

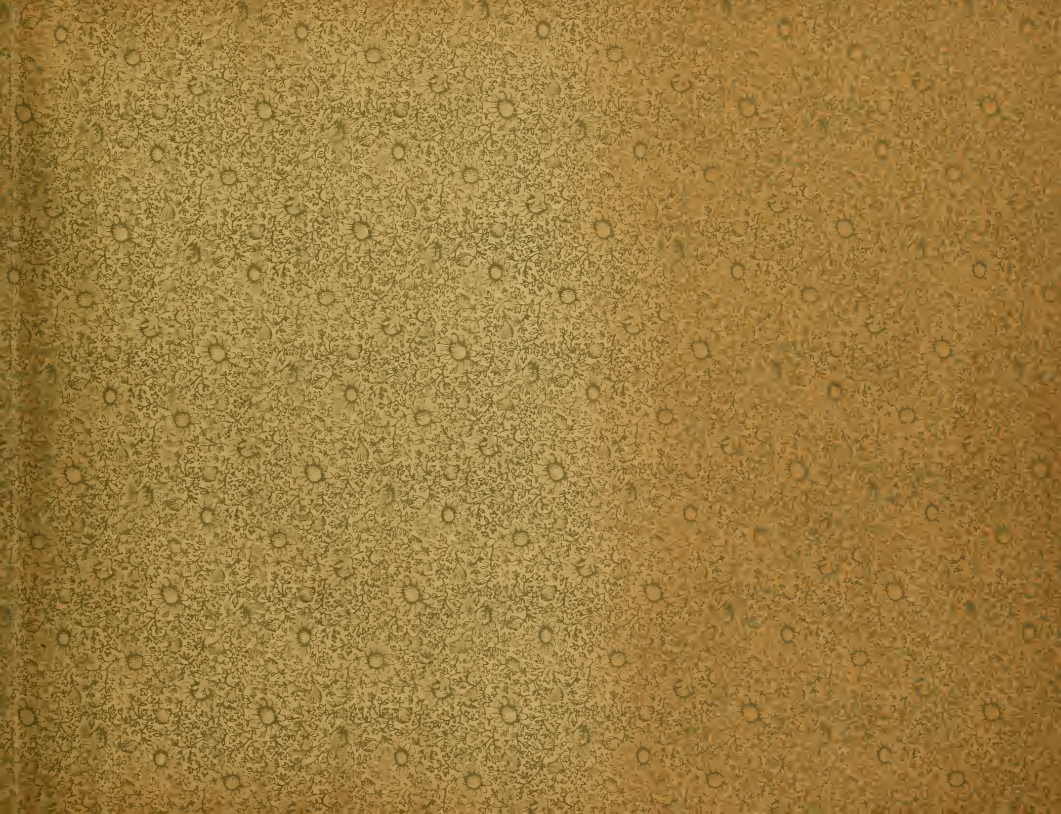


Class T353 _____

Book I64 _____

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SAMPLES
OF THE
WORK IN DRAWING

OF THE STUDENTS OF

THE INTERNATIONAL CORRESPONDENCE SCHOOLS

SCRANTON, PA.



THE COLLIERY ENGINEER COMPANY,

SCRANTON, PA.

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PART I

MECHANICAL DRAWING

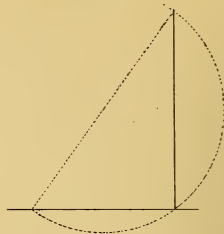
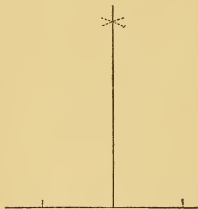
PROBLEM 1: To bisect a straight line



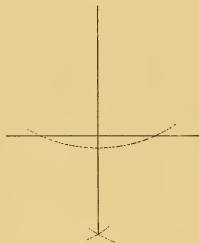
PROBLEM 2: To draw a perpendicular to a straight line from a given point on that line.

CASE I.

CASE II



PROBLEM 3: To draw a perpendicular to a straight line from a point without it
CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line

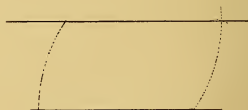
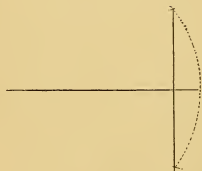
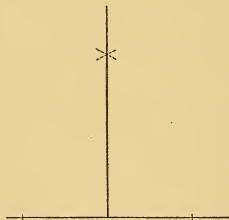


PLATE I

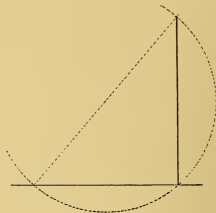
PROBLEM 1: To Bisect a straight line.



