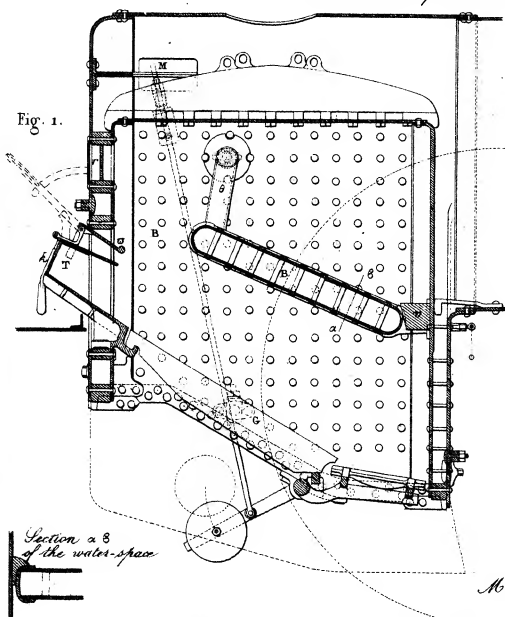
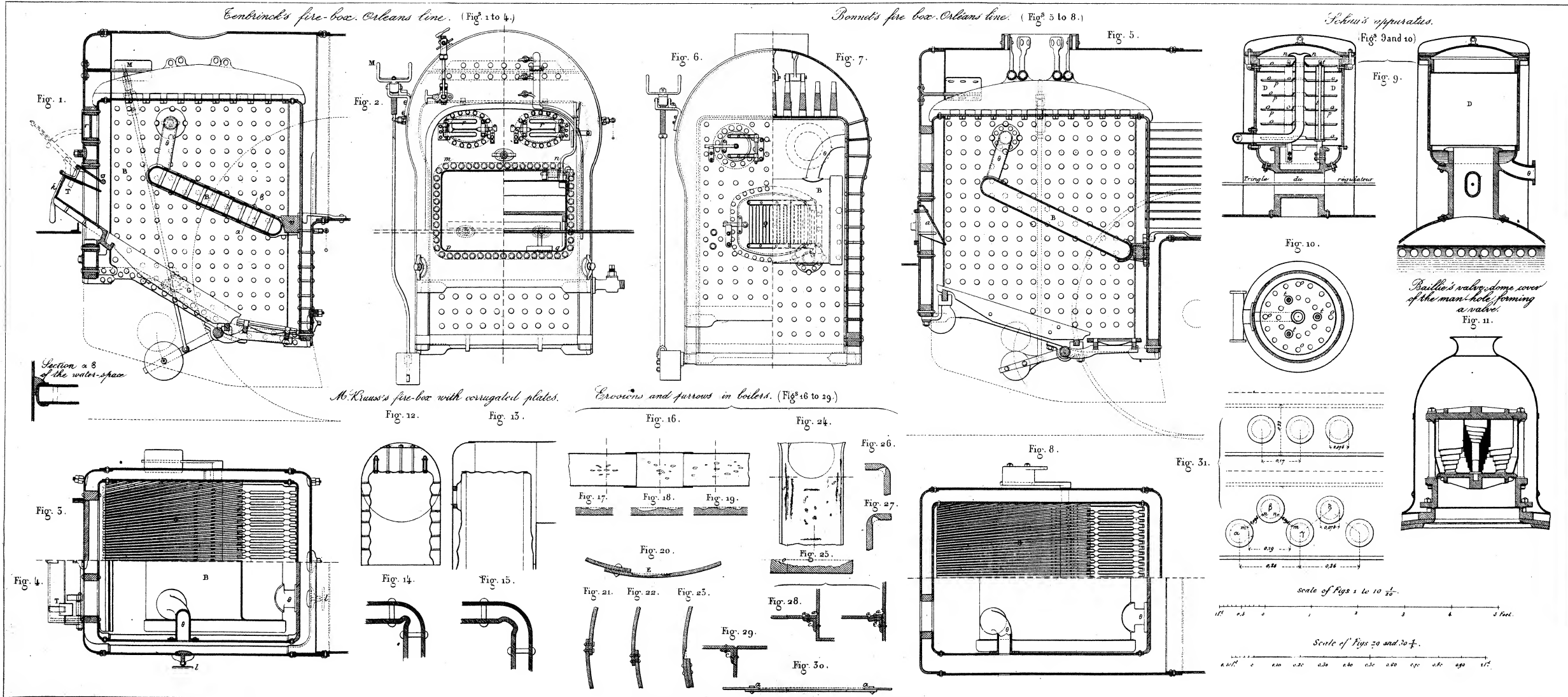
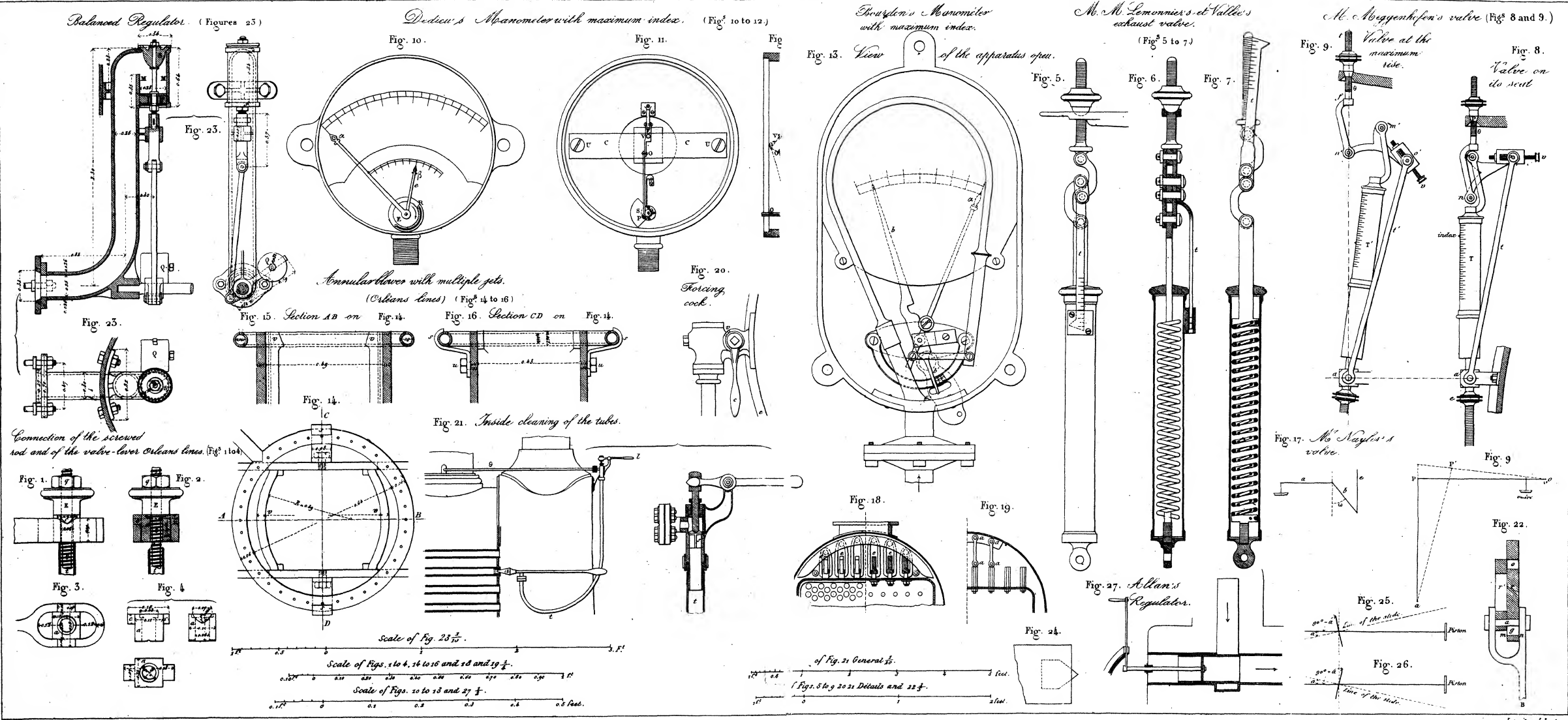


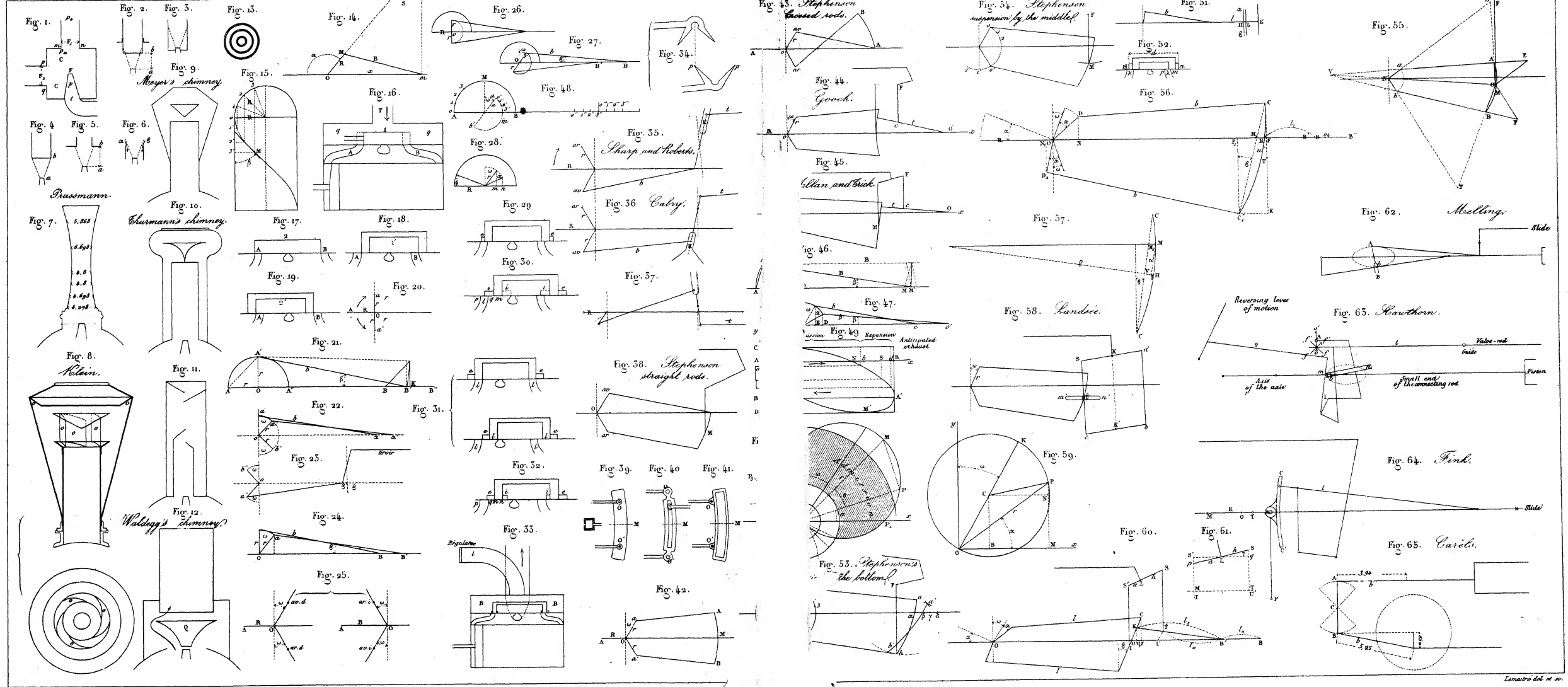
Fig. 11.







C. COUCHE. Railways



Lemaire del. et sc.

Fig. 1. Slides of the Mediterranean engine Clampton.

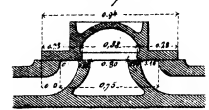


Fig. 2. Passenger

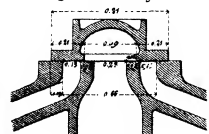


Fig. 3. Ordinary

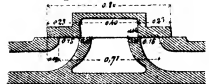


Fig. 4. Goods

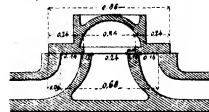


Fig. 12.

Guinette's expansion.

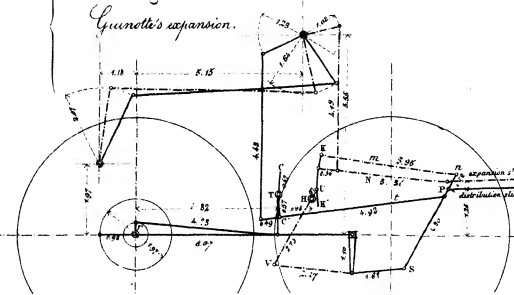
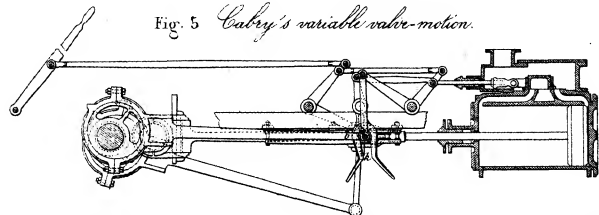


Fig. 5. Cabry's variable valve-motion.



Wilschaert's valve-motion with single eccentric.

Fig. 7.

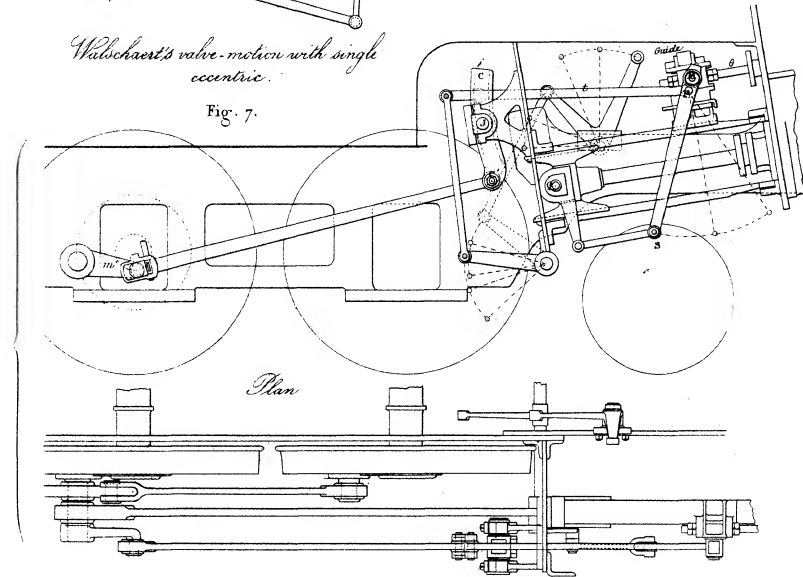


Fig. 6. Fischer's valve-motion with a single eccentric.

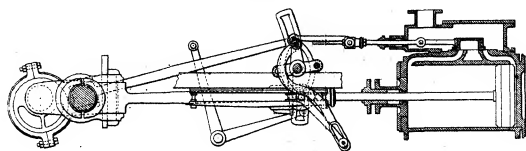


Fig. 9. Stewart and Hope's valve-motion with a single eccentric.

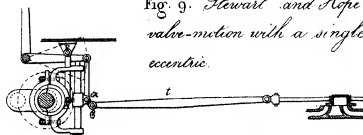


Fig. 8. Stewart and Hope's valve-motion with single eccentric.

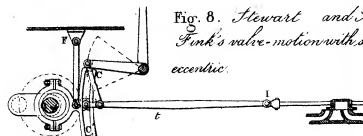


Fig. 10.

Stewart's valve-motion without eccentric.

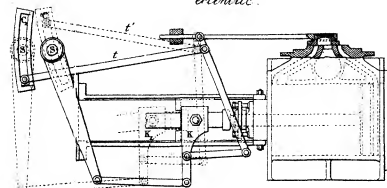


Fig. 13. Mediterranean engine similar to 1130 forward gear.

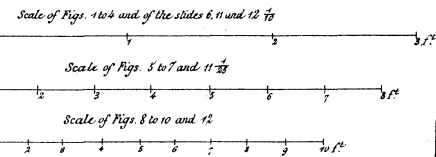
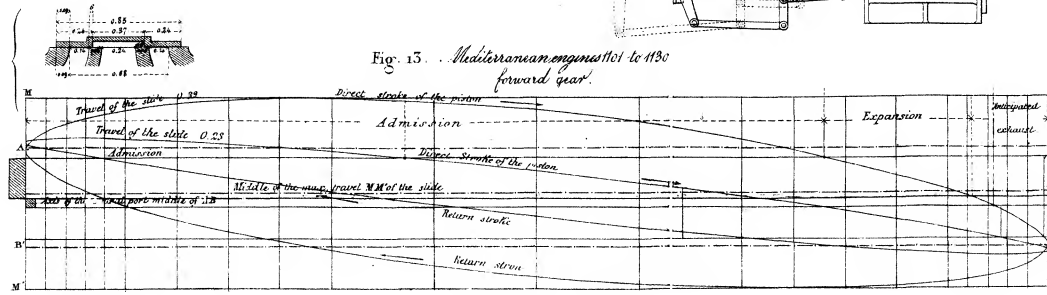


Fig. 11. Polonceau's expansion with two slides.

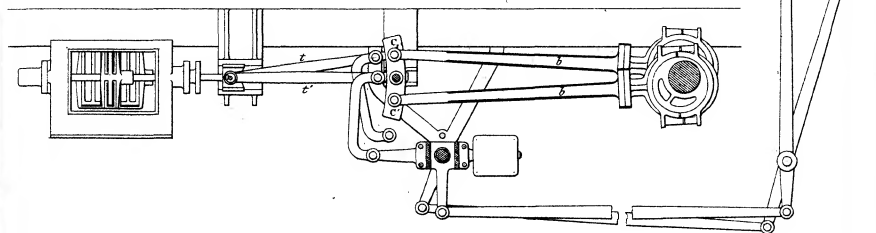
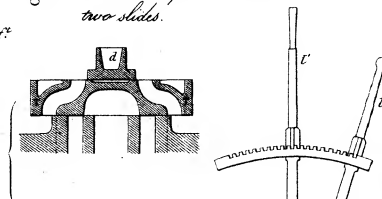
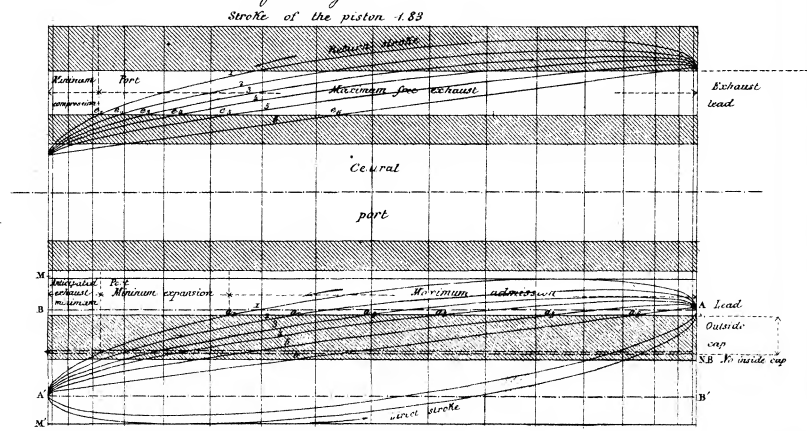
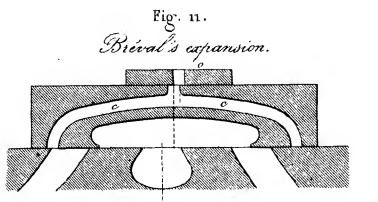
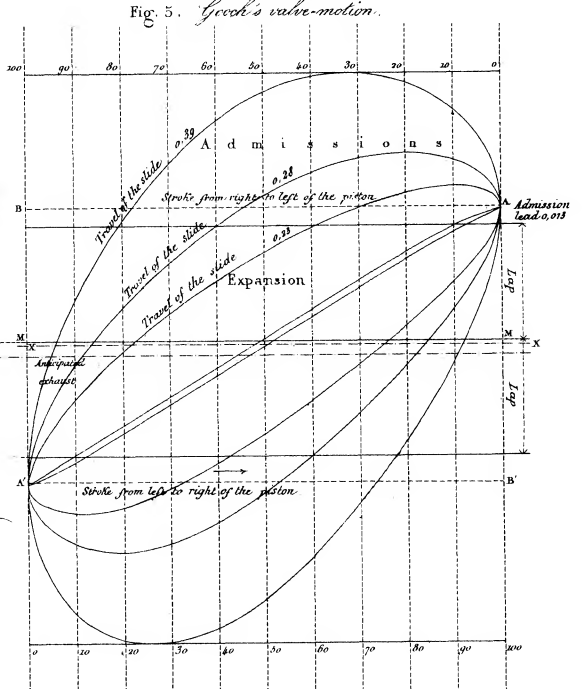
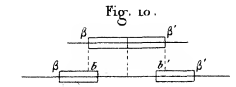
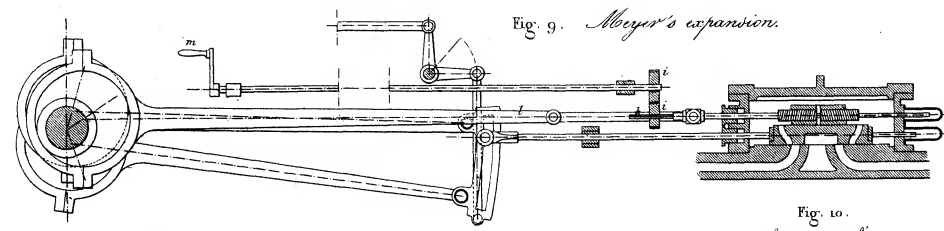
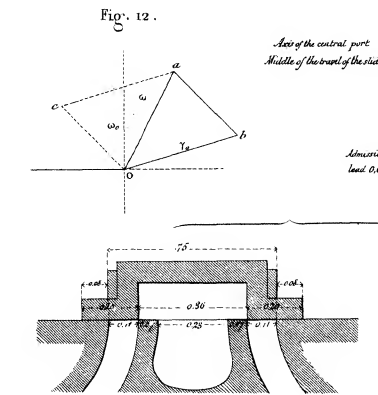
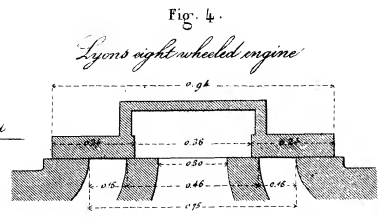
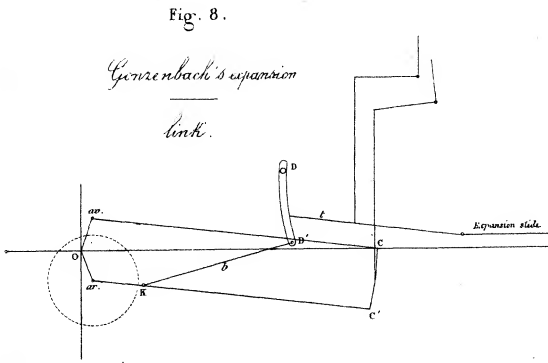
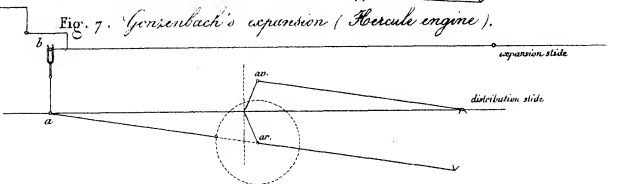
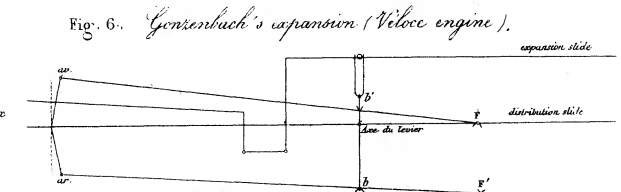
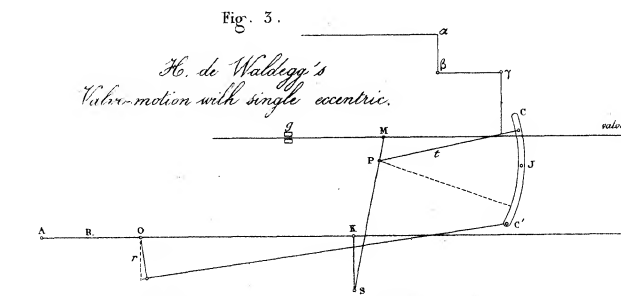
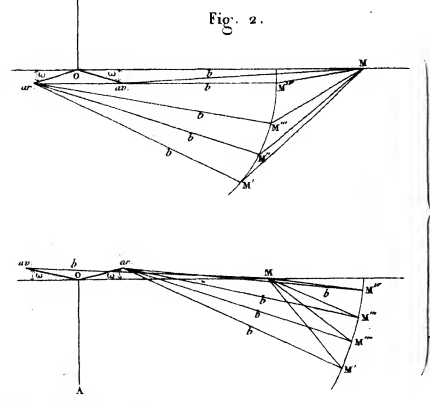
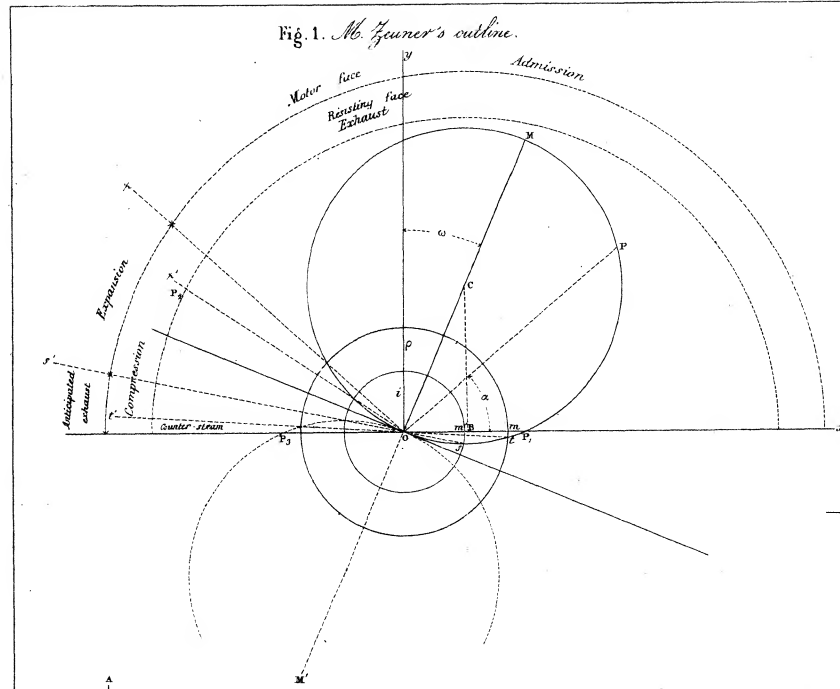
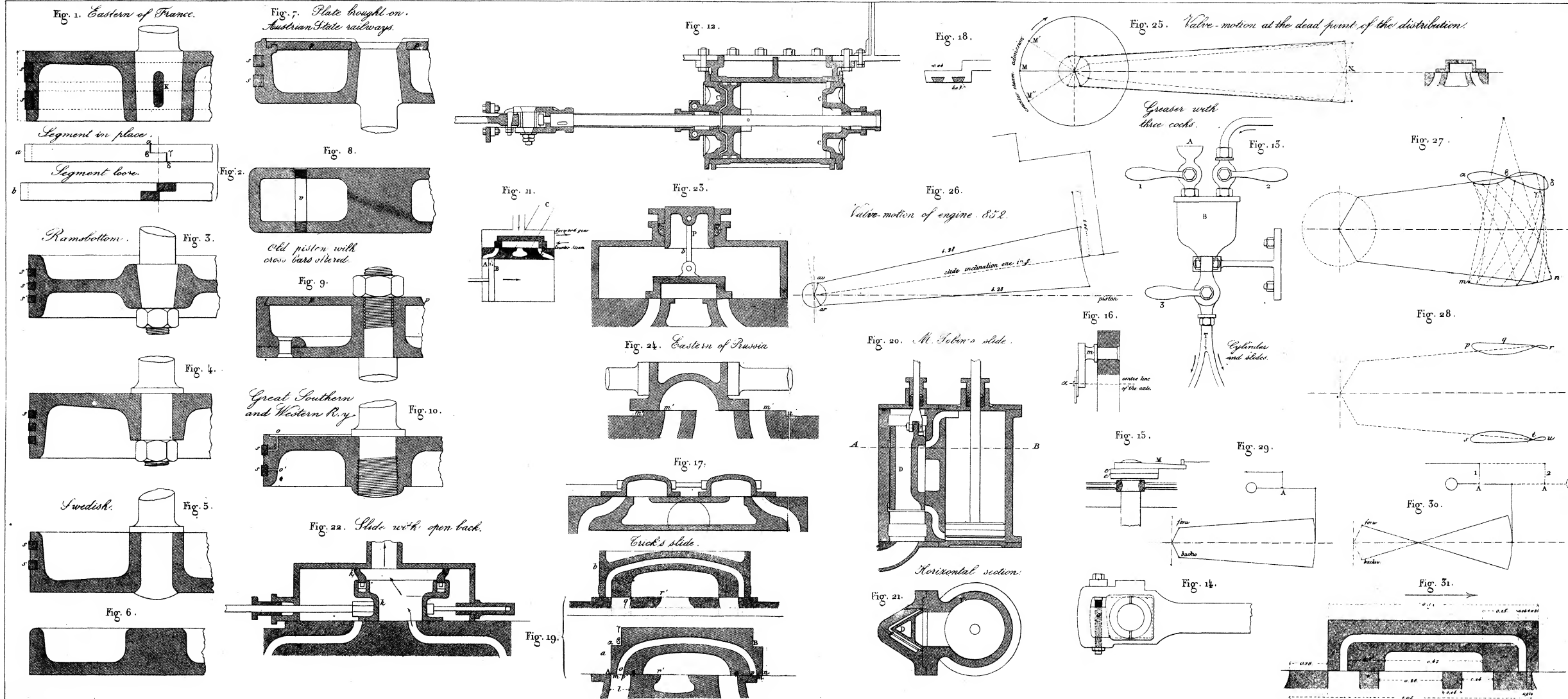
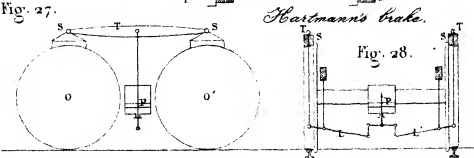
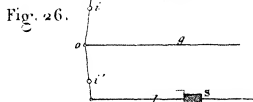
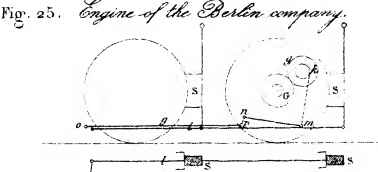
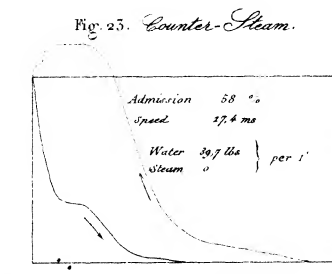
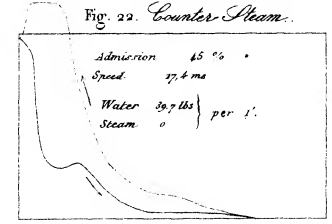
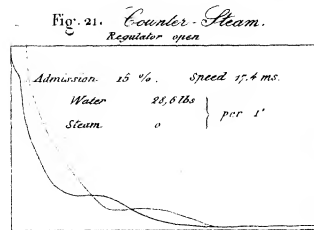
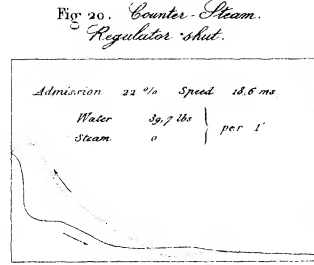
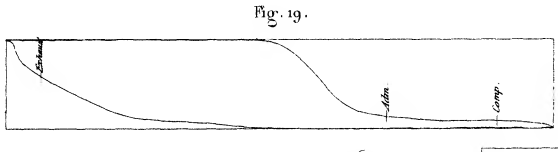
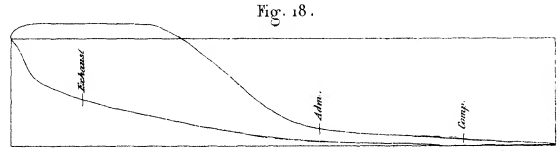
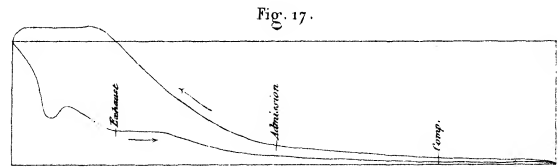
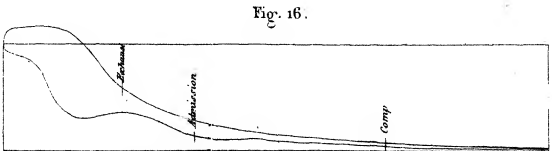
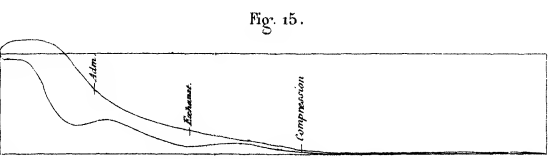
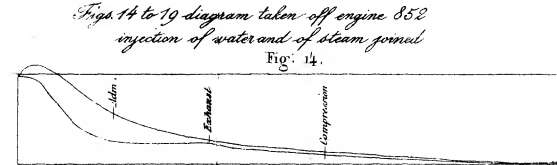
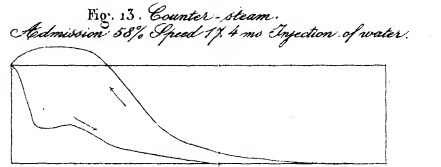
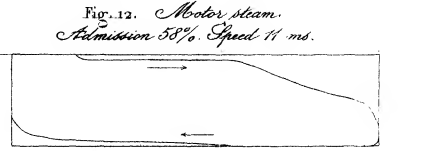
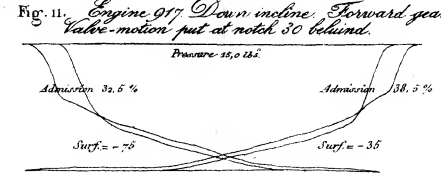
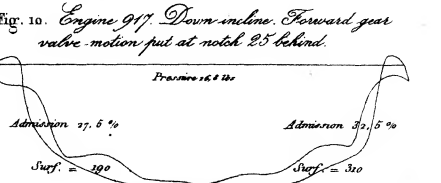
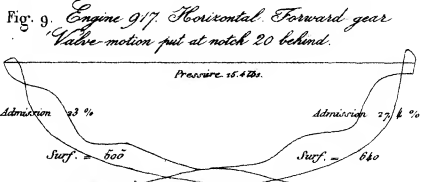
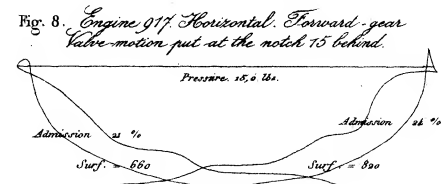
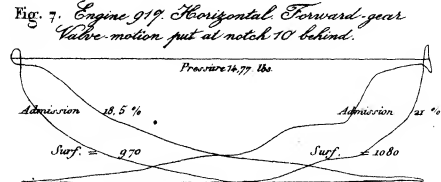
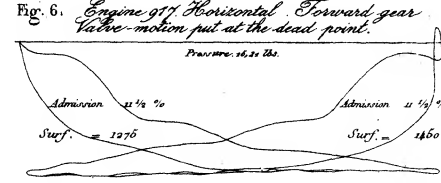
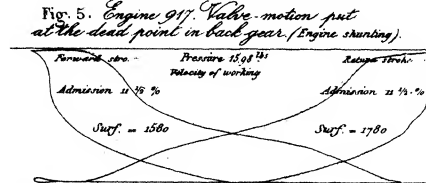
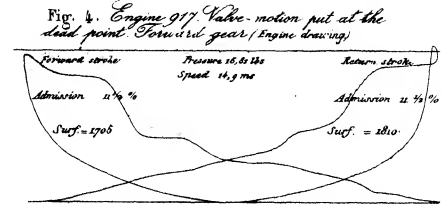
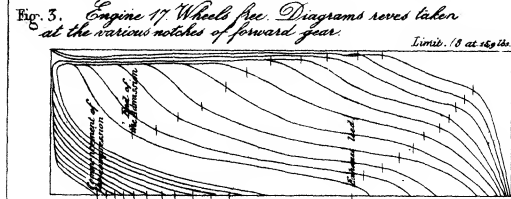
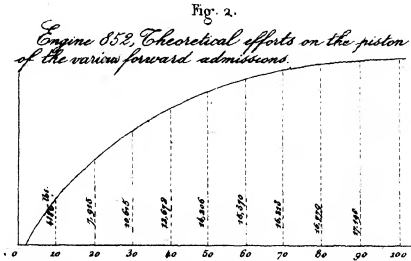
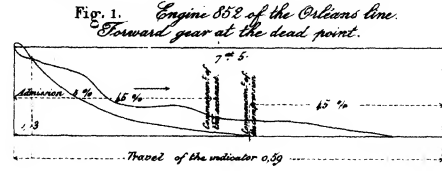


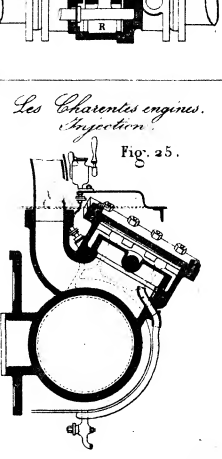
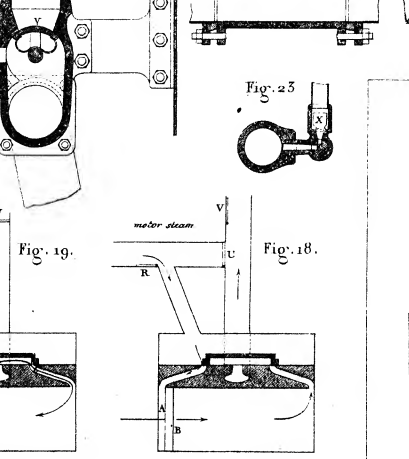
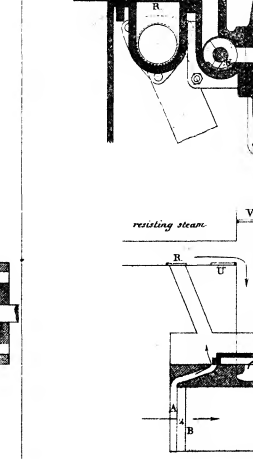
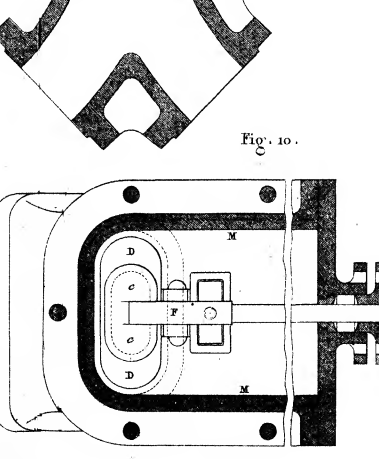
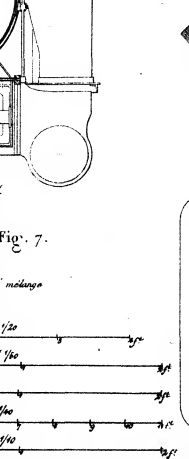
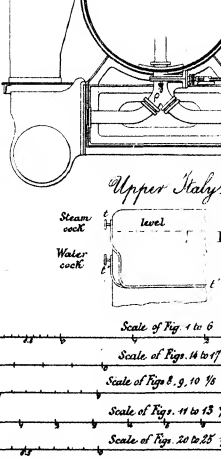
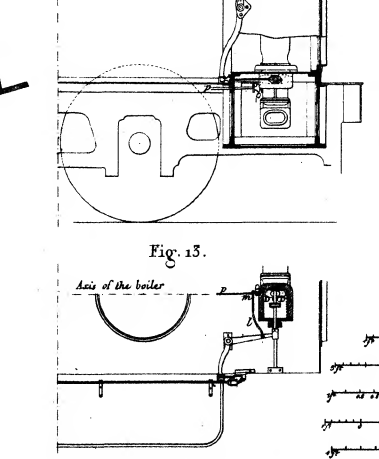
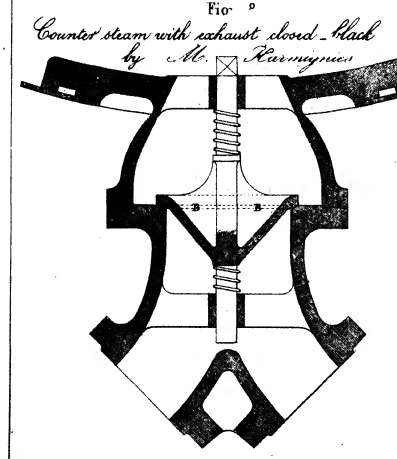
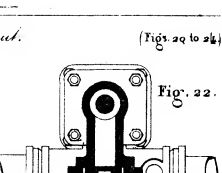
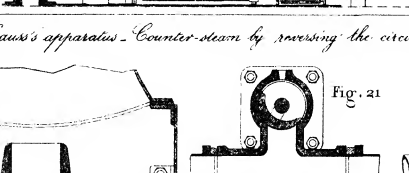
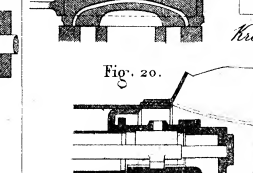
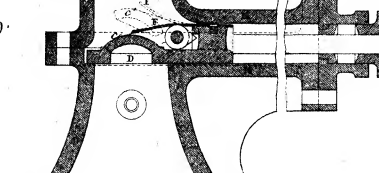
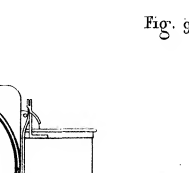
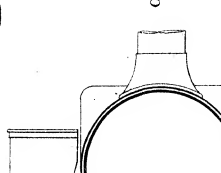
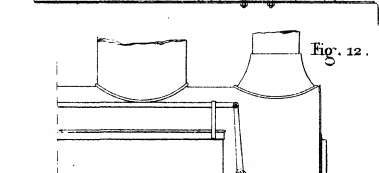
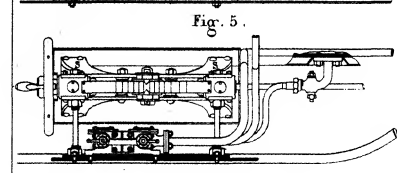
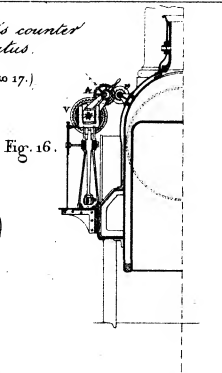
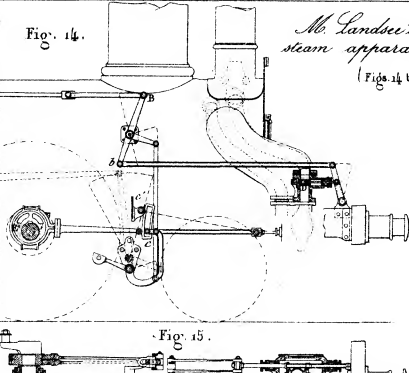
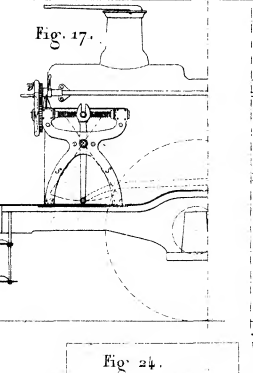
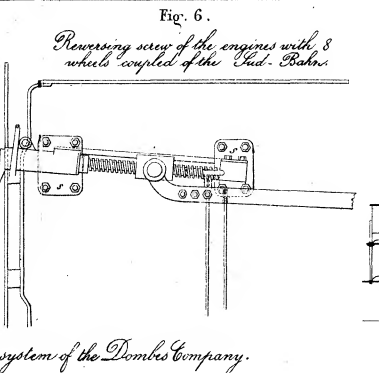
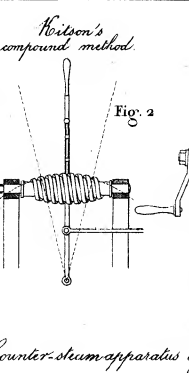
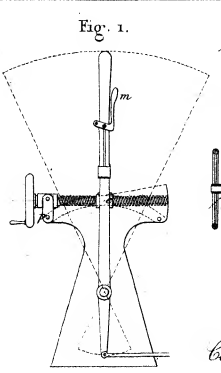
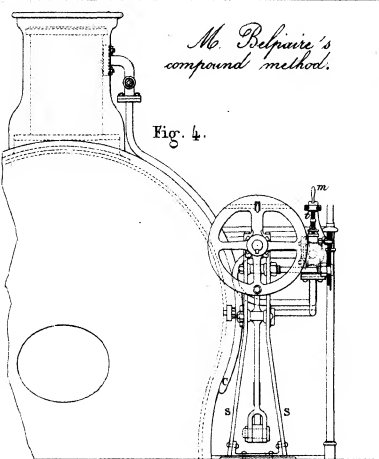
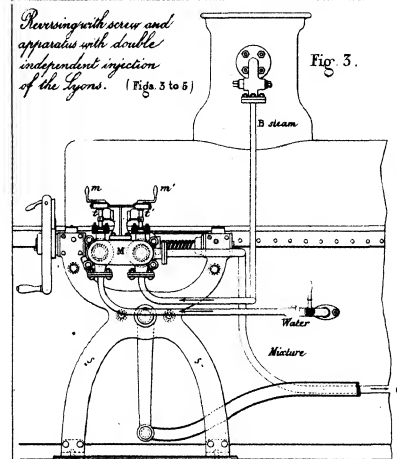
Fig. 14. Stewart and Hope's valve-motion (and Fink's) (See Fig 8) forward gear.











Scale of Fig. 4 to 6 1/20
 Scale of Figs. 14 to 17 1/20
 Scale of Figs. 8, 9, 10 1/10
 Scale of Figs. 11 to 13 1/10
 Scale of Figs. 20 to 25 1/10

Fig. 1.

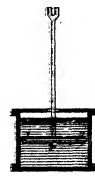


Fig. 2.

Brake of the Steindorf engine.

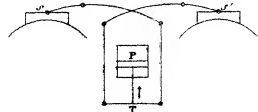


Fig. 3.

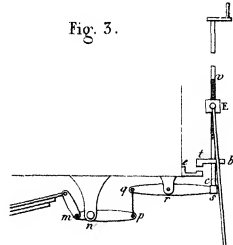


Fig. 4.

Noseda or Curi's brake.

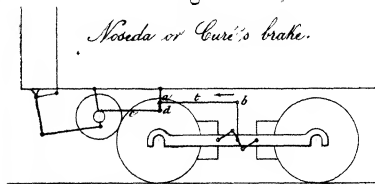


Fig. 5.

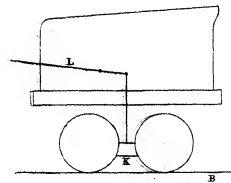


Fig. 6.

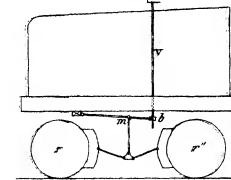


Fig. 7. Mr Courasse's impulsion brake.

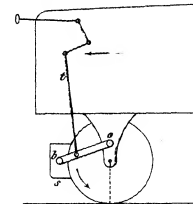


Fig. 8.

Cabritaui's brake.

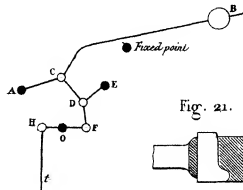


Fig. 21.



Fig. 15.

Laignel's brake.

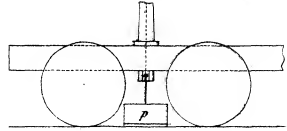


Fig. 17.

Mr Guerin's automotor brake.

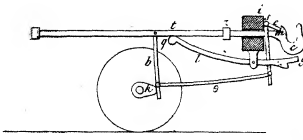


Fig. 19.

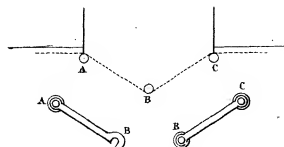


Fig. 10.

Capstan brake, Calogne and Minden line.

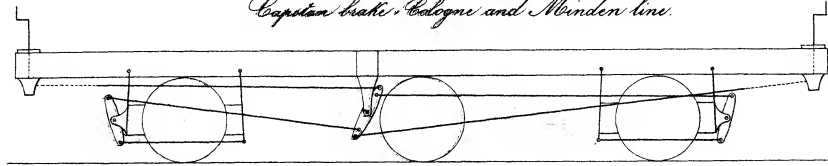


Fig. 26.

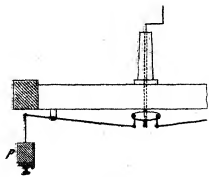


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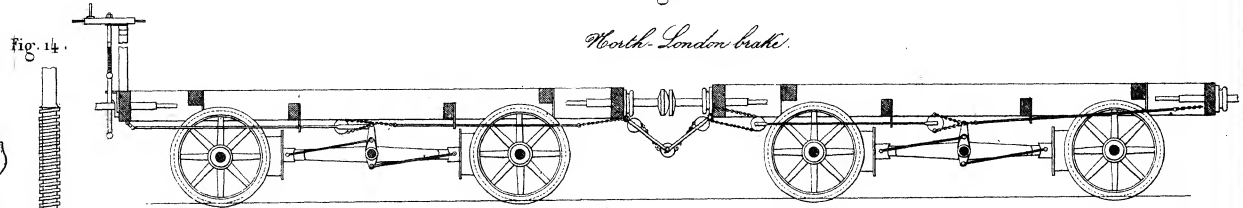


Fig. 18.

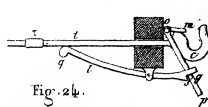


Fig. 24.

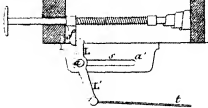


Fig. 11.

Mr. Brucogne's counterpoise screw brake.

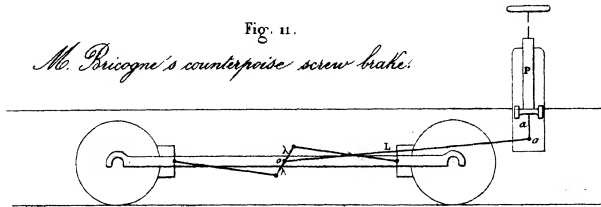


Fig. 12.

Mr. Brucogne's counterpoise and jack brake.

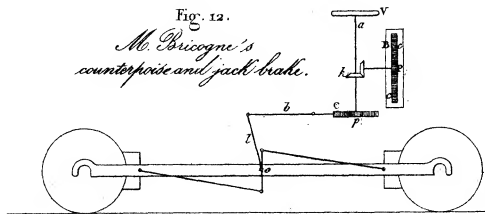


Fig. 13.

Mr. Brucogne's brake with two blocks on each wheel.

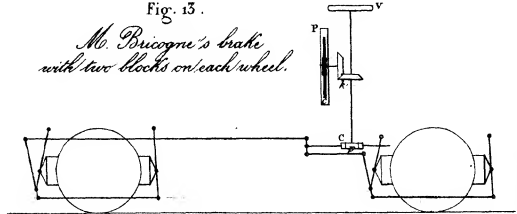


Fig. 20.