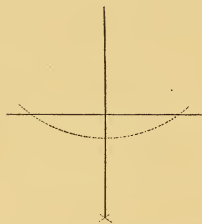
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE 1



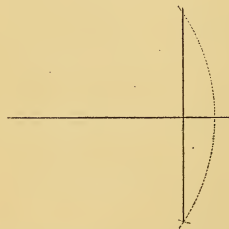
CASE 2



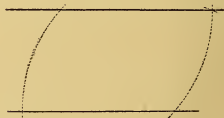
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE 1



CASE 2



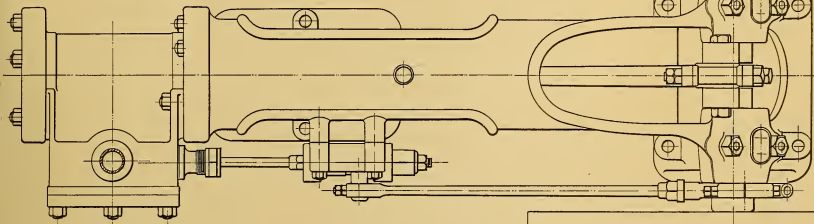
PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



SEPTEMBER 25 1893.

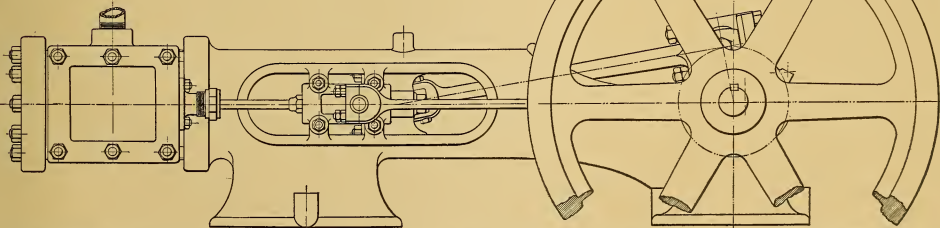
E. R. YOUNG.

CLASS No S of M 225



**SIX HORSE POWER
HORIZONTAL STEAM ENGINE.**

Scale 3" = 1 Ft.

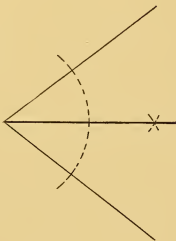


APRIL 10 1894.

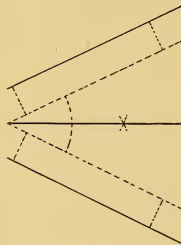
Photograph of Plate Drawn by E. R. Young, C. 325, Machinist, Age 25,
73 Plymouth Street, Cleveland, Ohio.

ERYOUNG, CLASS No C 225

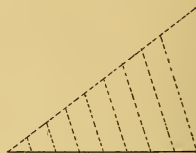
To bisect a given angle.
CASE I.



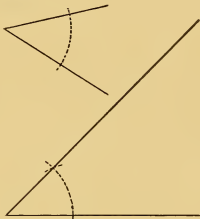
To bisect a given angle.
CASE II.



To divide a given straight line into any
required number of equal parts:



To draw a straight line through any given point
on a given straight line to make any required angle
with that line:



To draw an equilateral triangle, one side
being given:



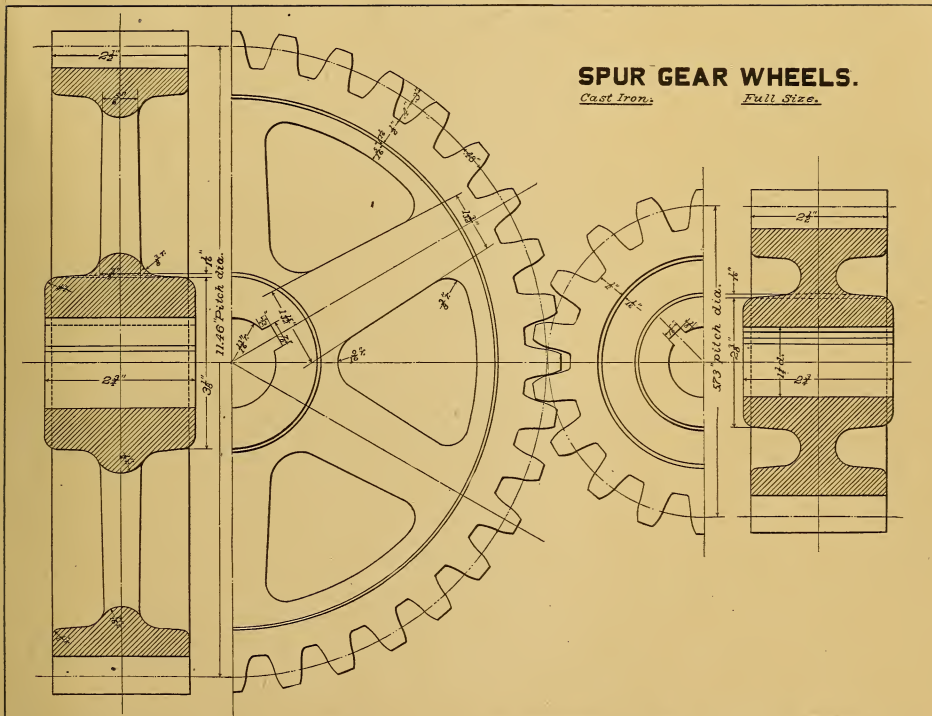
The altitude of an equilateral triangle being
given, to draw the triangle:



SPUR GEAR WHEELS.

Cast Iron.

Full Size.

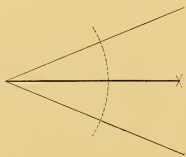


APRIL 10, 1897.

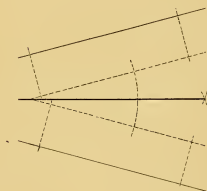
J. F. JOHNSON, CLASS C. No. 2333.

Photograph of Plate Drawn by J. F. Johnson, C. 2333, Machinist, Age 28,
46 Catharine Street, Worcester, Mass.

PROBLEM 5. To bisect a given angle
CASE I.



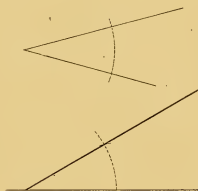
PROBLEM 5. To bisect a given angle
CASE II.



PROBLEM 6. To divide a given straight
line into any required number of equal
parts.



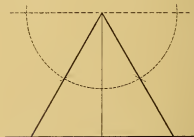
PROBLEM 7. To draw a straight line through
any given point on a given straight line to
make any required angle with that line.



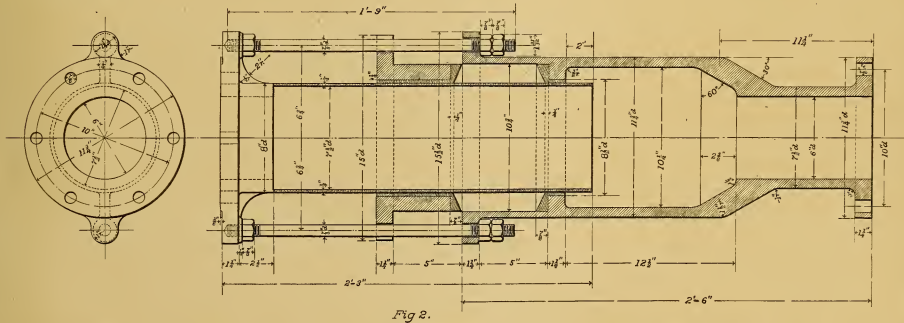
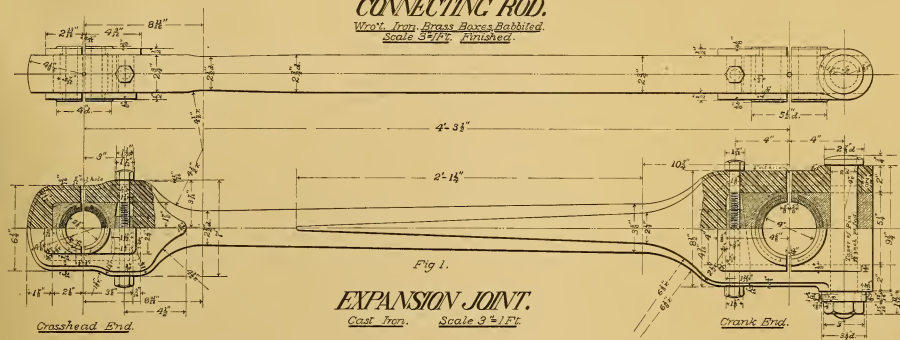
PROBLEM 8. To draw an equilateral
triangle one side being given.



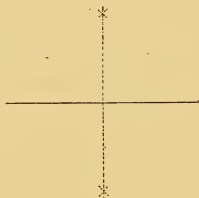
PROBLEM 9. The altitude of an equi-
lateral triangle being given to draw the
triangle.