North London brake.

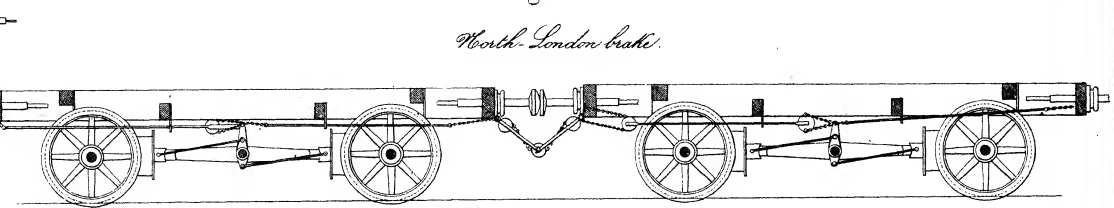


Fig. 22.

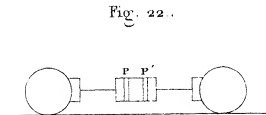


Fig. 9. Brake of the six-wheeled carriages on the Lyons line.

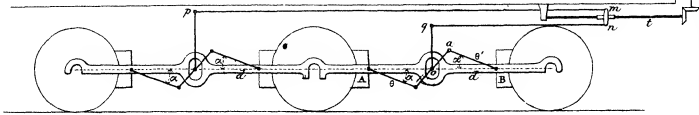


Fig. 23. Example of letting go at a distance.

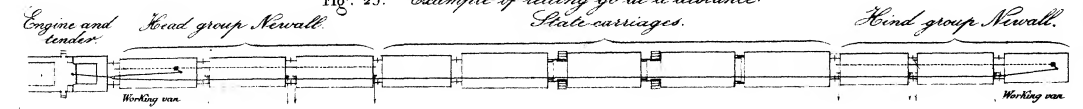


Fig. 1. *Brakes of the Western of France engines.*

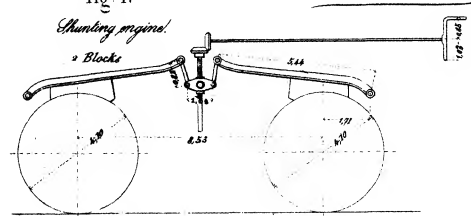


Fig. 5. *Passengers & Blocks*

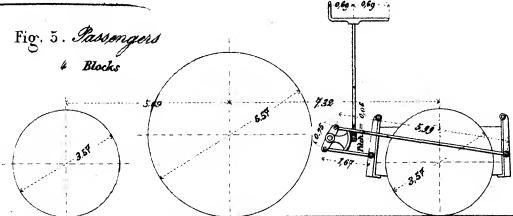


Fig. 2. *Shunting engine & Blocks*

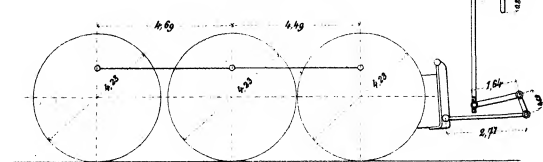


Fig. 6. *Goods.*

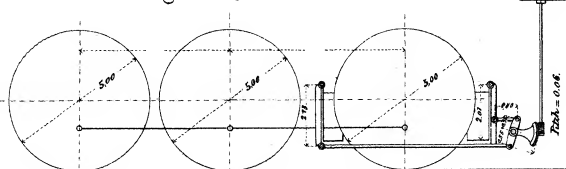


Fig. 3. *Suburban trains & Blocks*

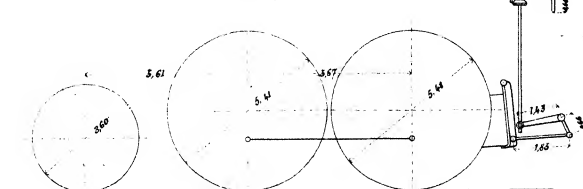


Fig. 7. *Engine of the Savao-Bavarian lines (Steam brake with skids)*

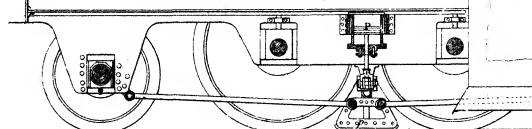


Fig. 4. *Suburban trains & Blocks*

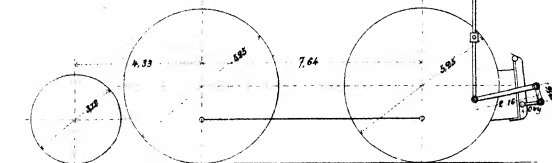


Fig. 8. *Plan*

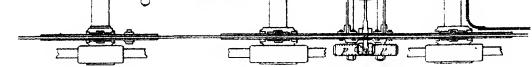


Fig. 9.

Mr. Adam's brake (Waggons)

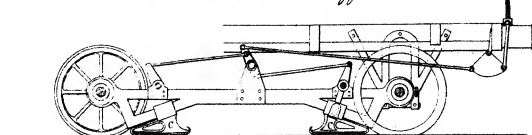


Fig. 11. *Tender with Stelmani's screw brake*

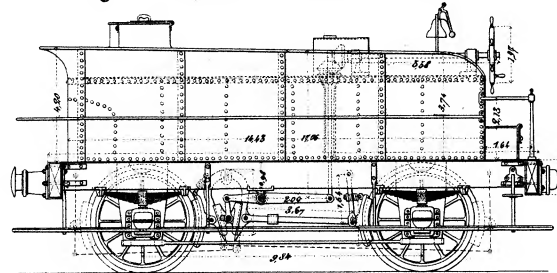


Fig. 12. *Van (Northern of France), with Stelmani's brake*

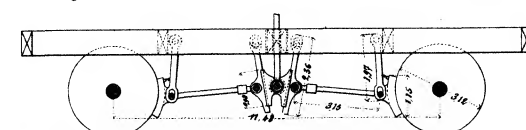


Fig. 13. *Stelmani's lower brake with single block.*

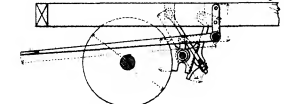


Fig. 14. *Tender with double screw brake Lyne from Paris to Lyon*

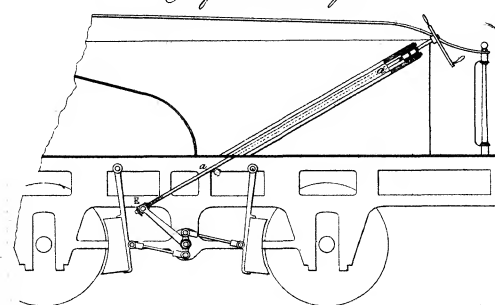


Fig. 15.

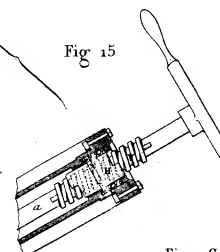


Fig. 17. *Courasse's brake*

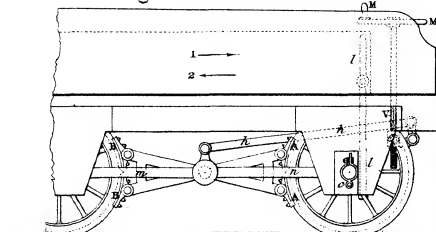


Fig. 18. *Tender with 6 wheels, Lyons line.*

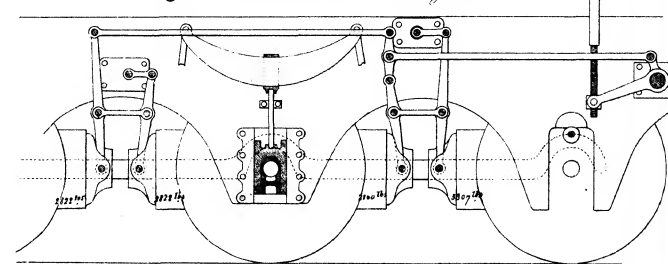
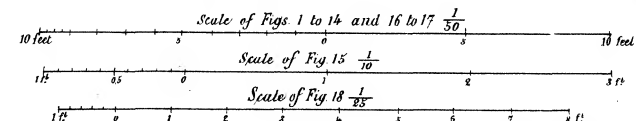
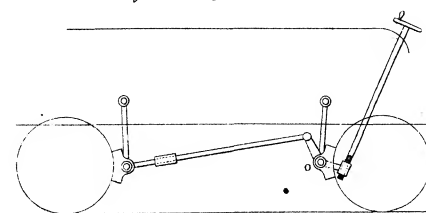


Fig. 16.

Tender of the Lybre line.



Tenders (Western of France). (Figs. 1 to 6.)

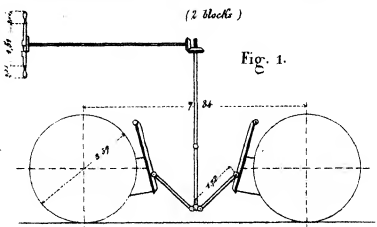


Fig. 1.

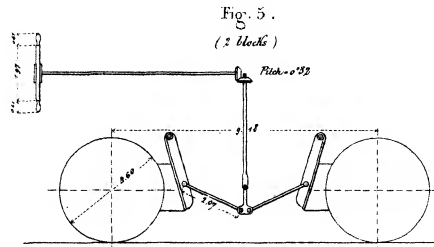


Fig. 5.

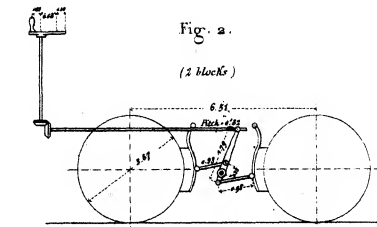


Fig. 2.

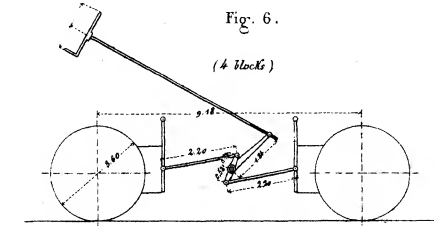


Fig. 6.

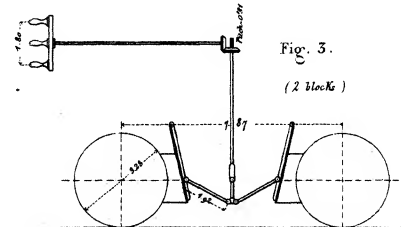


Fig. 3.

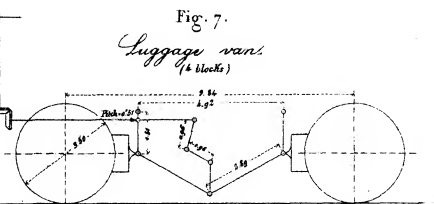


Fig. 7.

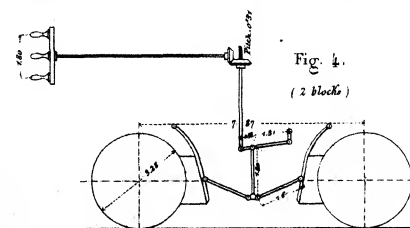


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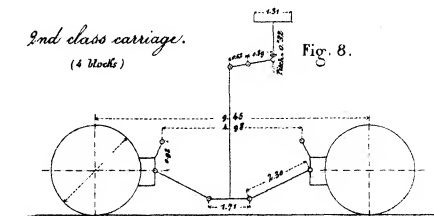


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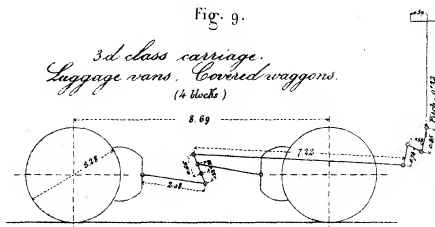


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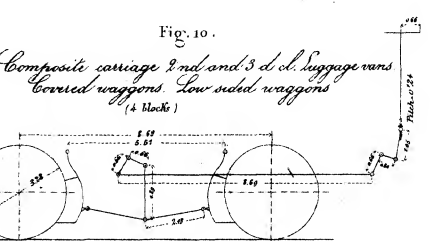


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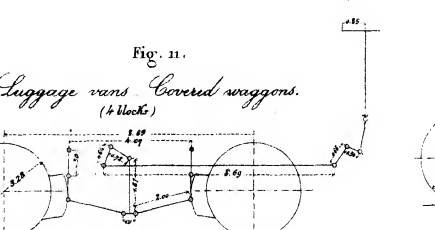


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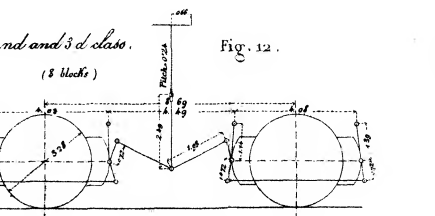


Fig. 12.

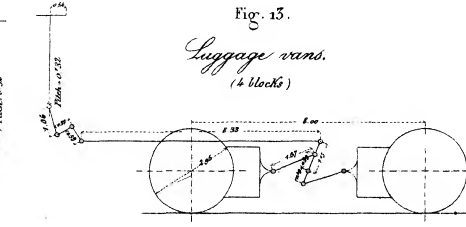


Fig. 13.

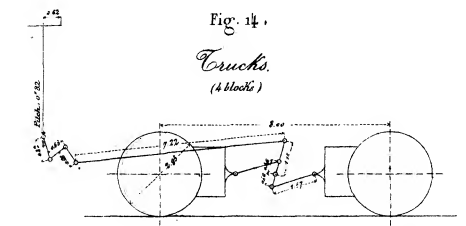


Fig. 14.

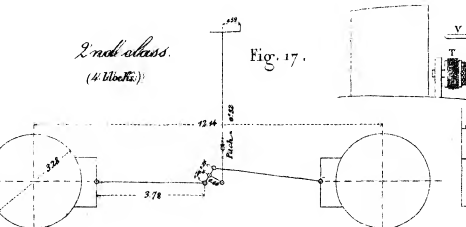


Fig. 17.

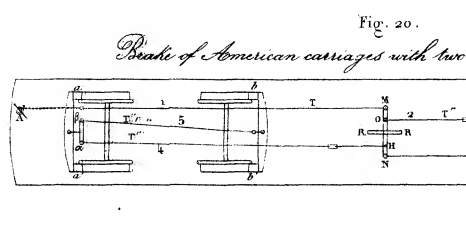


Fig. 20.

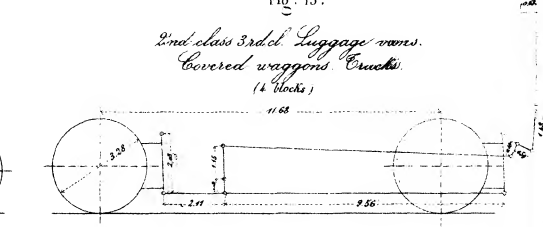


Fig. 15.

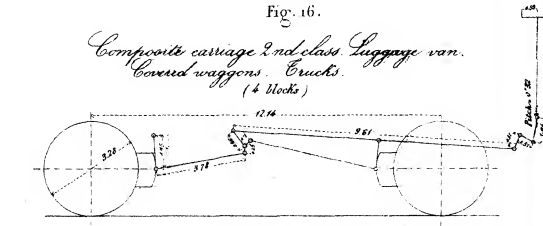


Fig. 16.

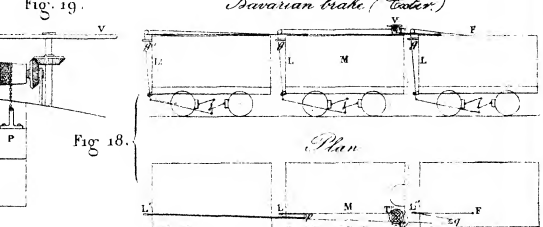


Fig. 18.

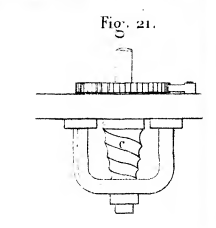


Fig. 21.

Scale of Figs. 1 to 17, 1/16 inch = 1 foot

Scale of Figs. 18 and 21, 1/32 inch = 1 foot

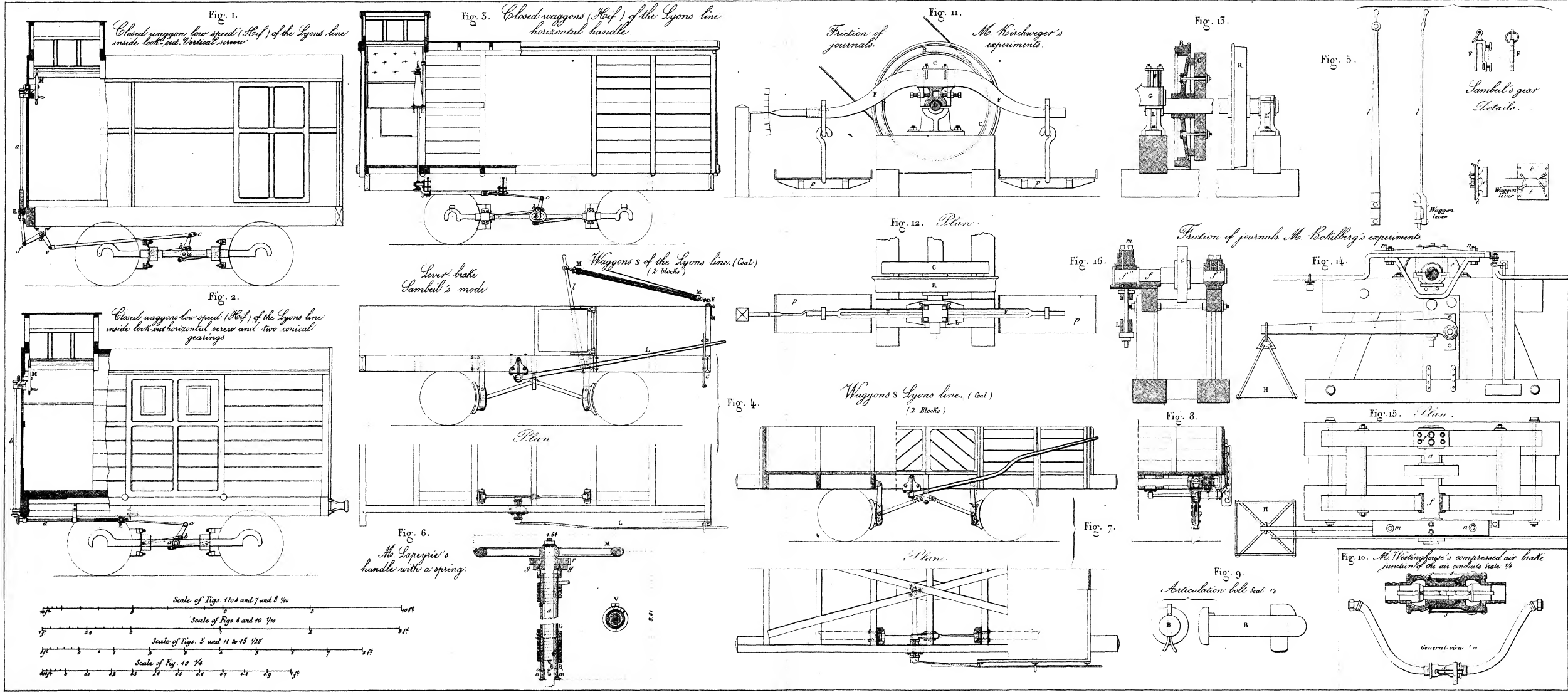


Fig. 1. Hydraulic brake for locomotors. Agudio's system for very steep inclines.

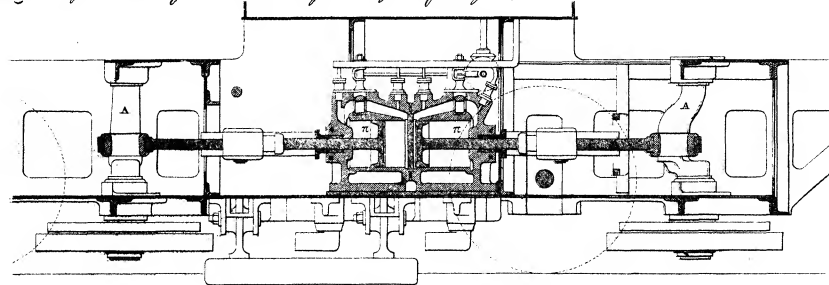


Fig. 2. Plan

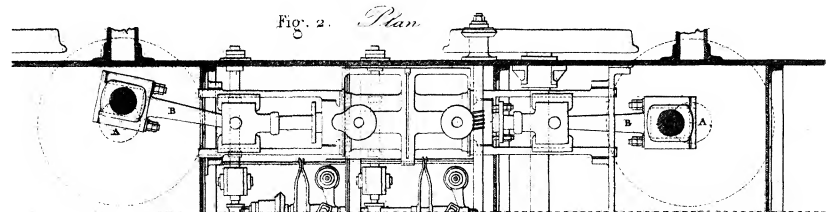


Fig. 3.

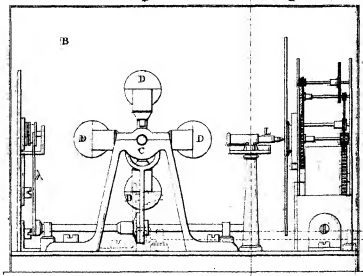
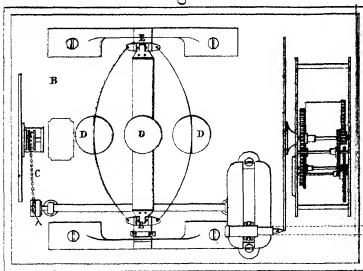


Fig. 4.



Figs 3 to 5. M. M. Donzel and Guillet's tachometer

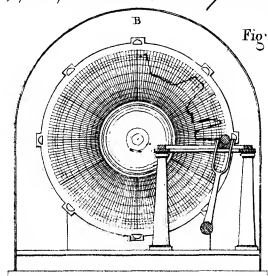


Fig. 5.

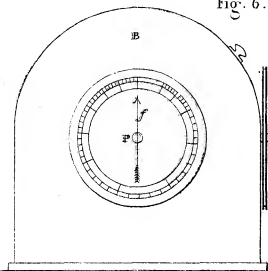


Fig. 6.

Fig. 7.

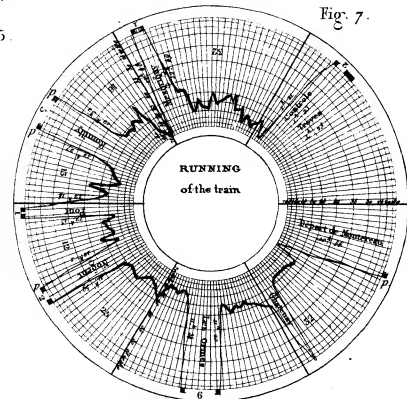


Fig. 20

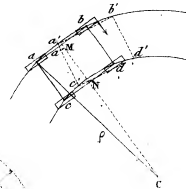


Fig. 8.

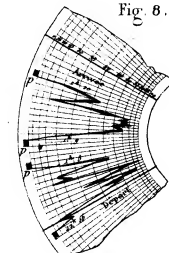


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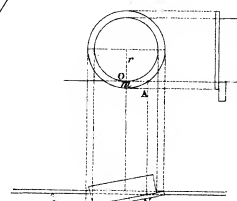


Fig. 24.

Fig. 21.

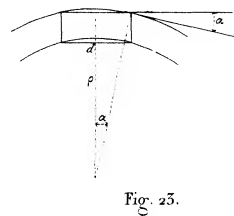


Fig. 23.

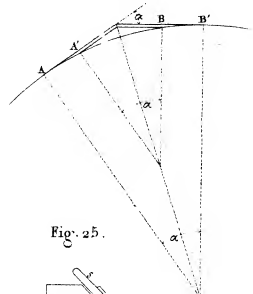


Fig. 25.

Fig. 7. Westinghouse's air brake. Application to vehicles with two articulated trains.

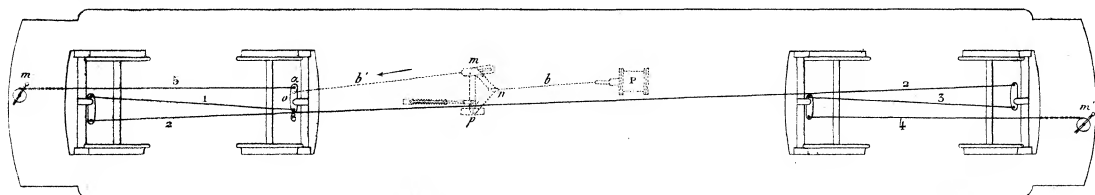


Fig. 9. M. Bricogne's method of letting go the brakes with counterforce.

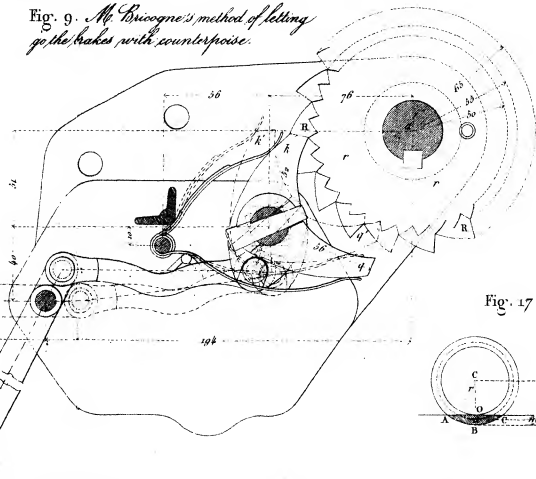


Fig. 19. Experiments made on the Lyons railway

Brake/Wagon	10 Wagons with oil	2 nd Dynamometer	10 Wagons with grease	1 st Dynamometer	Engine and Tender
Even days	[Diagram showing train layout]				
Odd days	[Diagram showing train layout]				

Fig. 10.

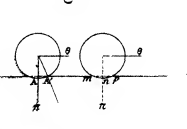


Fig. 11.

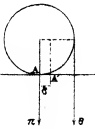


Fig. 12.

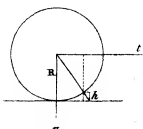


Fig. 16.

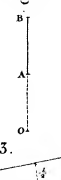


Fig. 13.

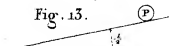


Fig. 14.

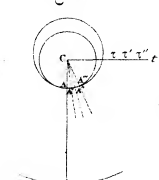


Fig. 15.

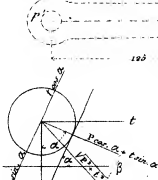


Fig. 17.

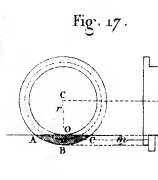
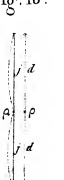


Fig. 18.



Poni 3,800 ft. above the level of the sea.

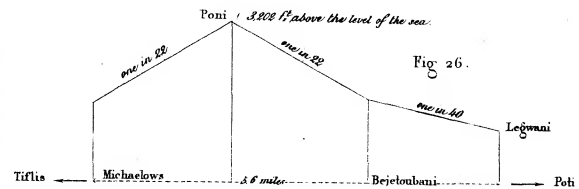
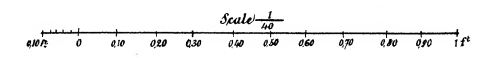
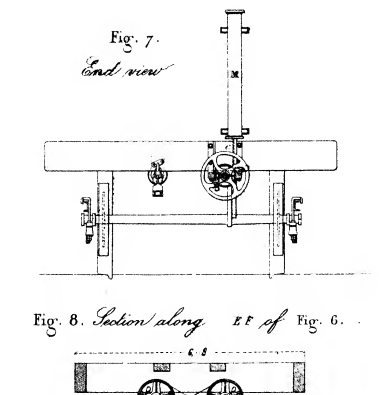
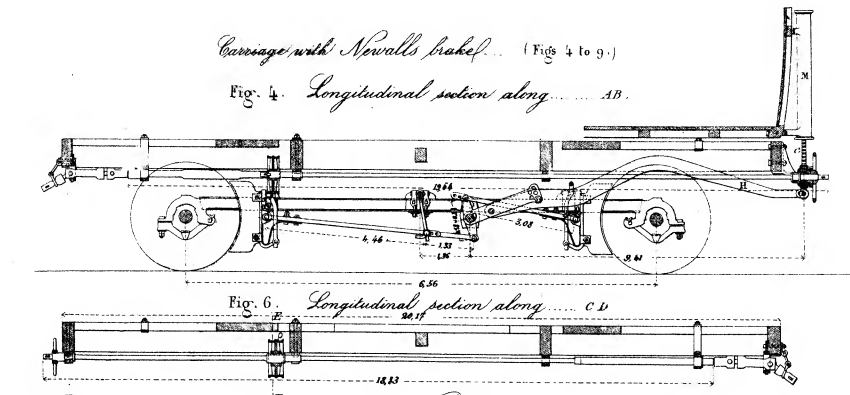
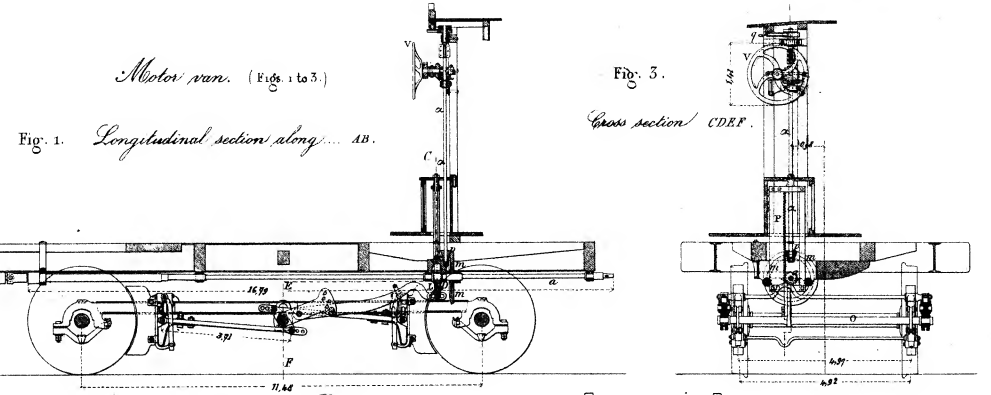
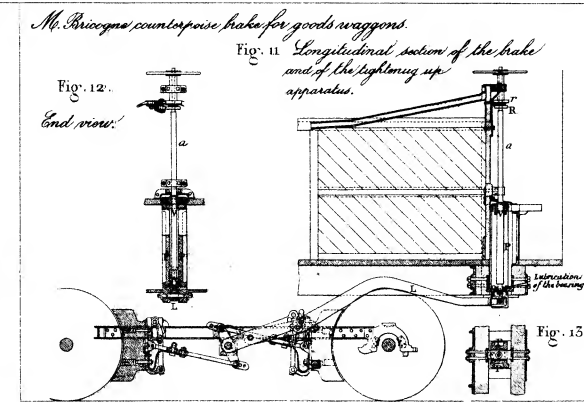
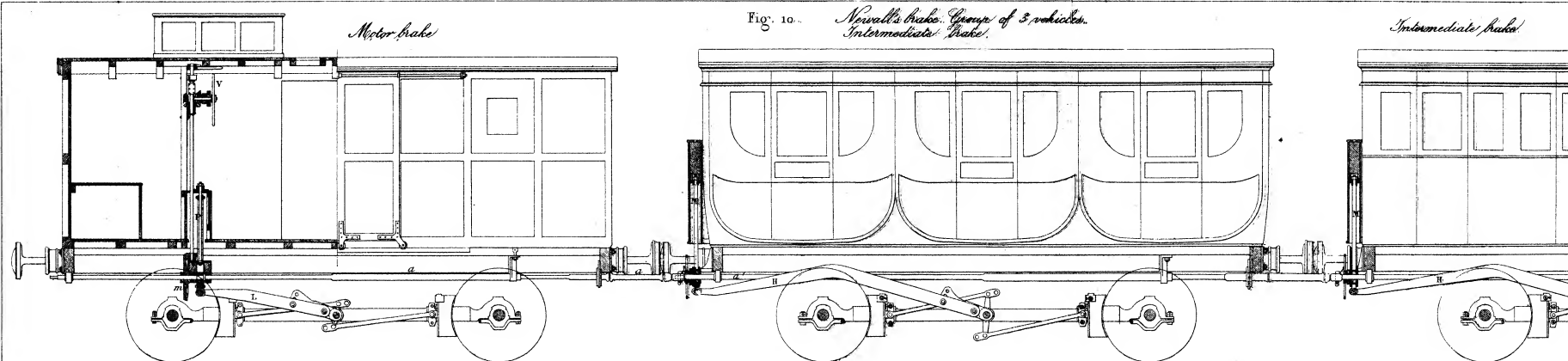


Fig. 26.



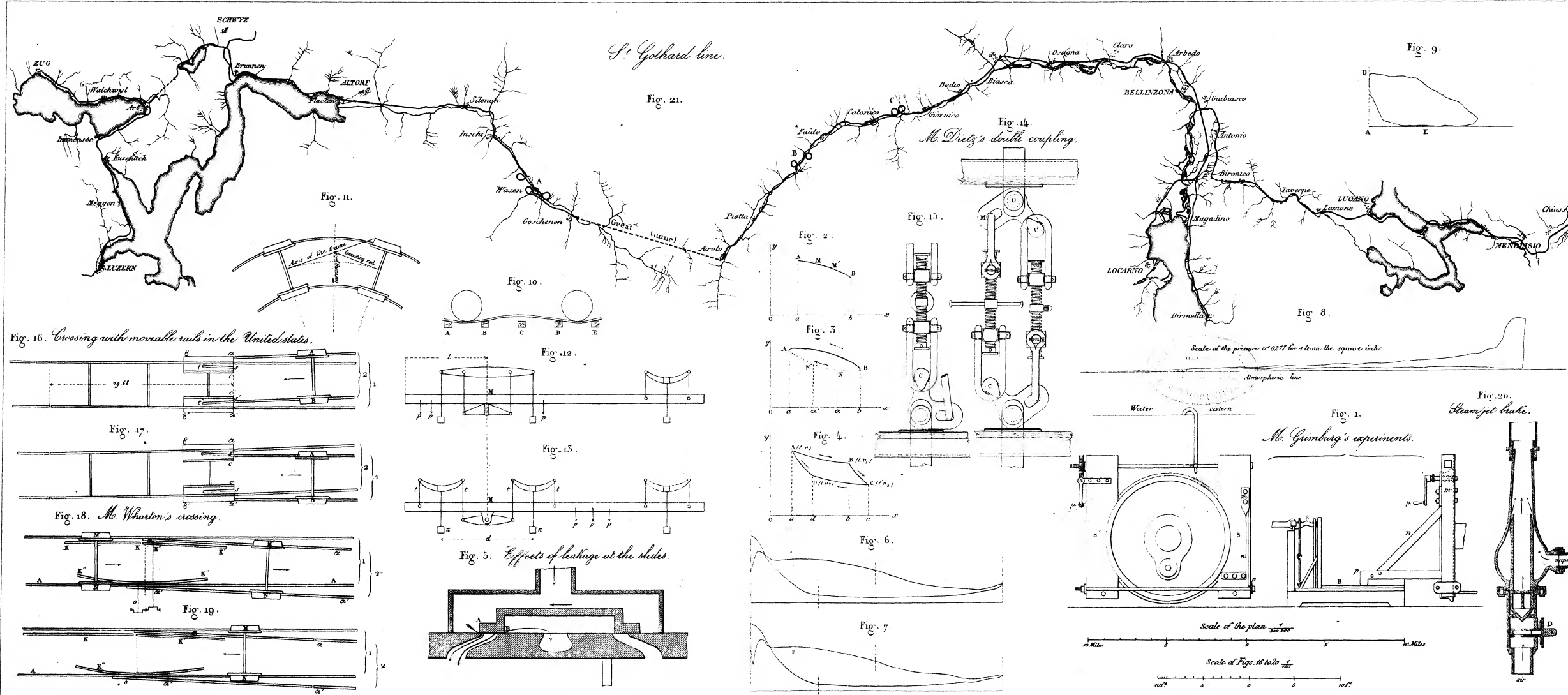


Fig. 4. *Plan*

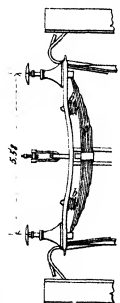
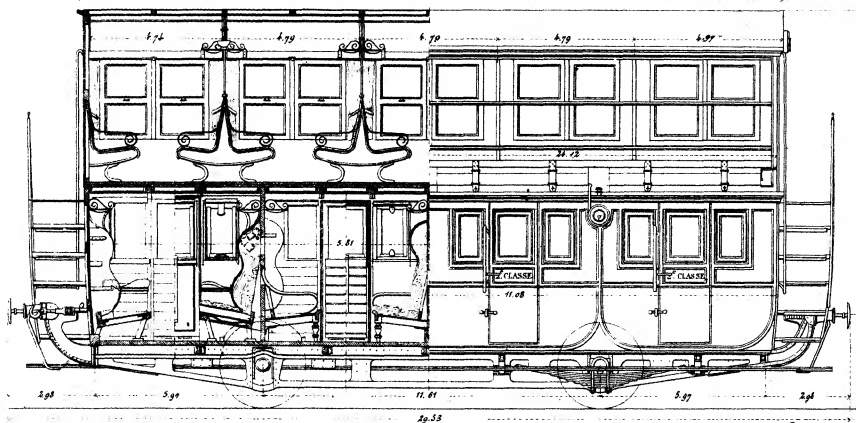


Fig. 1. *Suburban lines.*



M. Vidard's new carriages. (figs. 1 to 4.)

Fig. 2. *Great lines.*

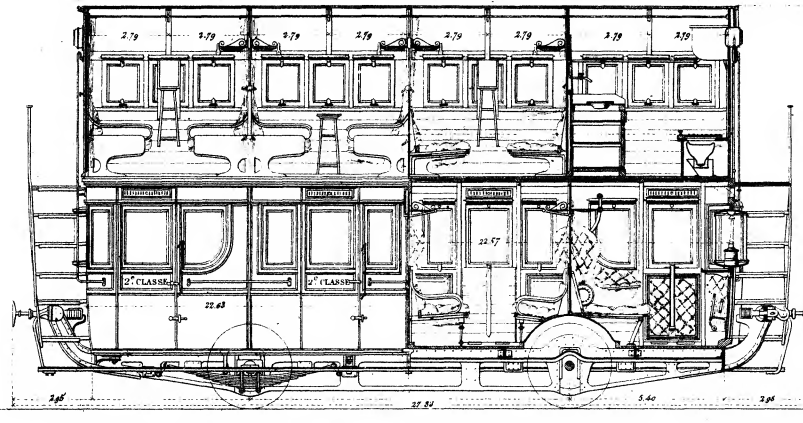


Fig. 3. *End view*

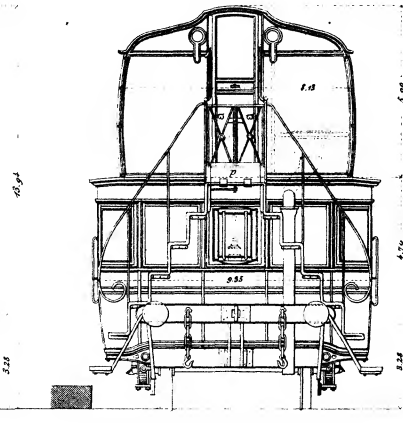
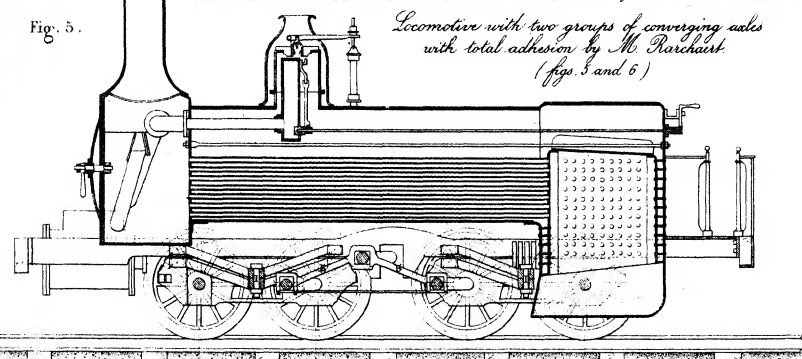
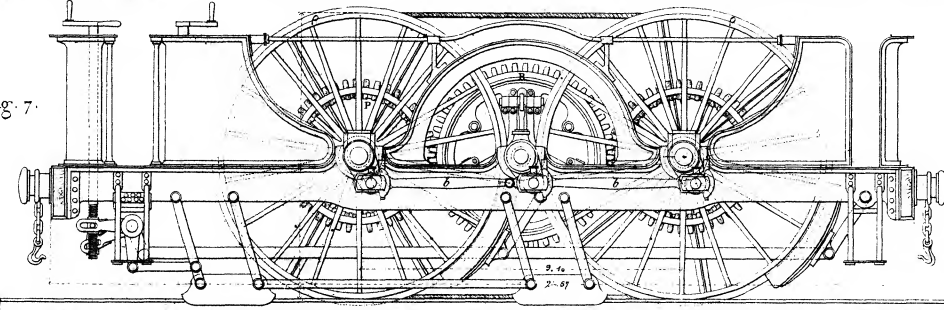


Fig. 5.



Locomotive with two groups of converging axles with total adhesion by M. Barchaert. (figs. 5 and 6)

Fig. 7.



Locomotive for small inclines acting by adhesion. (Aguado's system) (figs. 7 and 8)

Fig. 8. *Plan*

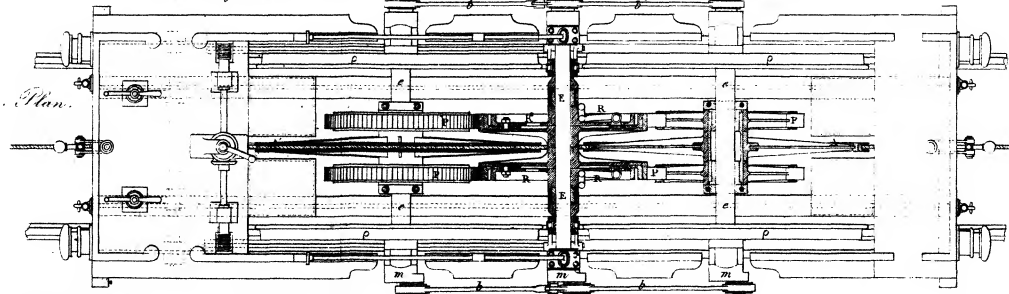
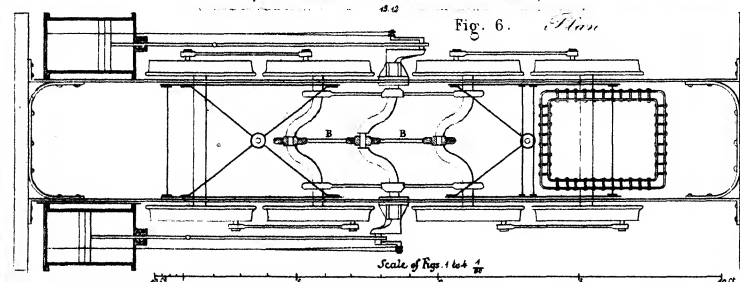
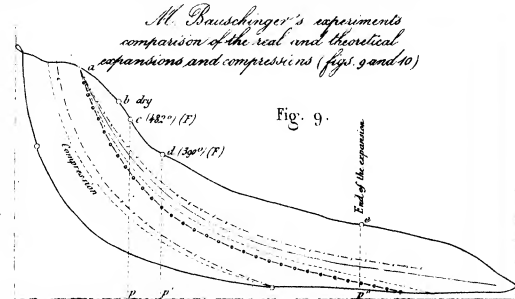


Fig. 6. *Plan*

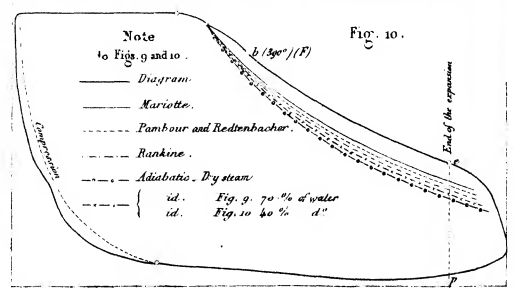


Scale of Figs. 1 to 4



M. Bauschinger's experiments comparison of the real and theoretical expansions and compressions (figs. 9 and 10)

Fig. 9.



Note to Figs. 9 and 10:
— Diagram
— Mariotte.
- - - Panbour and Redtenbacher.
- - - Rankine.
- - - Adiabatic, Dry steam
id. Fig. 9. 70% d' water
id. Fig. 10. 60% d''

Fig. 10.

Scale of Figs. 5 to 8

Fig. 1. Locomotor with 6 pinions reversing. (figs 1 to 4.)

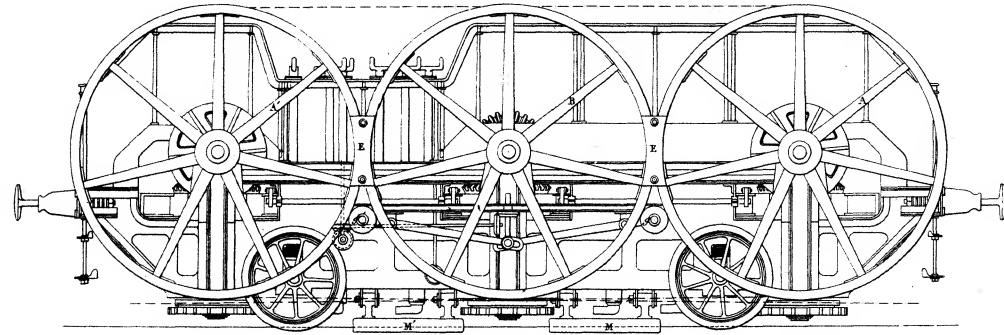


Fig. 2. Cross section.

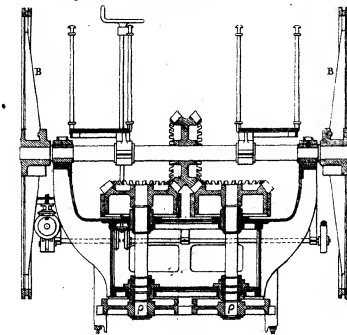


Fig. 6. Fish-plate without groove. Fish-plate with groove.

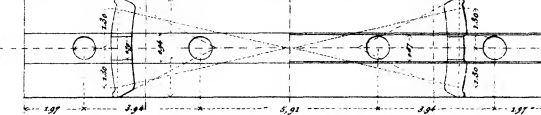


Fig. 8.



Fig. 3. Plan.

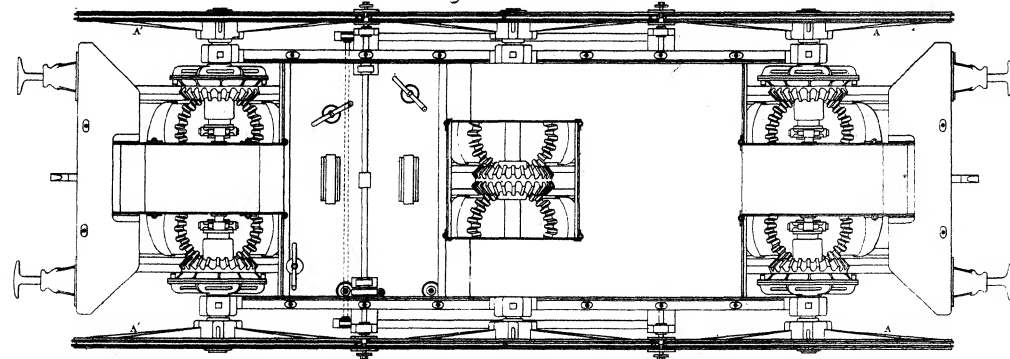


Fig. 5. Steel rail Northern of France. (1/2)

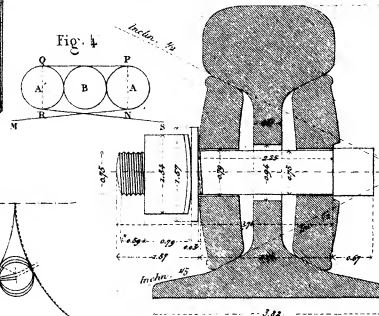


Fig. 7. Check fish-plate for steel rail 1/2 Line from Debra to Friedland.

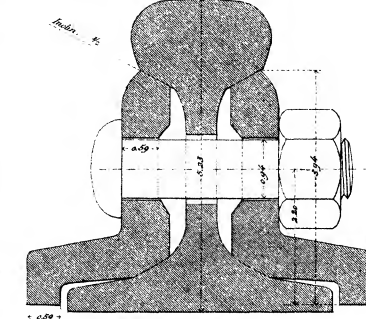


Fig. 9. (1/2)

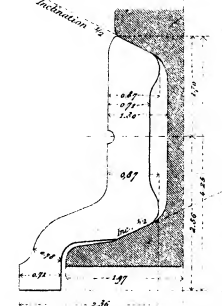


Fig. 4. Reversing gear.

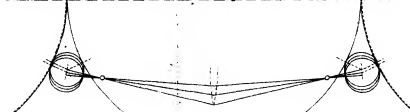


Fig. 12. New wrought-iron permanent way by M. Stelf.

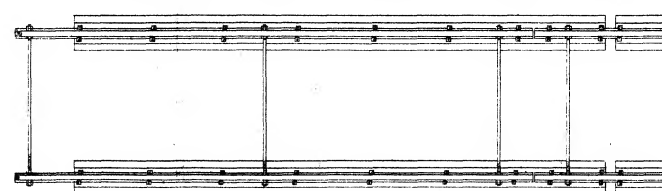


Fig. 15. Cross section.



Fig. 10. 5/8 1/2

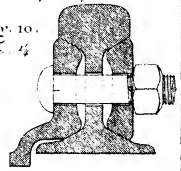


Fig. 11. Crossing called. Englische Weiche, in Germany.

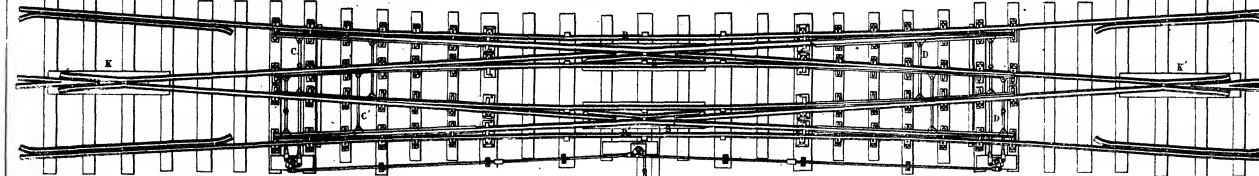
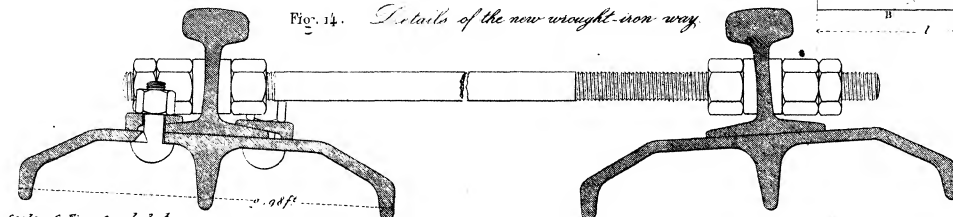


Fig. 14. Details of the new wrought-iron way.