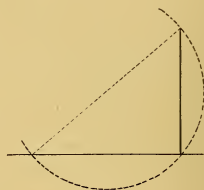
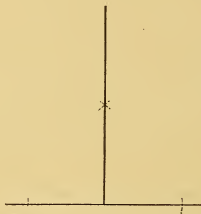
CONNECTING ROD.

Wro' Iron. Brass Boxes Babbled.
Scale 3/16". Finished.

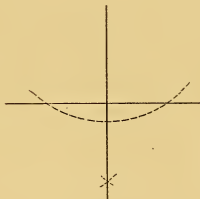
PROBLEM 1: To bisect a straight line.



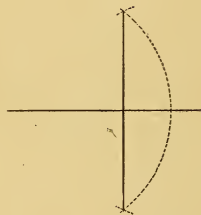
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



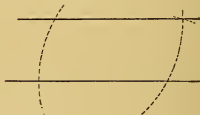
PROBLEM 3: To draw a perpendicular to a straight line from a without it.
CASE I.

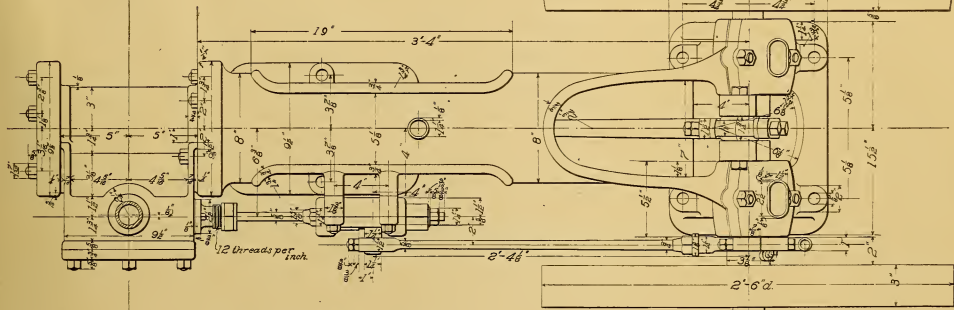


CASE II.



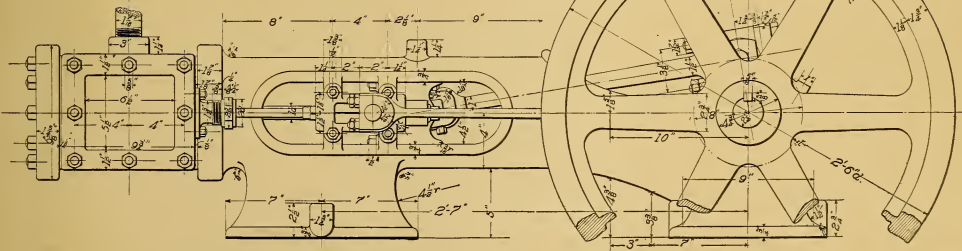
PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.





SIX HORSE POWER HORIZONTAL STEAM ENGINE.

Scale - 3" = 1 ft.

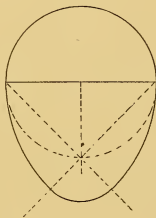


JULY 17 1897.

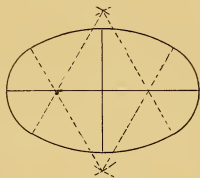
Photograph of Plate Drawn by John Edgar, C. 3614, Asst. Millwright, Age 17,
Box 305, Windsor, Ontario, Canada.

JOHN EDGAR, Class No C. 3614.

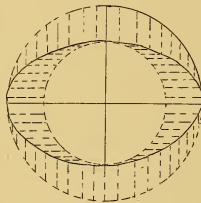
PROBLEM 22 To draw an egg shaped oval.



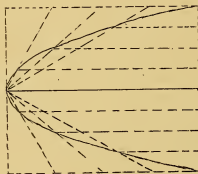
PROBLEM 24. To draw an ellipse with circular arcs.



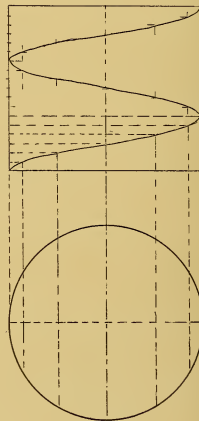
PROBLEM 23 To draw an ellipse the diameters being given.



PROBLEM 25. To draw a parabola, the axis and longest double ordinate being given.