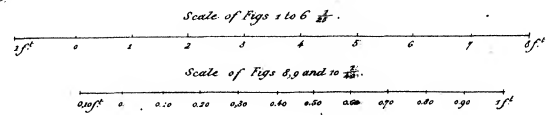
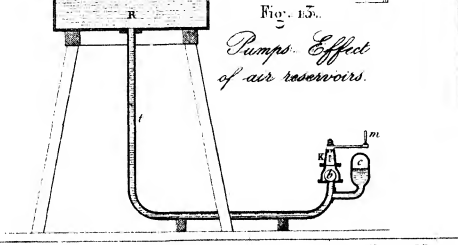
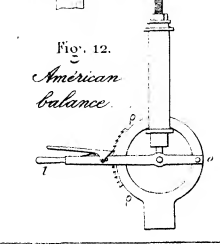
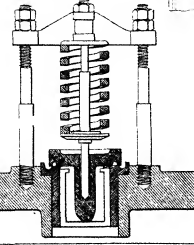
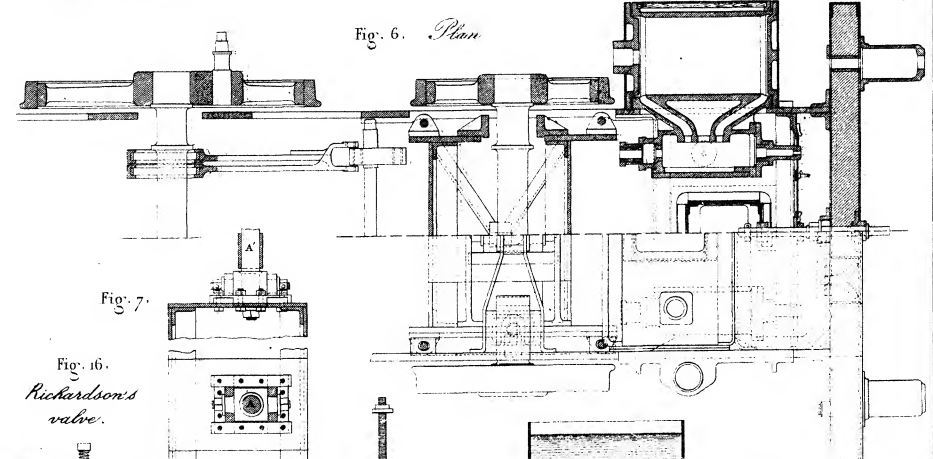
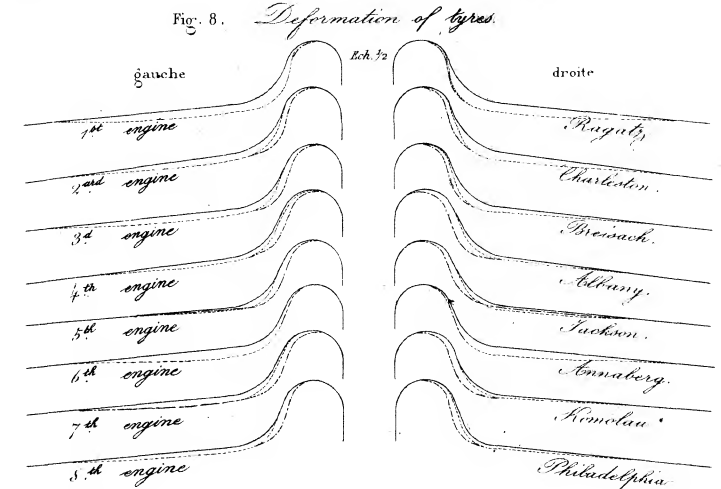
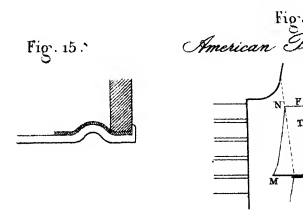
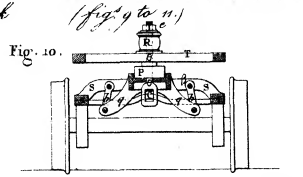
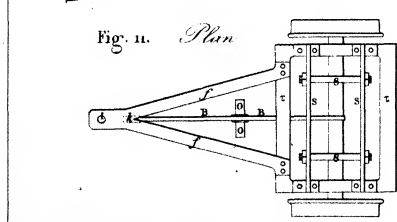
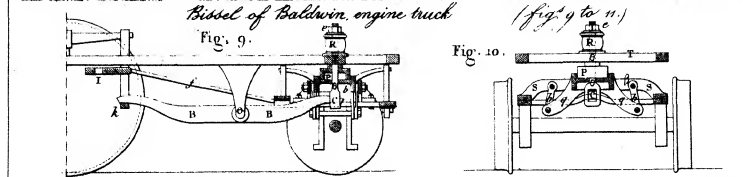
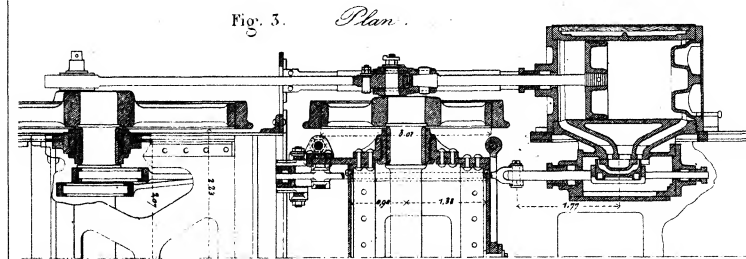
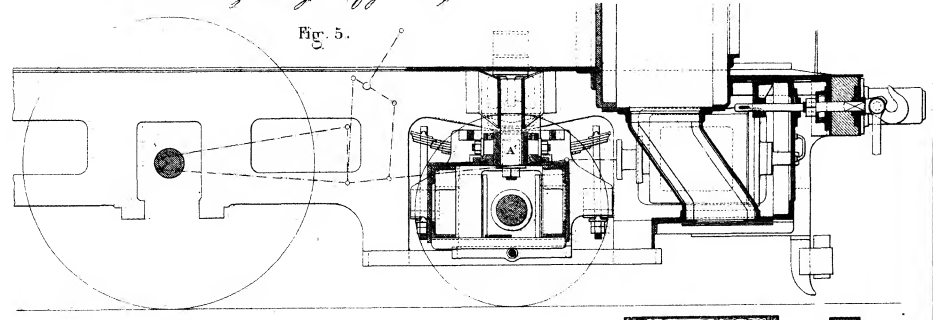
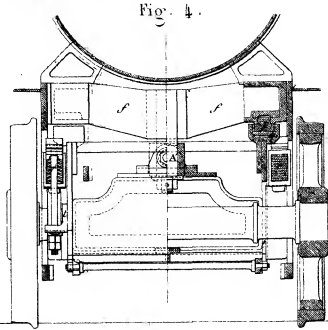
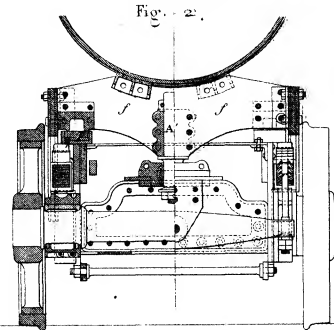
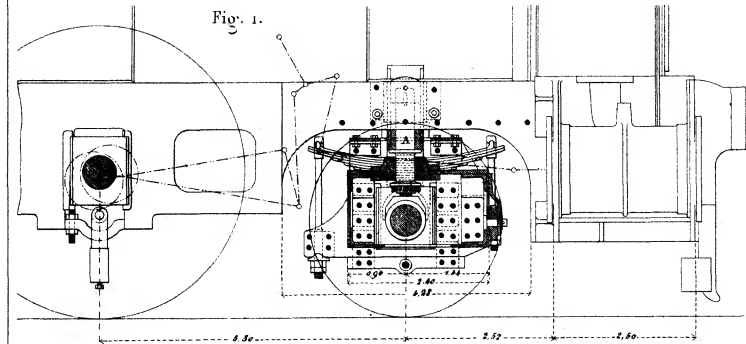


Scale of Fig. 11, 20 Feet. Scale of Figs. 1, 2, 3 and 4, 1/2".

Scale of Figs 12 and 13 5/8".



Curves. — *M. Novotny's engine. — Articulated leading truck with single axle and central turning pin. (figs 1 to 7)*
Passenger-engine. (figs 4 to 6)



Heating carriages by the circulation of hot air (eastern of France. (figs 1 to 6.)

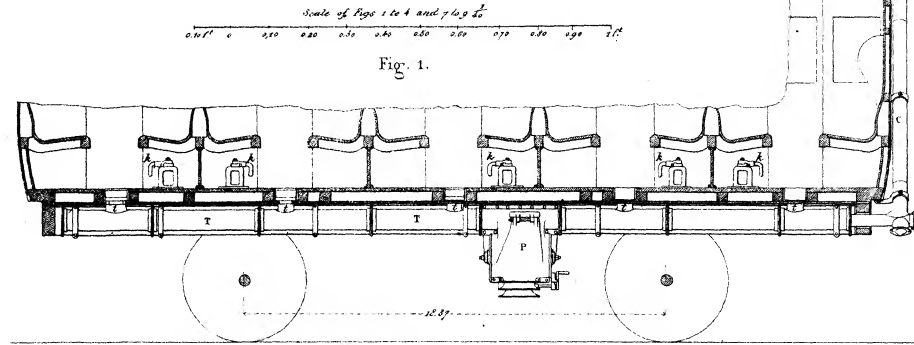


Fig. 1.

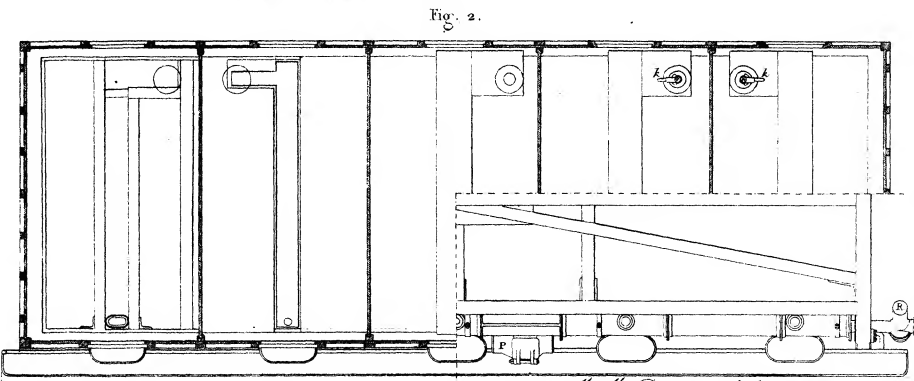


Fig. 2.

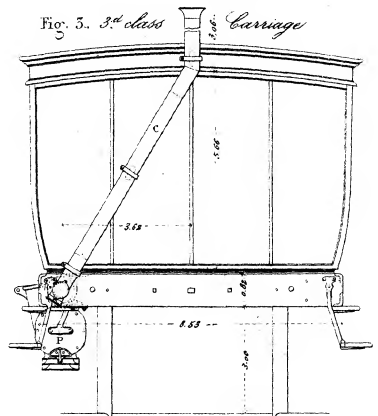


Fig. 3. 3rd class Carriage

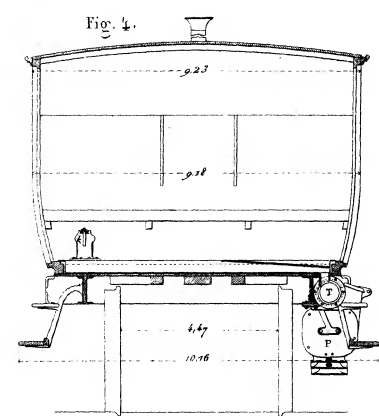


Fig. 4.

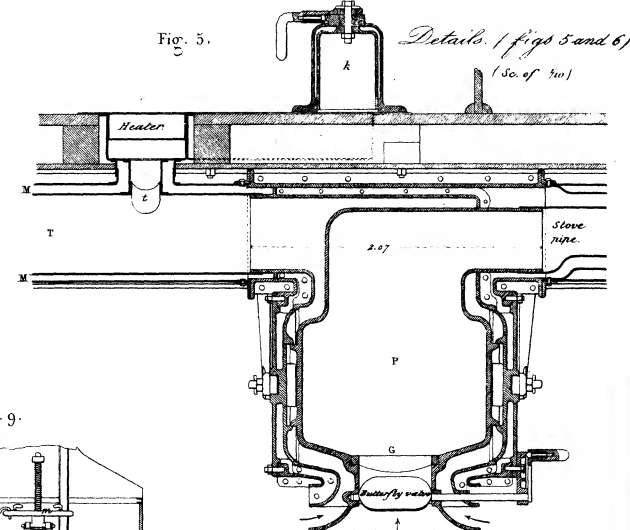
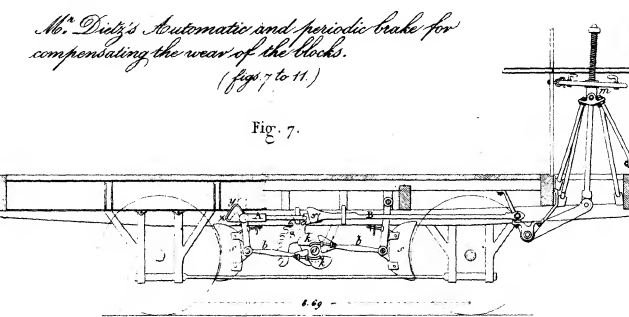


Fig. 5. Details. (figs 5 and 6) (Scale of 1/20)



M. Ditz's Automatic and periodic brake for compensating the wear of the blocks. (figs 7 to 11.)

Fig. 7.

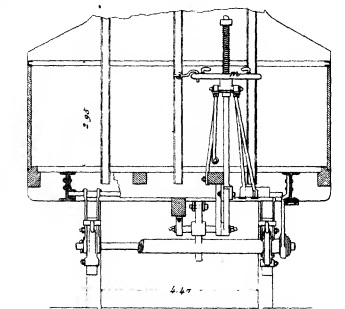


Fig. 9.

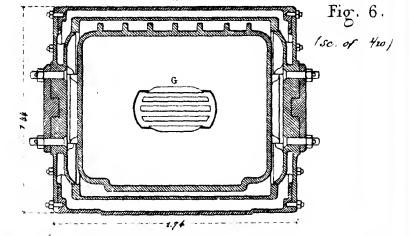


Fig. 6. (Scale of 1/20)

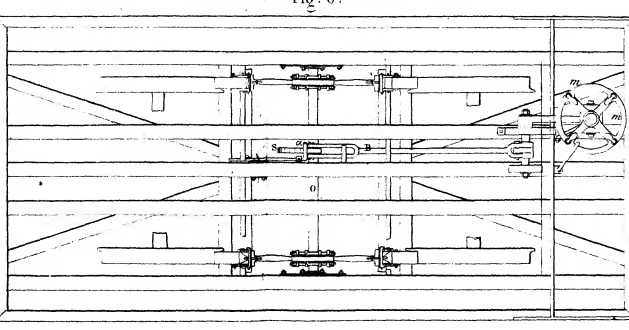


Fig. 8.

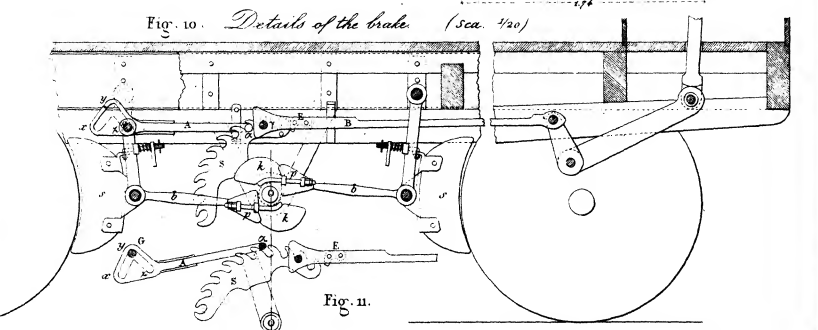


Fig. 10. Details of the brake (Scale 1/20)

Fig. 11.

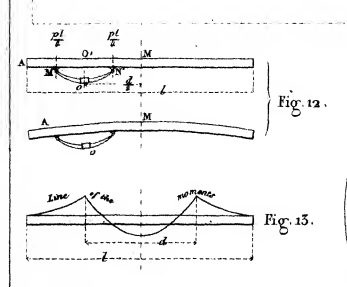


Fig. 12.

Fig. 13.

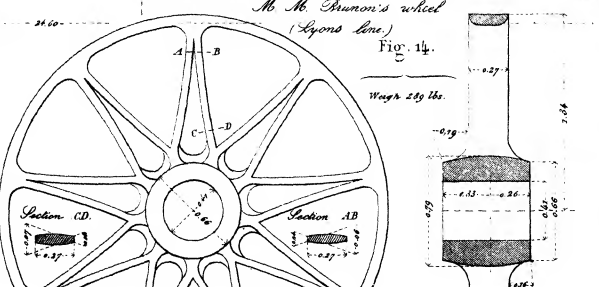


Fig. 14.

Weight 289 lbs.

LES
CHEMINS DE FER
EN
AMÉRIQUE

PAR

E. LAVOINNE

INGÉNIEUR EN CHEF DES PONTS ET CHAUSSEES

ET

E. PONTZEN

INGÉNIEUR, ANCIEN ÉLÈVE DE L'ÉCOLE DES PONTS ET CHAUSSEES

TOME PREMIER

ET

TOME SECOND

CONSTRUCTION

EXPLOITATION

SPÉCIMENS DES PLANCHES

PARIS

DUNOD, ÉDITEUR

Précédemment Carilian-Gœury et V^o Dalmont,

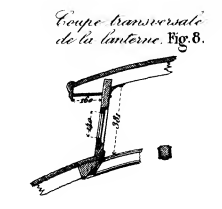
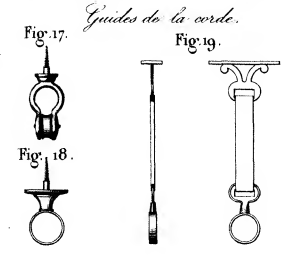
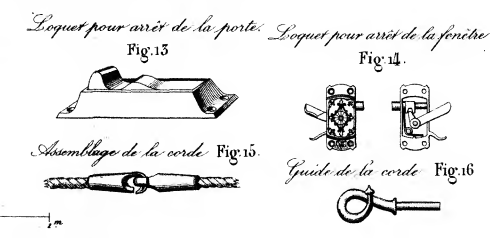
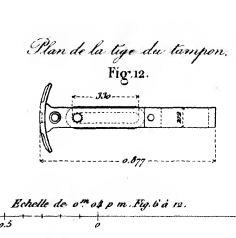
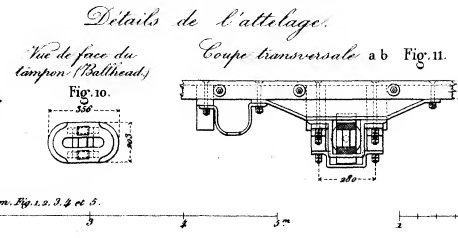
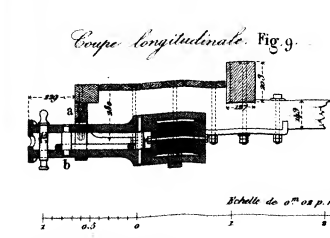
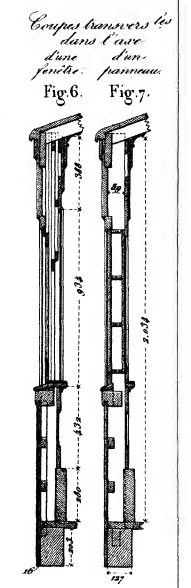
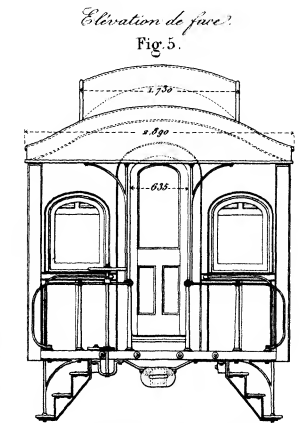
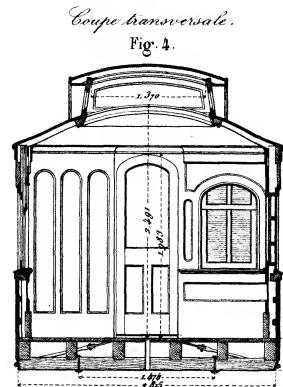
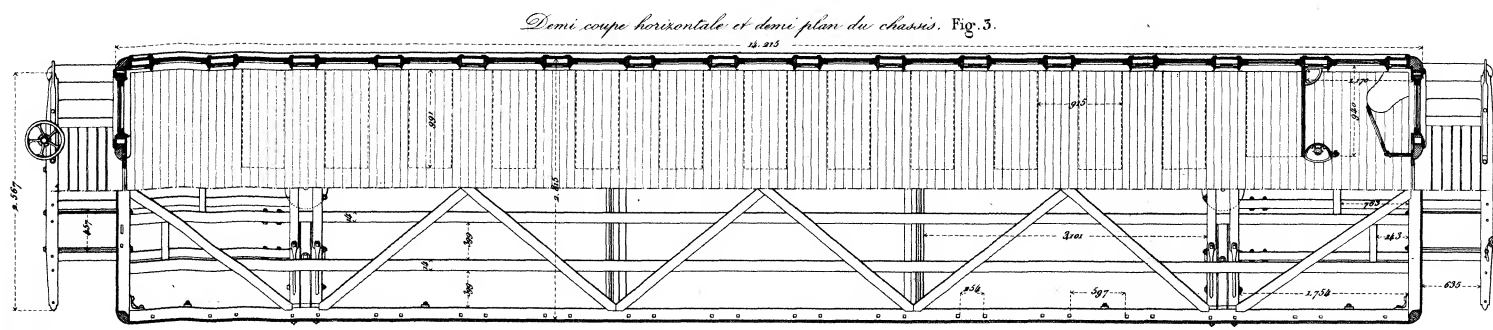
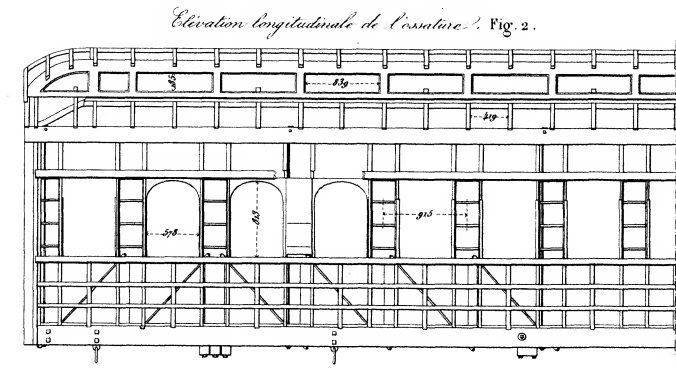
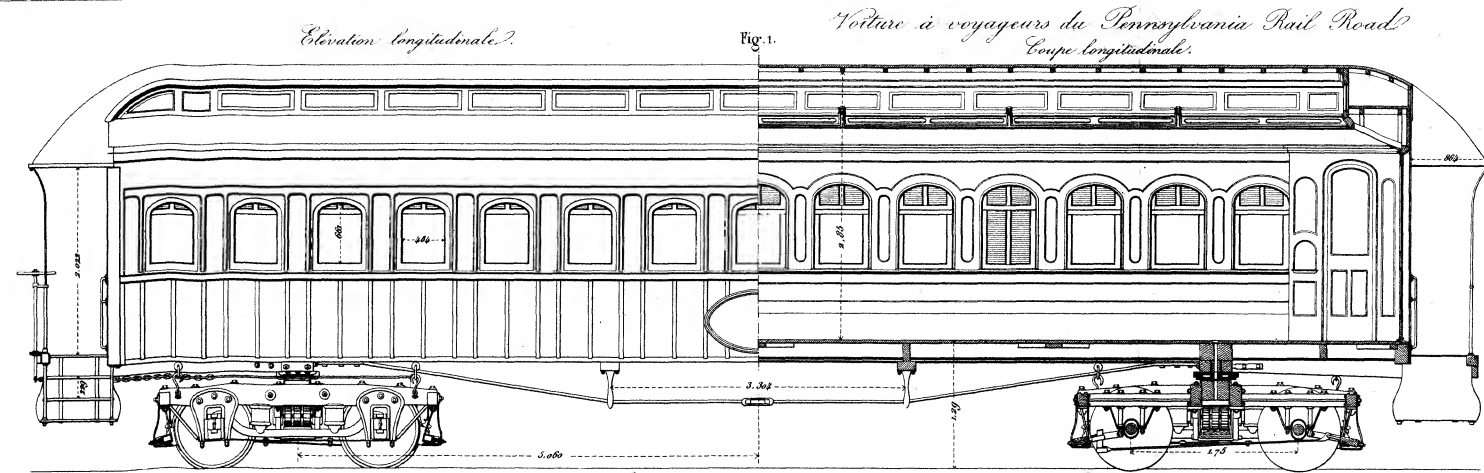
LIBRAIRE DES CORPS DES PONTS ET CHAUSSEES, DES MINES ET DES TELEGRAPHES

QUAI DES AUGUSTINS, N° 49

1882

(Tous droits de traduction et de reproduction réservés.)

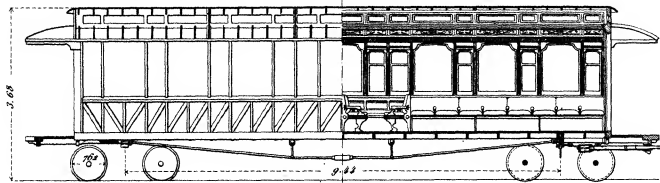
VOITURES A VOYAGEURS.



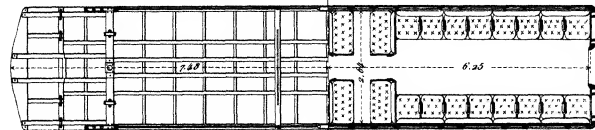
Echelle de 0^m 08 p. m. Fig. 1, 2, 3 & 5.

Echelle de 0^m 08 p. m. Fig. 6 à 12.

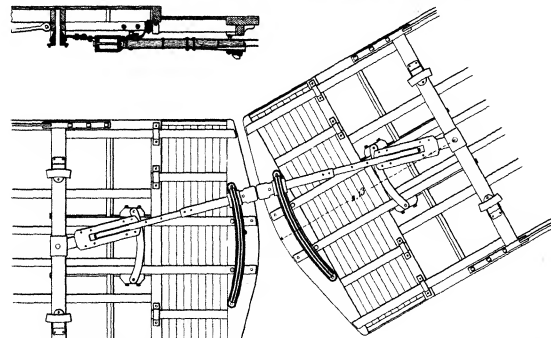
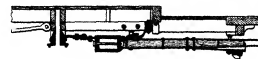
Voiture du chemin de fer aérien de New-York.
Élévation de l'ossature. Fig. 1. Coupe longitudinale.



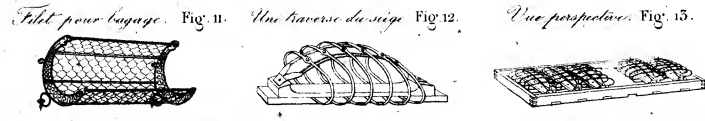
Plan du chassis. Fig. 2. Plan des sièges



Coupe longitudinale Fig. 3. Plan par dessous Fig. 4.



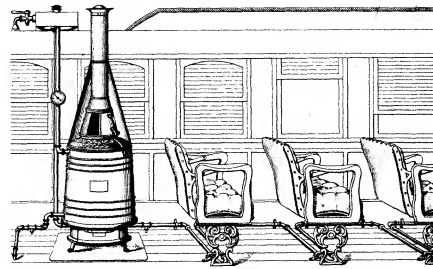
Sièges à ressorts elliptiques, Syst. Collé



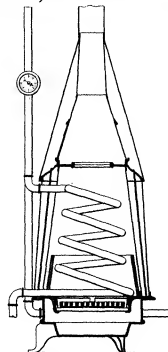
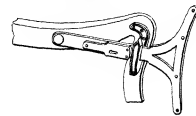
Échelle de 0^m 01 p. m. Fig. 1, 2, et 10

Échelle de 0^m 02 p. m. Fig. 3, 4, 11 et 13

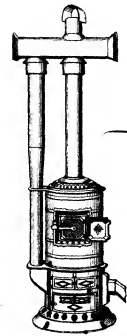
Chauffage système Baker Fig. 5.



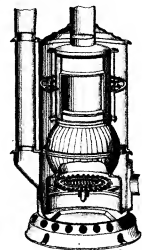
Sièges réversibles des sièges. Fig. 7. Coupe du poêle Baker. Fig. 6.



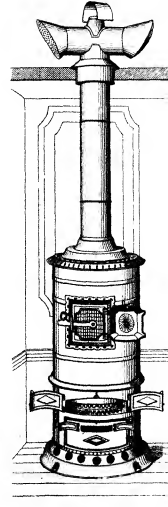
Poêle à ventilation système Sparrs Fig. 8.



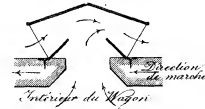
Coupe. Fig. 9.



Poêle ordinaire Syst. Spiers Fig. 10.



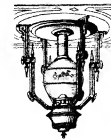
Ventilation par aspiration Fig. 14.



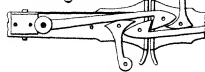
Ventilation automatique par aspiration. Fig. 15.



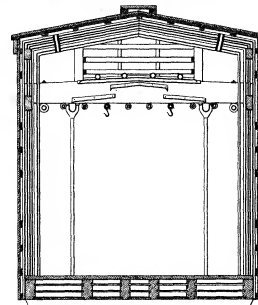
Lampe centrale Fig. 16.



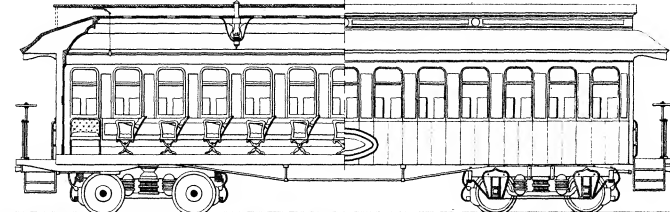
Plan de l'attelage M. Nade Fig. 26.



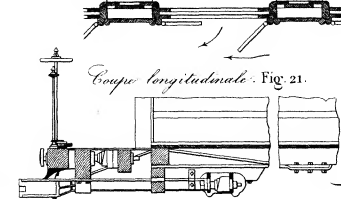
Wagon réfrigérant Syst. Coffey. Coupe transversale. Fig. 17.



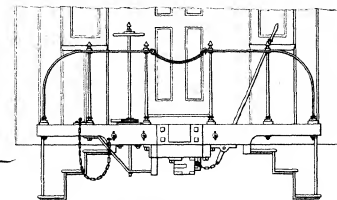
Voiture à voyageurs avec ventilation Système Mitchell. Coupe longitudinale. Fig. 18. Élévation



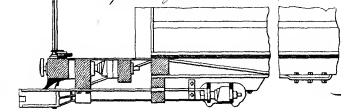
Coupe par une fenêtre avec déflecteur Windmille. Intérieur du Wagon - Direction de marche. Fig. 19.



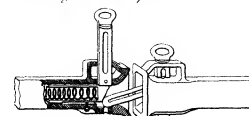
Attelage et plateforme Miller. Vue de face. Fig. 20.



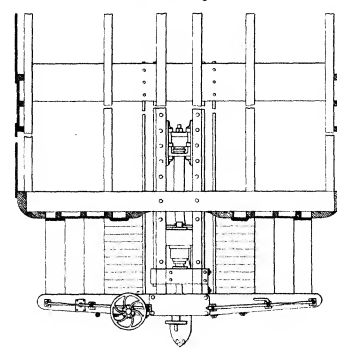
Coupe longitudinale. Fig. 21.



Attelage Whiteford Fig. 23.



Plan Fig. 22.



Attelage M. Nade Fig. 24.

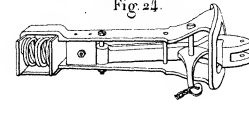
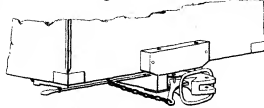


Fig. 25.



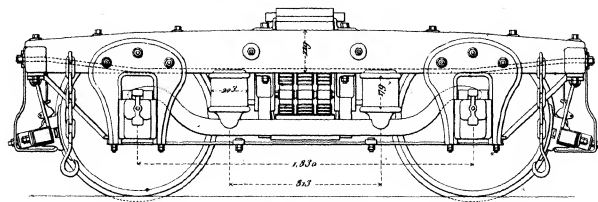
Échelle de 0^m 025 p. m. Fig. 5, 8, 20 et 22.

Échelle de 0^m 04 p. m. Fig. 6, 9, 10, 11, 13, 16 et 23 à 26

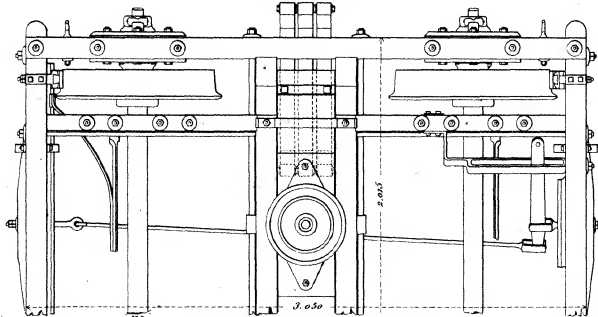
Échelle de 0^m 10 p. m. Fig. 7, 21, 24 et 25.

TRUCKS DE VOITURES A VOYAGEURS.

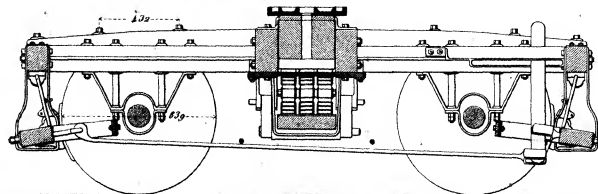
Truck à quatre roues d'un Wagon à voyageurs du Pennsylvania R.R.
Elevation. Fig. 1.



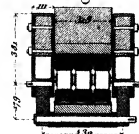
Plan. Fig. 4.



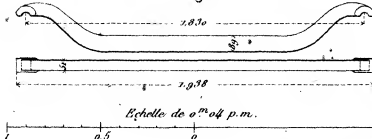
Coupe longitudinale. Fig. 5.



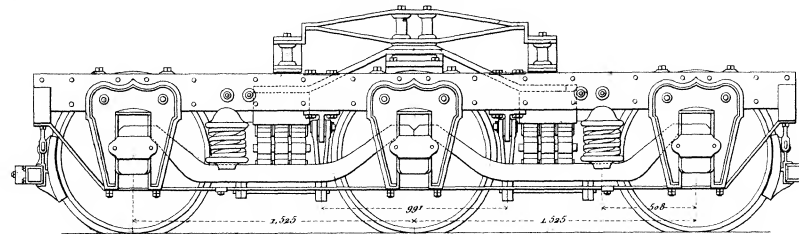
Coupe à travers le ressort elliptique.
Fig. 6.



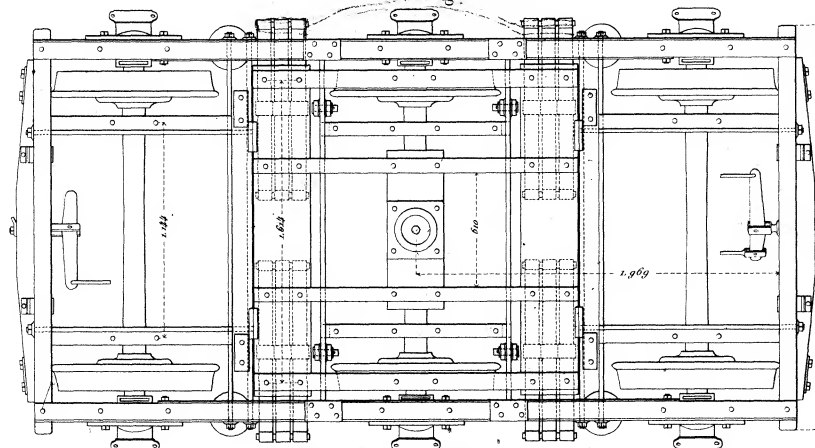
Balancier repartissant les charges.
Fig. 7.



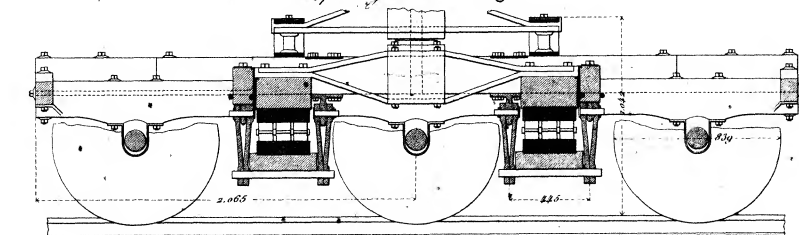
Truck à six roues d'un Wagon à lits du Louisville et Nashville Rail Road.
Elevation. Fig. 8.



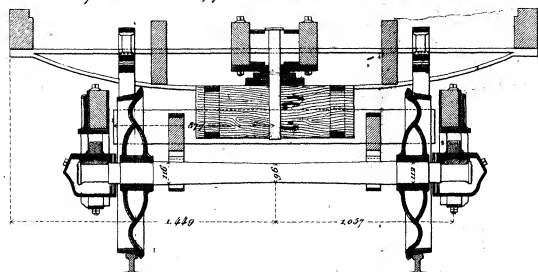
Plan. Fig. 11.



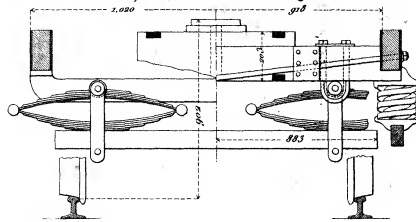
Coupe longitudinale. Fig. 12.



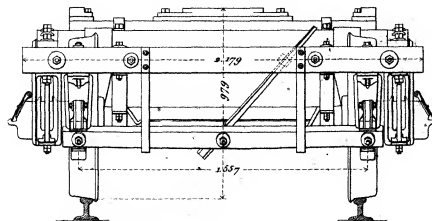
Coupe transversale par l'axe de l'essieu central. Fig. 9.



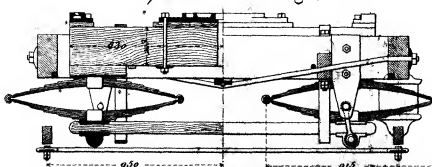
Coups transversales. Fig. 10.



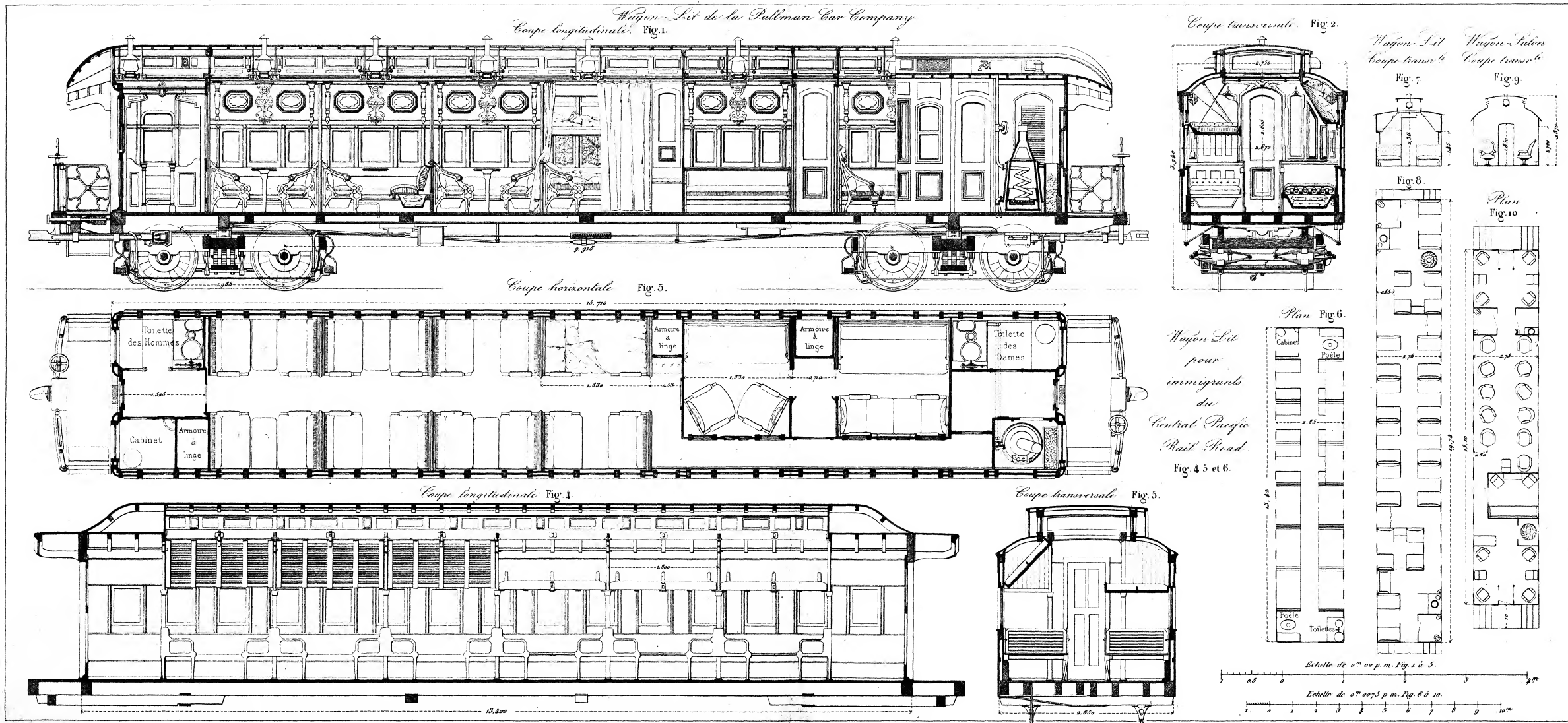
Vue de face. Fig. 2.



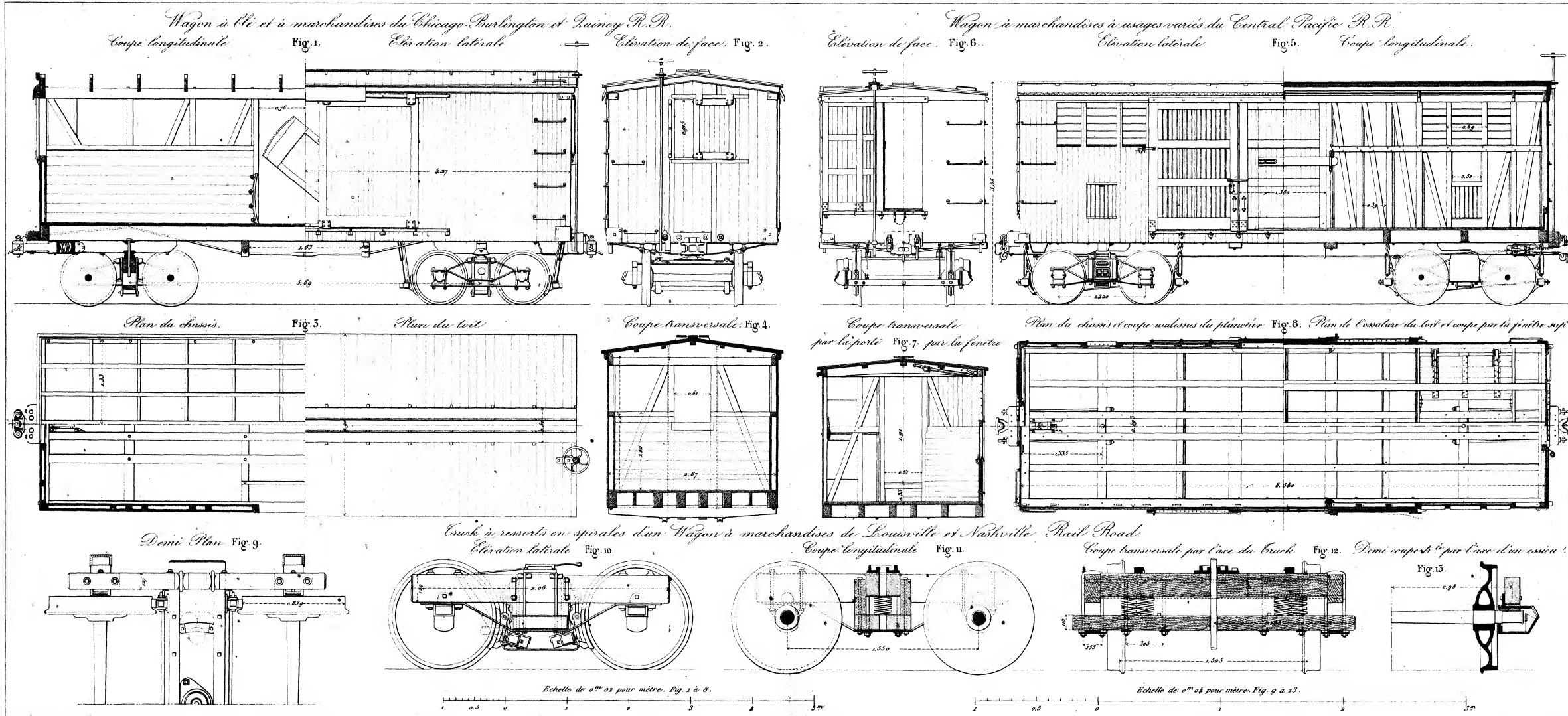
Coupe transversale. Fig. 3.



WAGONS-LITS ET WAGON-SALON.

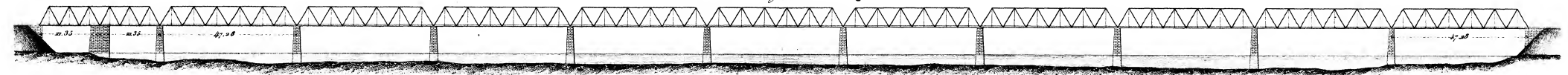


WAGONS COUVERTS A MARCHANDISES.

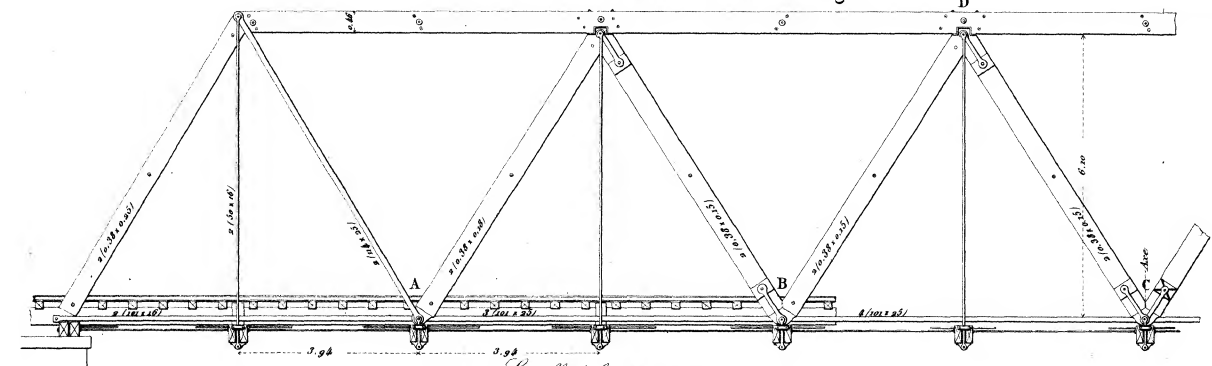


PONT DU SYSTÈME TRIANGULAIRE EN BOIS ET FER. SEMELLES EN FONTE.

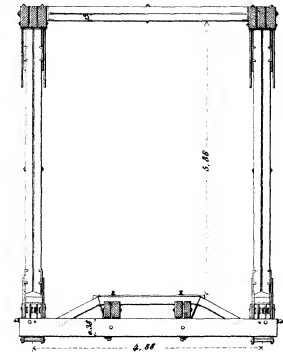
Pont sur le Tennessee à Decatur (Alabama) sur le Memphis et Charleston Rail-Road.
Elevation générale. Fig. 1.



Elevation d'une demi-travée. Fig. 2.

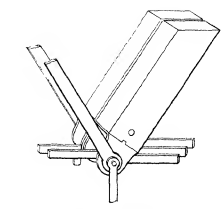


Coupe transversale. Fig. 3.

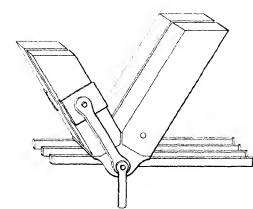


Détails d'assemblage avec la semelle inférieure

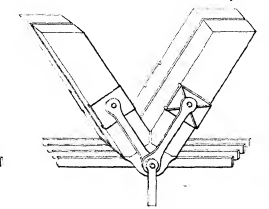
Articulation en A
Fig. 6.



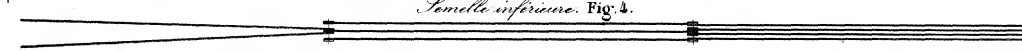
Articulation en B
Fig. 7.



Articulation en C
Fig. 8.



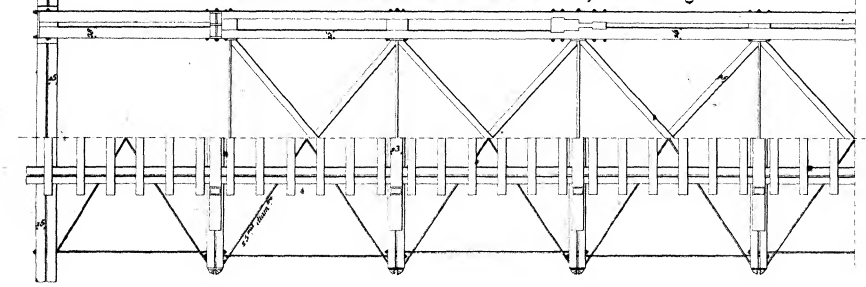
Semelle inférieure. Fig. 4.



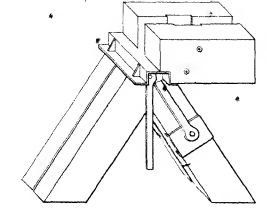
Détails de la semelle supérieure en fonte des Ponts du système Post
Elevation et coupe verticale. Fig. 10.



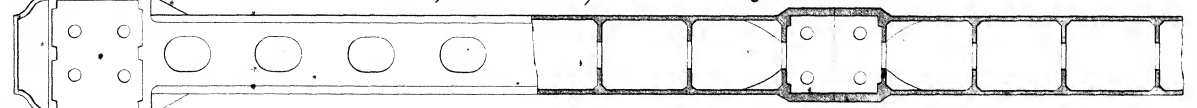
Plan du treillis et du contreventement supérieur. Fig. 5.



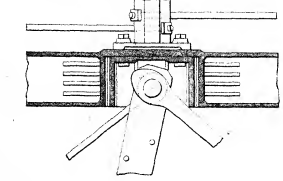
Assemblage avec la semelle supérieure en D.
Fig. 9.



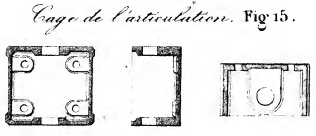
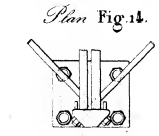
Vue par dessous et coupe horizontale. Fig. 12.



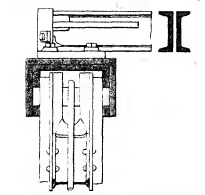
Coupe longitudinale. Fig. 13.



Attache des montants, tirants et contreventements.
Plan Fig. 14.



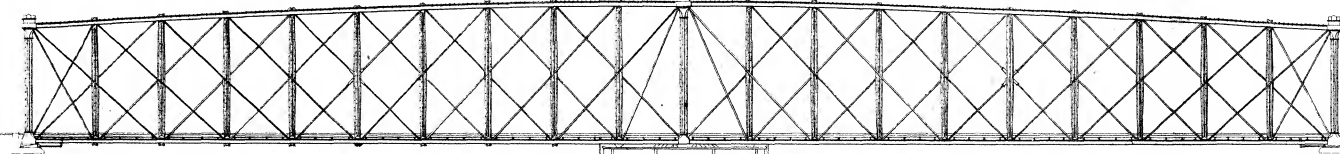
Coupe transversale. Fig. 16.



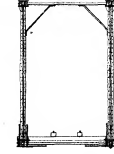
Echelle de 0^m 00083 p.m. (1/1250) Fig. 1.
Echelle de 0^m 02 p.m. Fig. 6, 7, 8 et 9.

Echelle de 0^m 01 p.m. Fig. 2, 3 & 5.
Echelle de 0^m 04 p.m. Fig. 10 à 16.

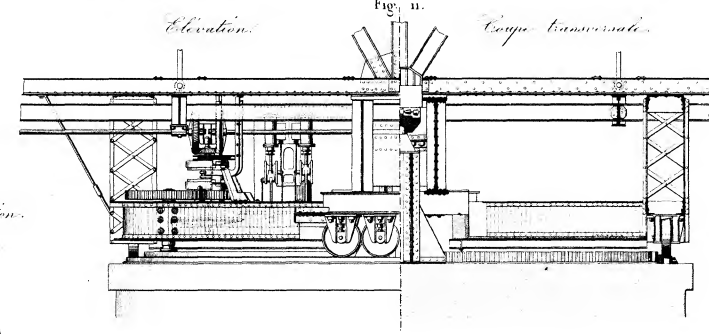
Pont tournant construit par la Compagnie de Westons (Type pour les ponts de 55^m à 65^m)
Elevation Fig. 1.



Coupe transversale Fig. 3.

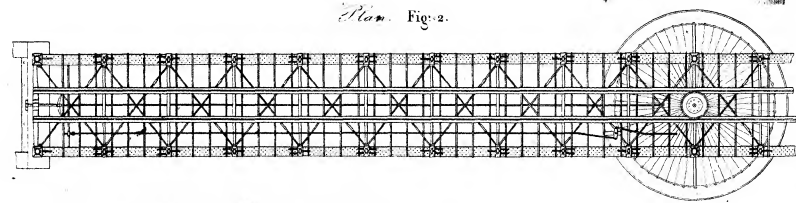


Appareil de rotation du pont tournant sur le Passaic River.
Elevation Fig. 11.

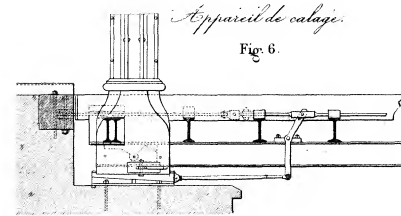


Coupe transversale.

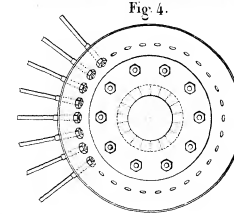
Plan Fig. 2.



Appareil de calage Fig. 6.



Plan du centre de rotation Fig. 4.

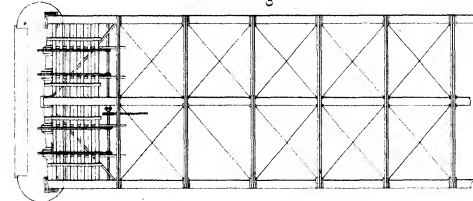


Echelle de 0^m 005 p.m. Fig. 1, 2, 3, 4 et 6.

Echelle de 0^m 025 p.m. Fig. 5 et 6.

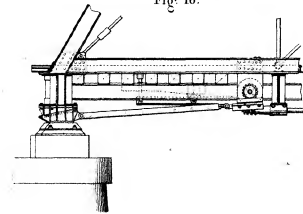
Echelle de 0^m 050 p.m. Fig. 10 et 12.

Plan Fig. 8.



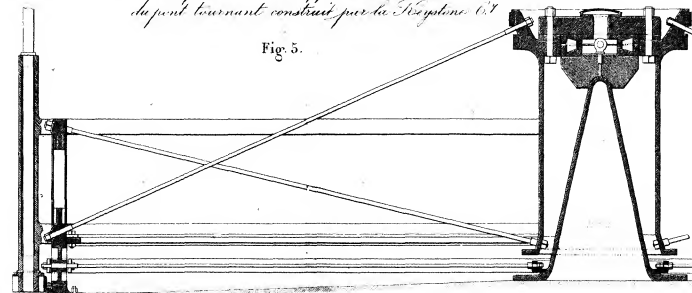
Appareil de calage du pont tournant sur le Passaic River.

Fig. 10.

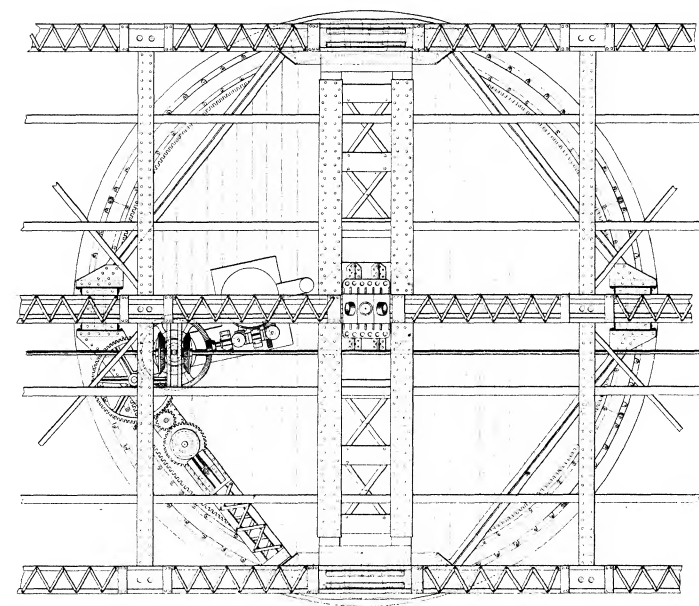


Coupe à travers l'appareil de rotation du pont tournant construit par la Westons Co.

Fig. 5.

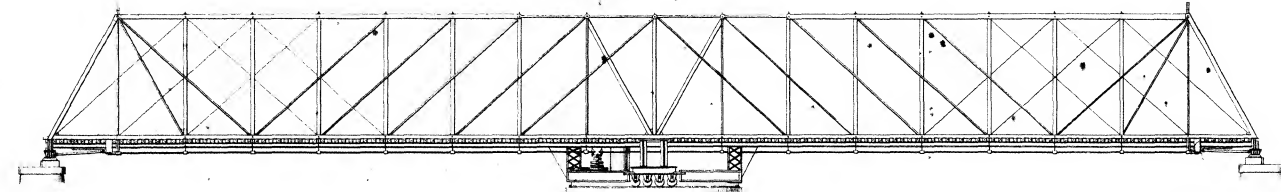


Plan Fig. 12.

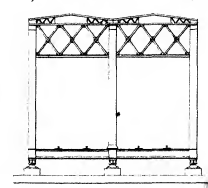


Pont tournant sur le Passaic River du Delaware, Lackawanna & Western R.R. construit par la Bridge Co. Delaware.

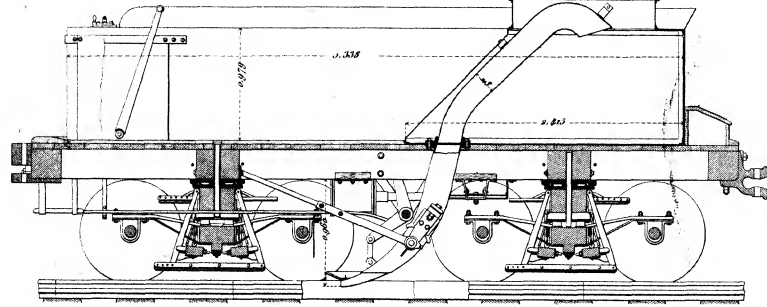
Elevation Fig. 7.



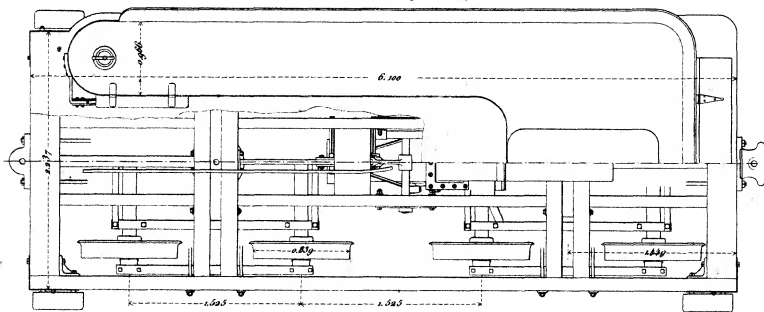
Coupe transversale Fig. 9.



Tender pour Locomotives à grande vitesse (Système Ramsbottom) du Pennsylvania Rail Road
Coupe longitudinale. Fig. 1.



Plan. Fig. 3



Échelle de 0^m10 p. m. Fig. 3 et 4.

Échelle de 0^m005 p. m. Fig. 1 à 3, 5 à 12 et 13 à 15.

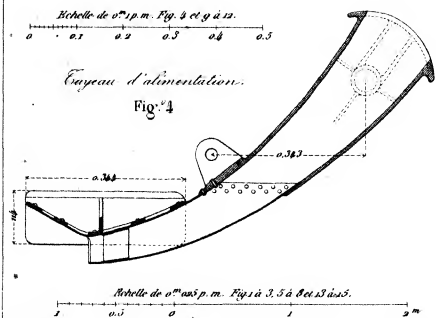
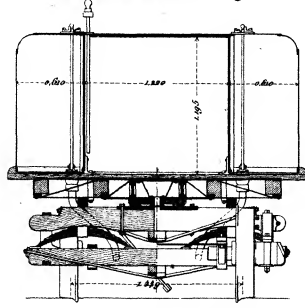
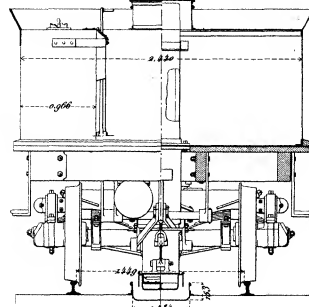


Fig. 4

Coupe transversale. Fig. 14

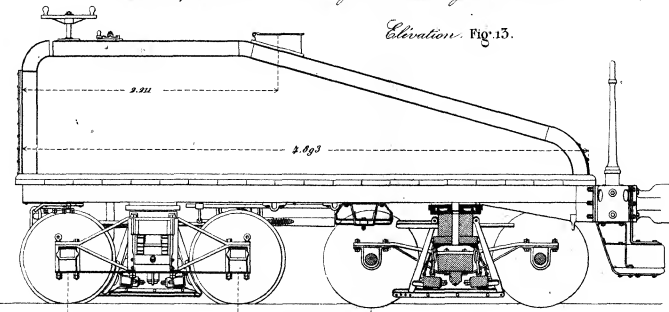


Elevation. Fig. 2. Coupe

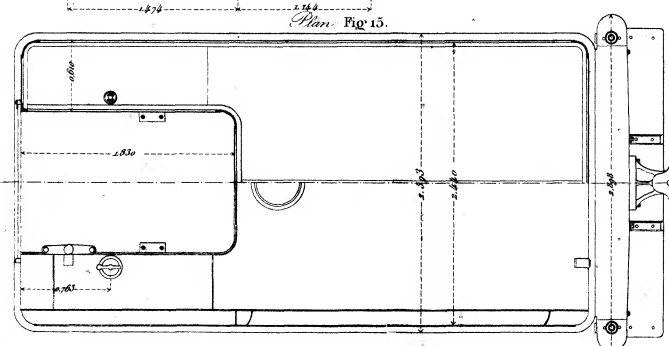


Tender pour locomotive de gare du Pennsylvania R.R.

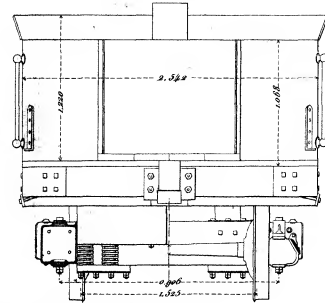
Elevation. Fig. 13.



Plan. Fig. 15.

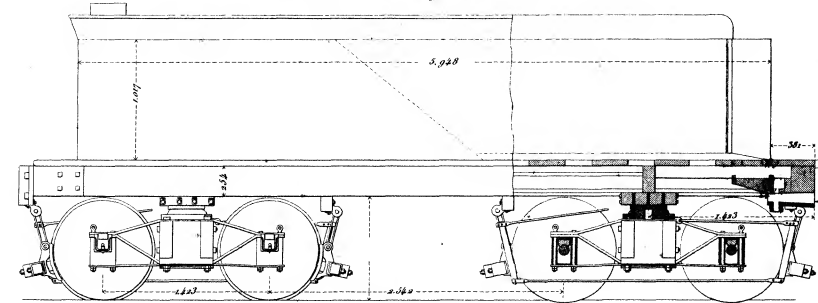


Vue de face. Fig. 5.

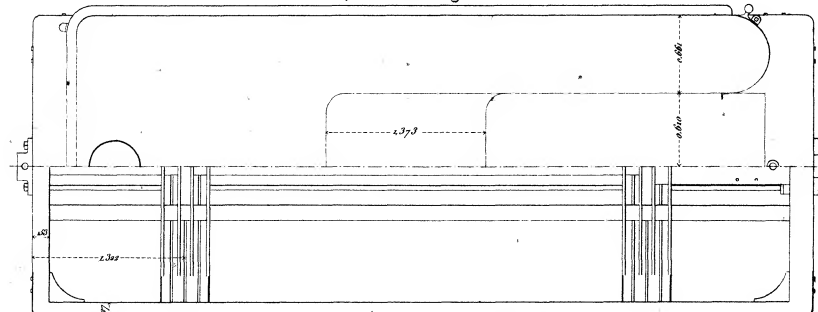


Tender pour Locomotives à marchandises de Louisville et Washville Rail Road.

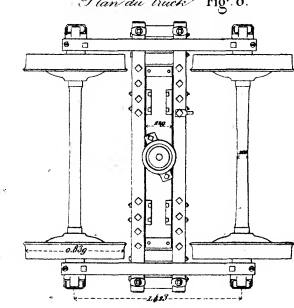
Elevation et coupe longitudinale. Fig. 6



Plan. Fig. 7.



Plan du truck. Fig. 8.



Détails de la soupape de mélange.

Fig. 9.

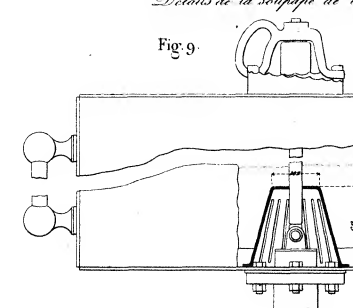


Fig. 10.

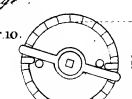
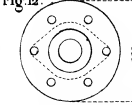
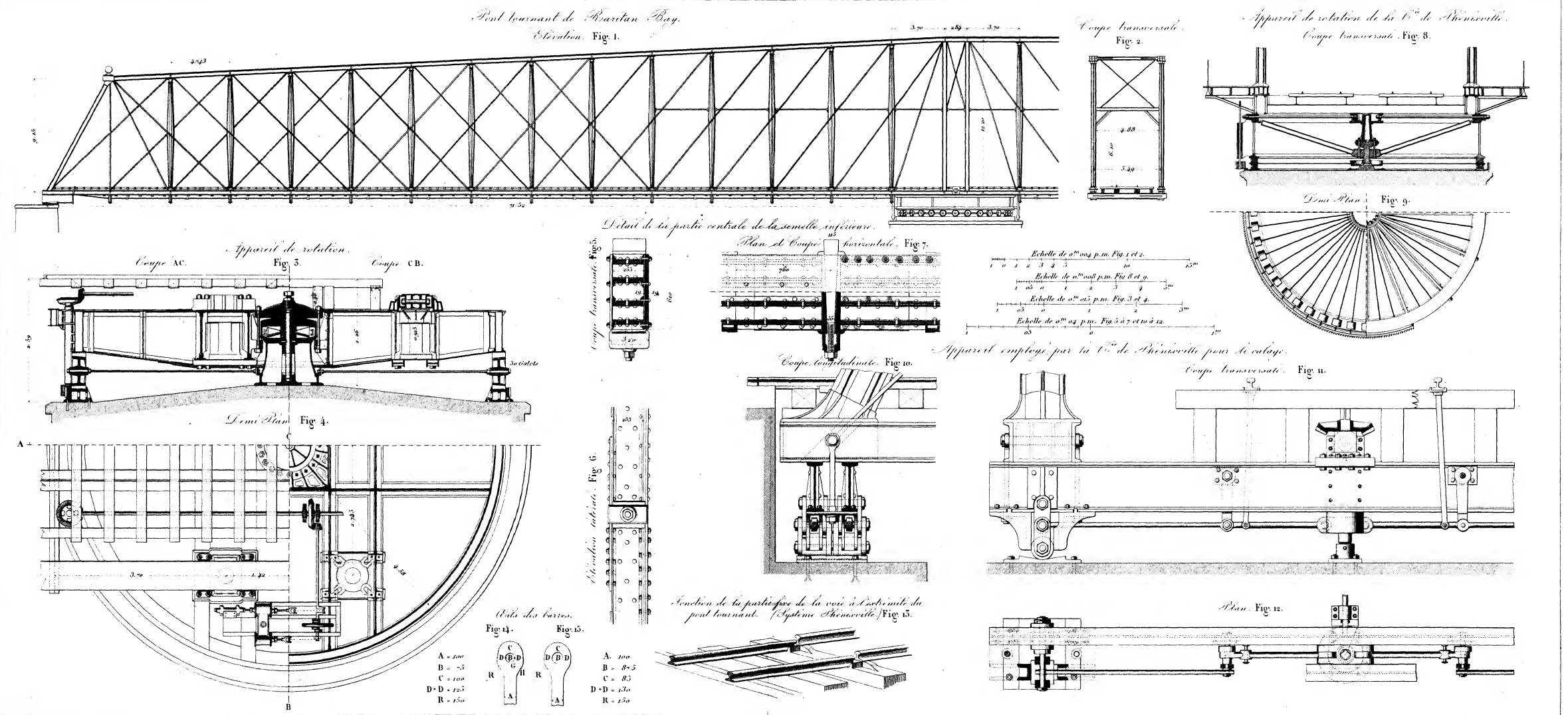


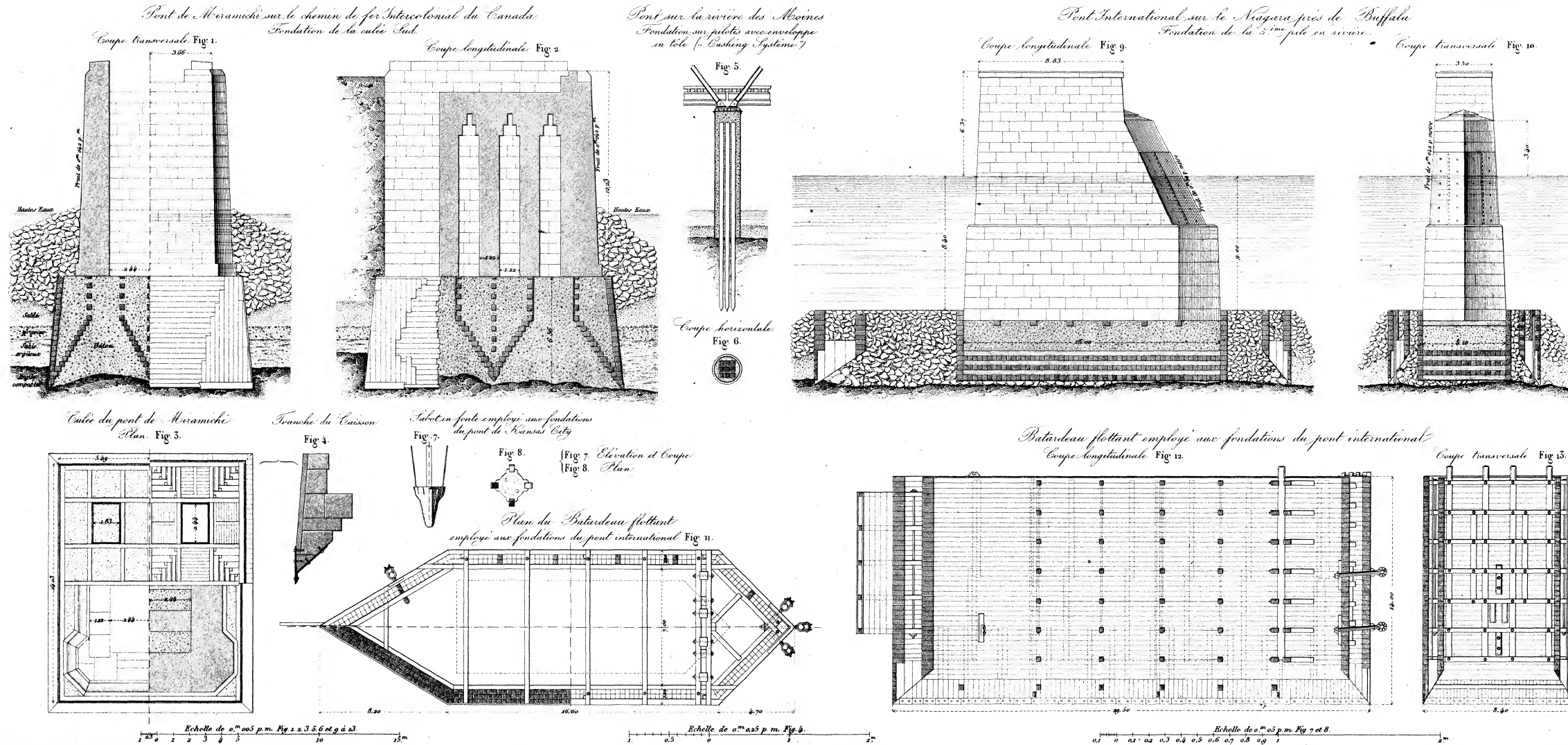
Fig. 11.



Fig. 12.

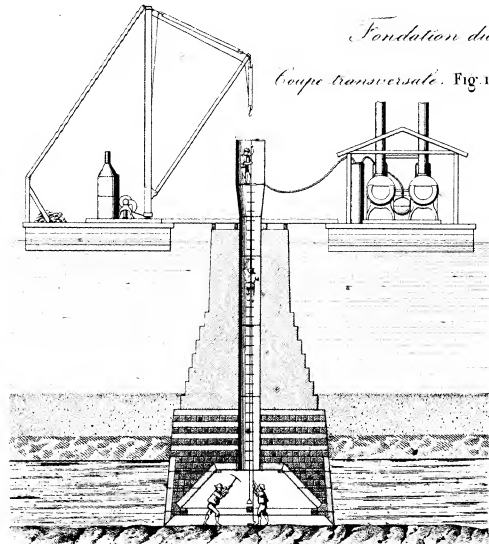




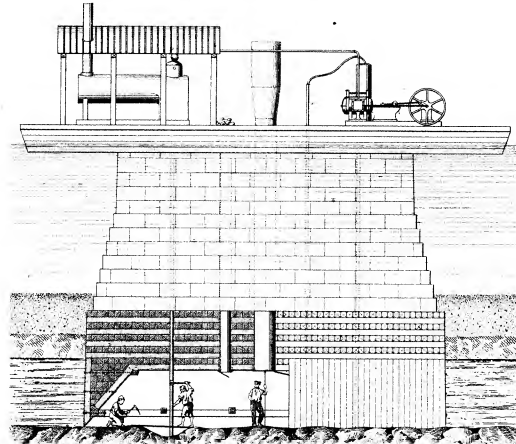


Fondation du Pont d'Atchison sur le Missouri.

Coupe transversale. Fig. 1.

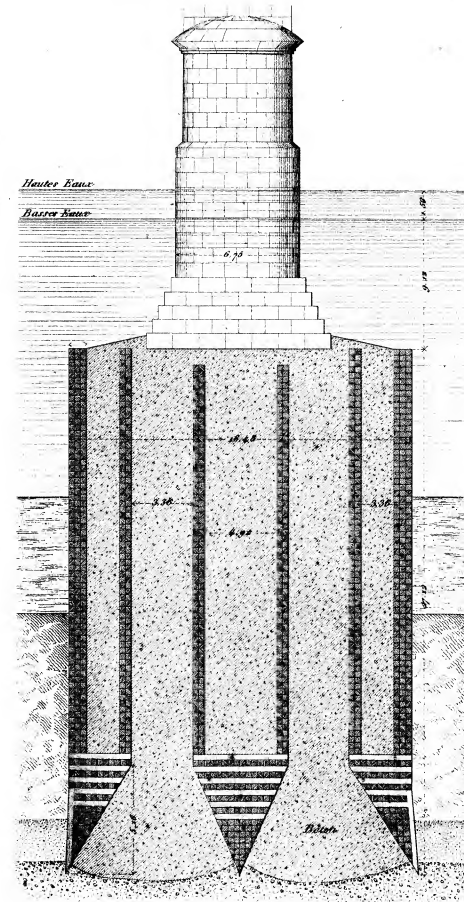


Coupe longitudinale. Fig. 2.

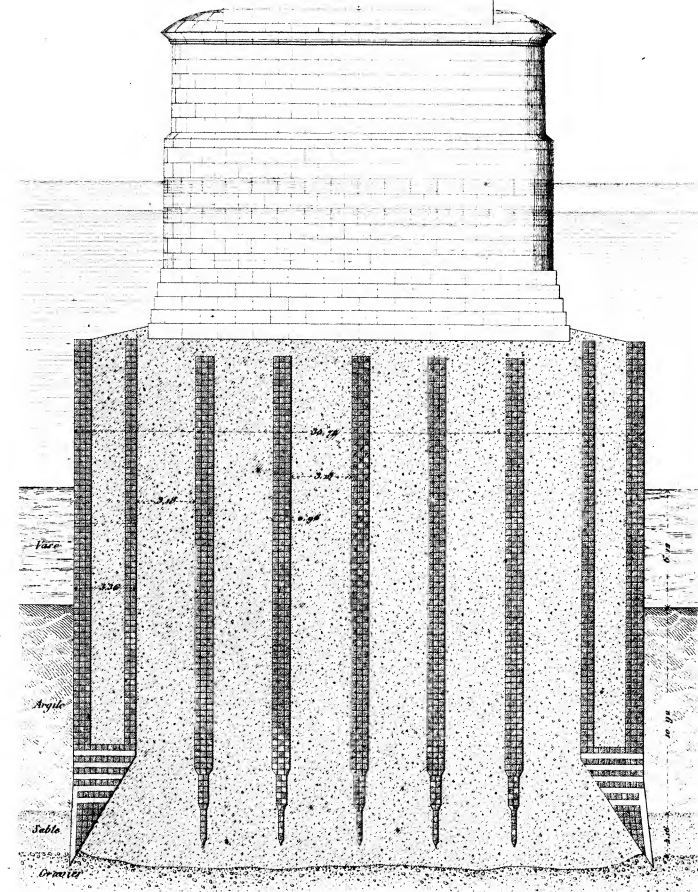


Fondation du Pont de Roughkepsic sur l' Hudson.

Coupe transversale. Fig. 6.

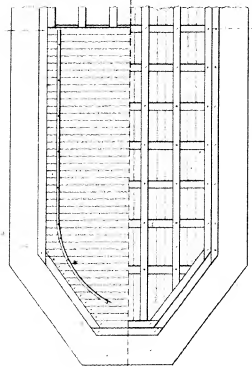


Coupe longitudinale. Fig. 7.

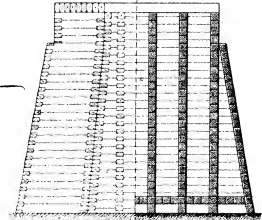


Fondation par enrochement (Aril.)

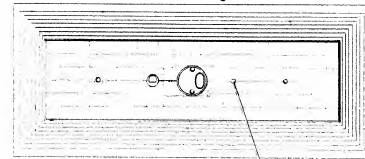
Demi Plan. Fig. 4.



Elevation et Coupe de Fig. 5.



Plan. Fig. 5.

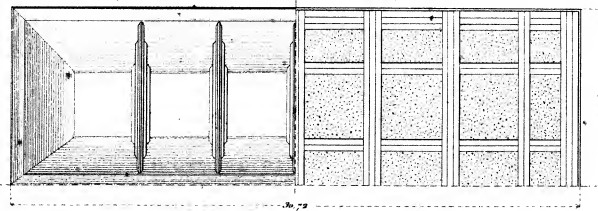


Demi Plan d'un caisson du Pont de Roughkepsic.

Vue par dessous.

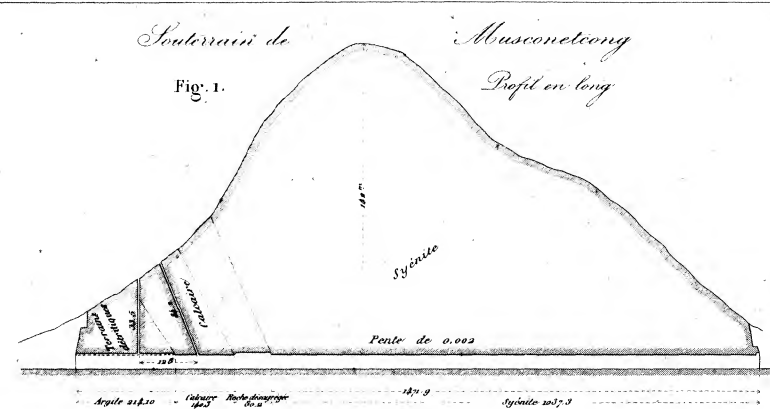
Fig. 8.

Coupe horizontale.

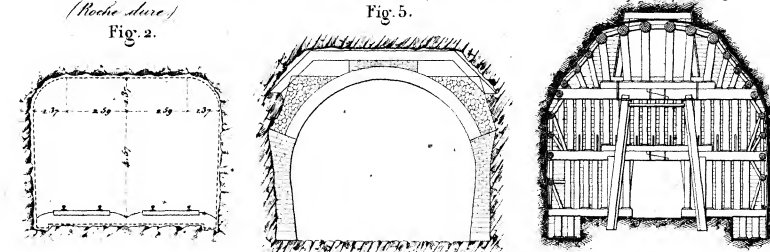


Echelle de 0^m 005 p. m. Fig. 1 à 5.

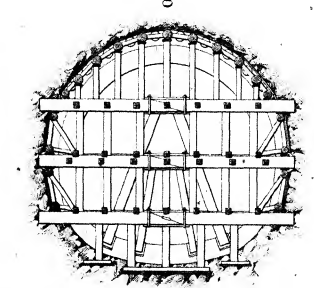
Echelle de 0^m 005 p. m. Fig. 6 à 8.



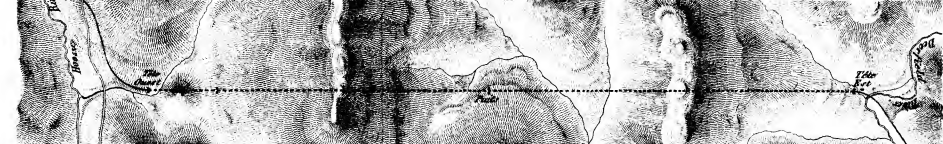
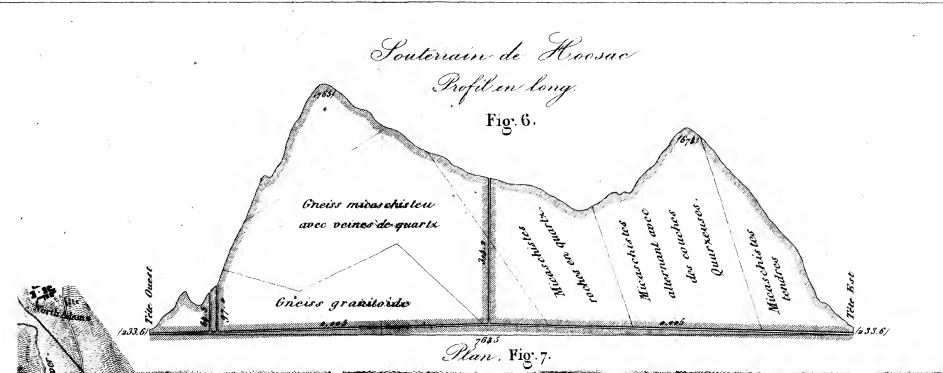
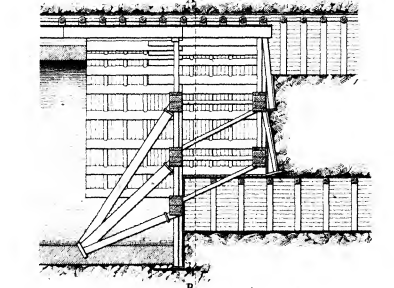
Coupes transversales du Souterrain de Musconcong. (Roche tendre) Fig. 2. (Roche dure) Fig. 5.



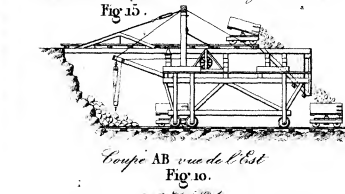
Coupe AB vue de l'Ouest Fig. 8.



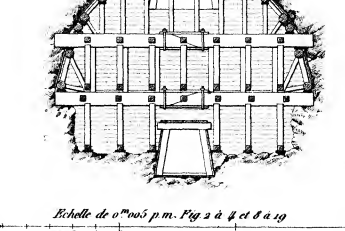
Boisages dans le Souterrain de Hoosac. Coupe longitudinale. Fig. 9.



Pont mobile pour chargement employé aux Hoosac et Musconcong Tunnel. Fig. 13.

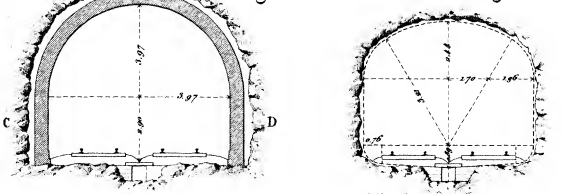


Coupe AB vue de l'Est Fig. 10.

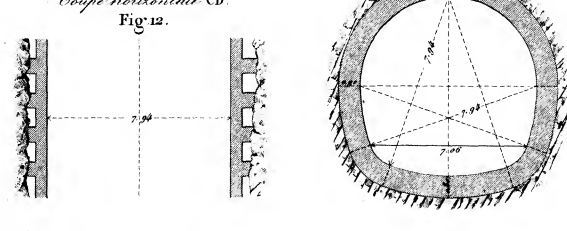


Echelle de 0.005 p. m. Fig. 2 à 4 et 8 à 10.

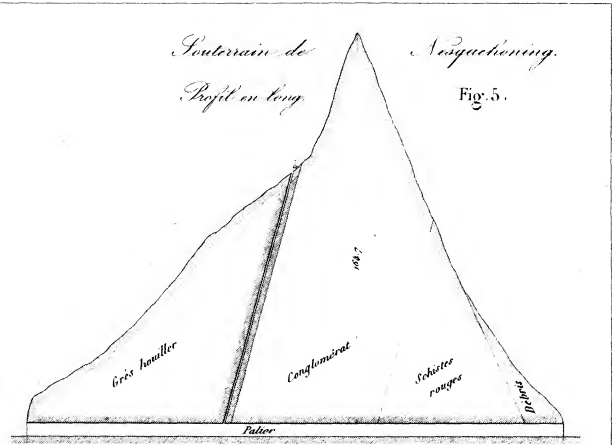
Coupes transversales du Souterrain de Hoosac. (Roche dure) Fig. 11. (Roche tendre) Fig. 14.



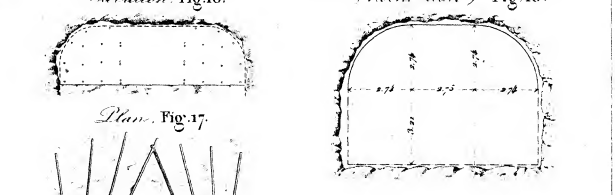
Revêtement sans remplissage Coupe horizontale CD. Fig. 12.



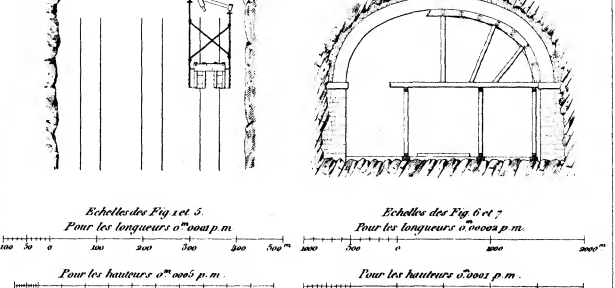
Echelle de 0.005 p. m. Fig. 11 et 14.



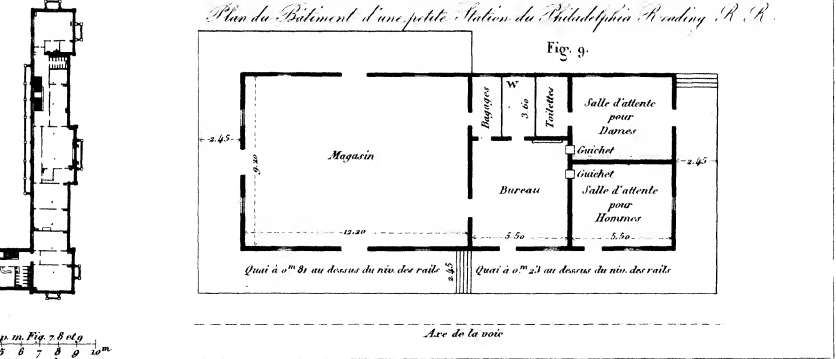
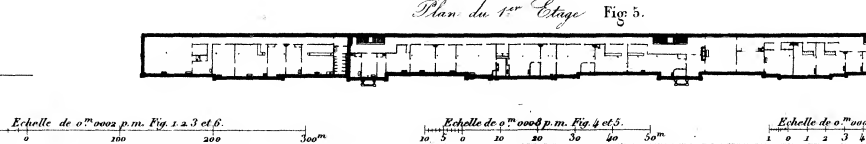
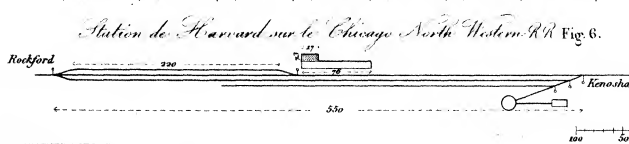
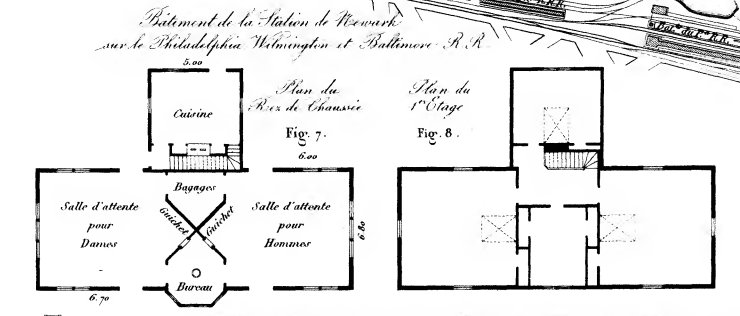
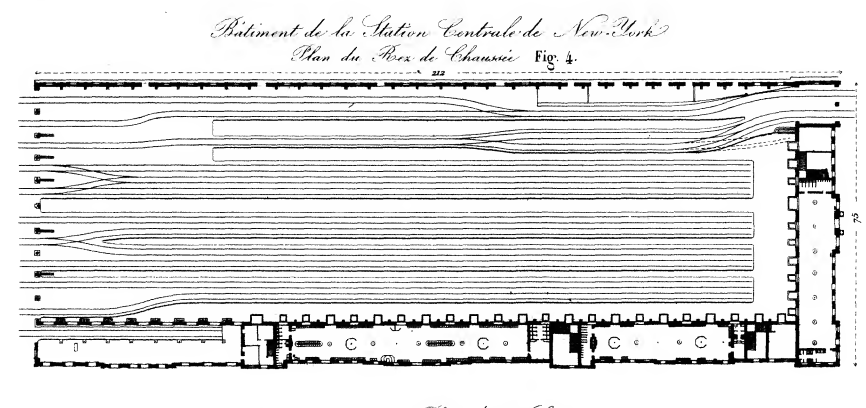
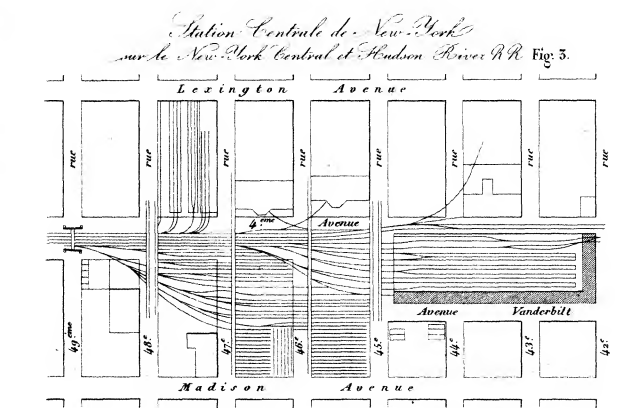
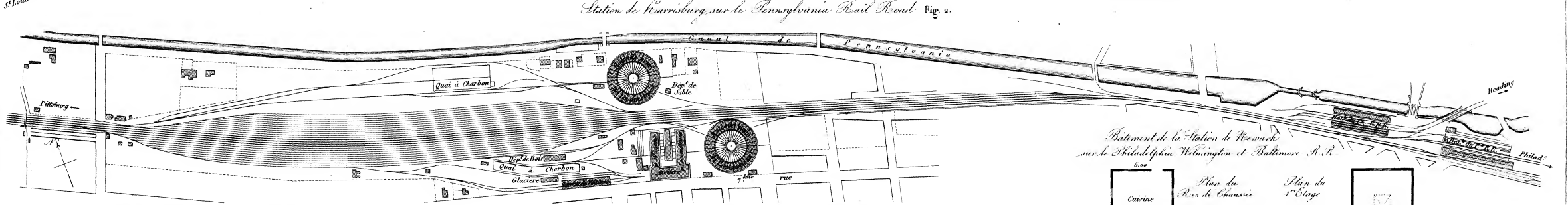
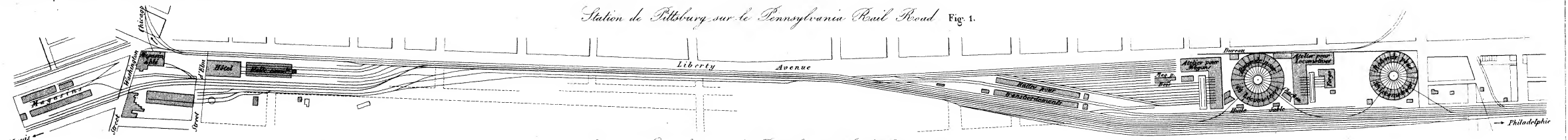
Système d'attaque pour l'avancement. Fig. 16. Souterrain de Bergen Delaware Susquehanna & Western R.R. (Roche dure) Fig. 18.

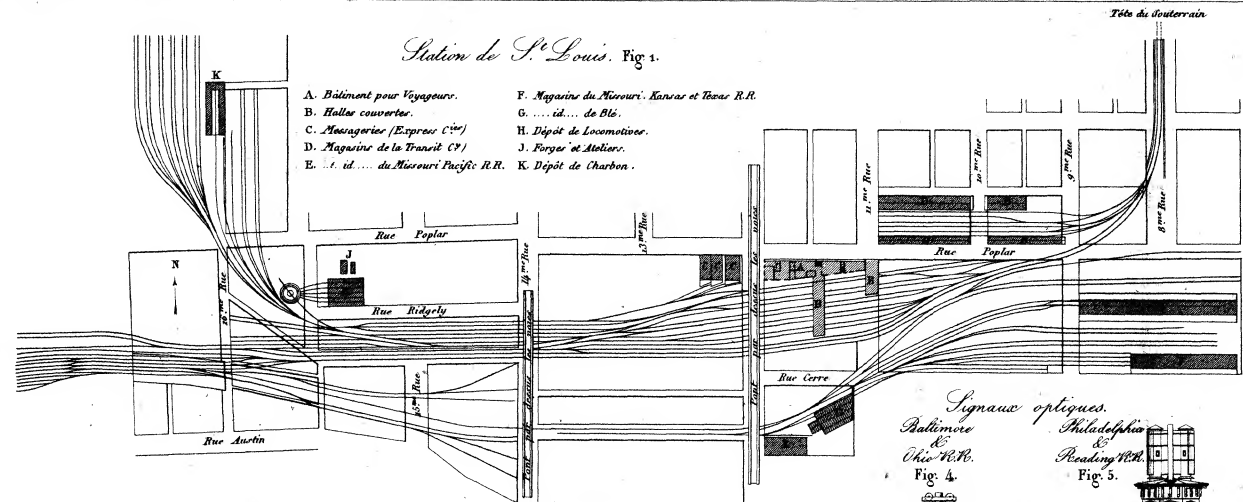


Plan. Fig. 17. (Roche tendre) Fig. 19.

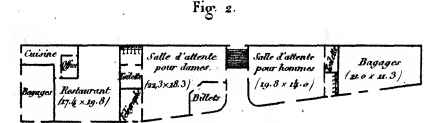


Echelle des Fig. 5 et 16. Pour les longueurs 0.002 p. m. Echelle des Fig. 6 et 7. Pour les longueurs 0.0002 p. m. Pour les hauteurs 0.005 p. m. Pour les hauteurs 0.002 p. m.

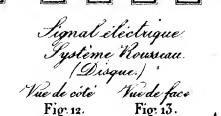
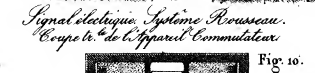
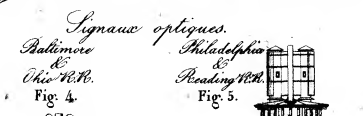
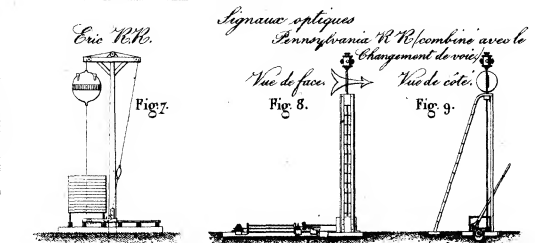
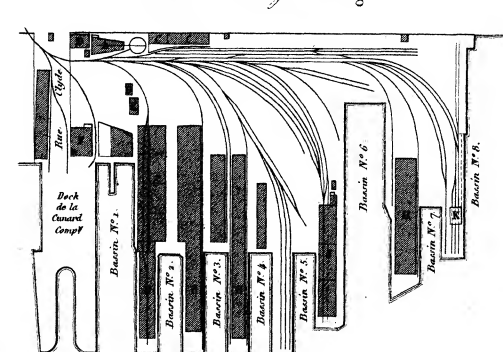




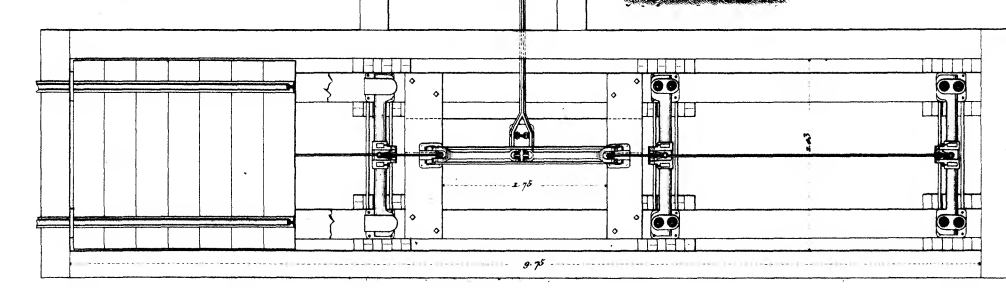
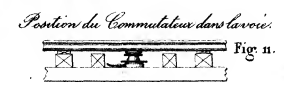
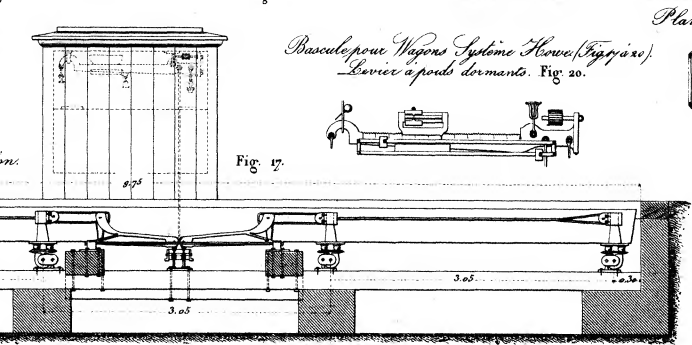
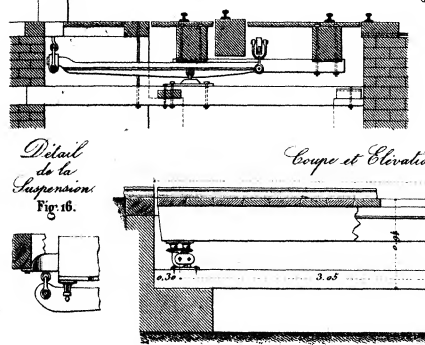
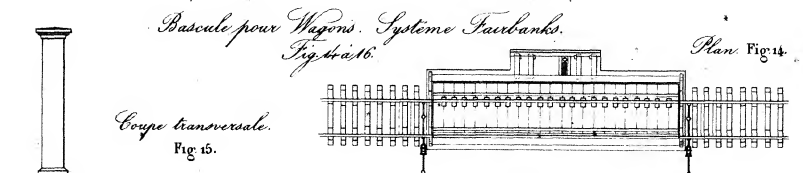
Plan du Bâtiment de la Station des St. Louis.



Gare maritime de Boston du Boston et Albany R.R. Fig. 3.



- Legende de la Fig. 3.
- A. Dépôt de Locomotives.
 - B. Bourée
 - C. Haller pour marchandises.
 - D. Atelier de réparation.
 - E. Bureaux.
 - F. Dépôt de Charbon.
 - G. Entrepôt de Douane
 - H. Hangars ouverts
 - J. Magasin de blé (Elevator).
 - K. Soutes à charbon.



Echelle de 0^m0005 p.m. Fig. 1 et 3. Echelle de 0^m0008 p.m. Fig. 2. Echelle de 0^m001 p.m. Fig. 4 à 16. Echelle de 0^m05 p.m. Fig. 11, 15, 17 et 18. Echelle de 0^m05 p.m. Fig. 12, 13 et 14. Echelle de 0^m05 p.m. Fig. 10.