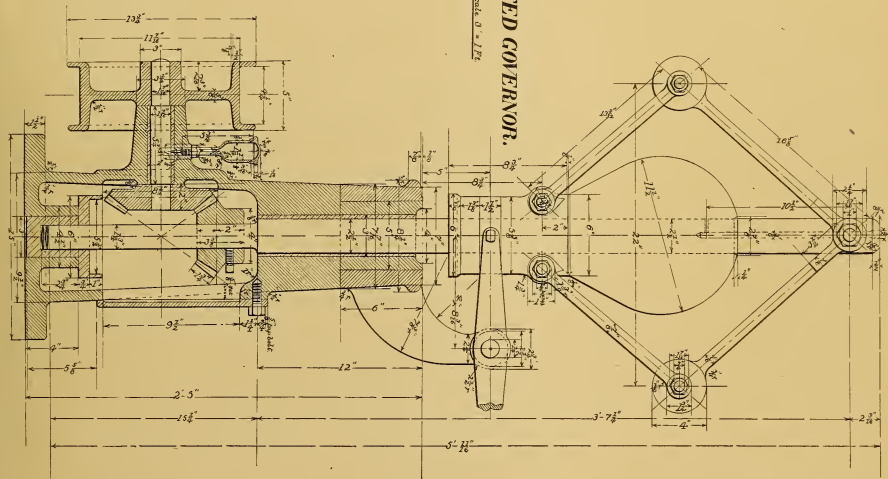


PROBLEM 26. To draw a helix, the pitch and the diameter being given.

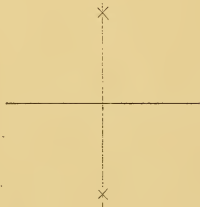


WEIGHTED GOVERNOR.

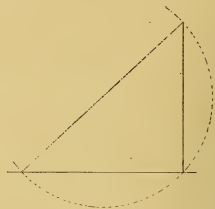
Scale, 1" = 1 1/2"



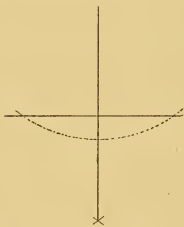
PROBLEM 1: To bisect a straight line



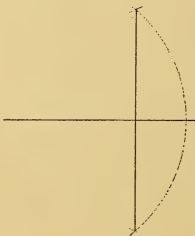
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line
CASE I.

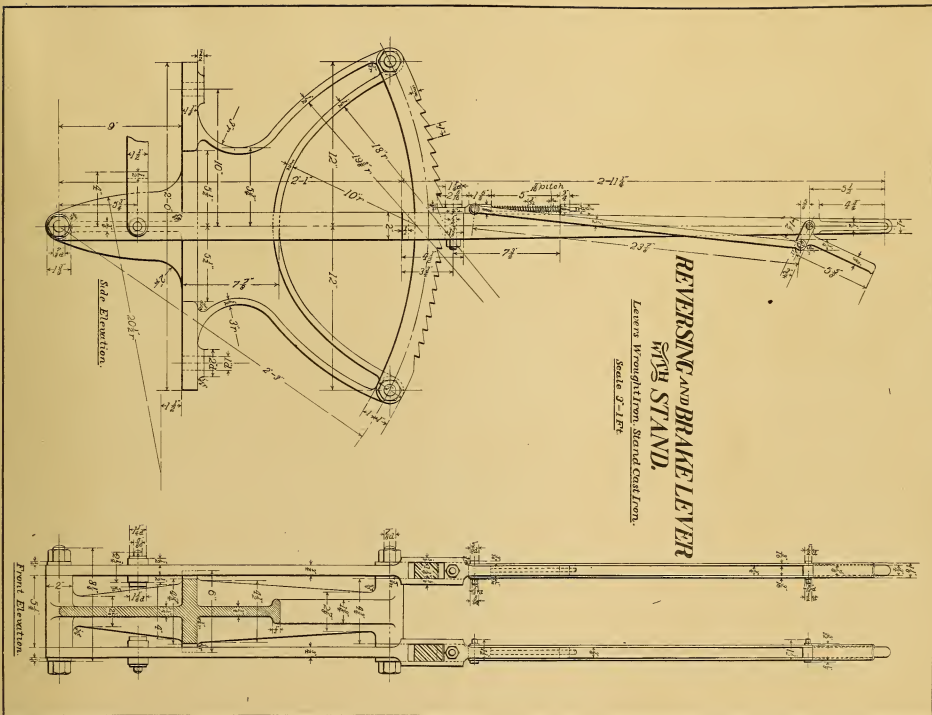


PROBLEM 3: To draw a perpendicular to a straight line from a given point without it
CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line





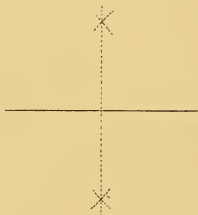
REVERSING AND BRAKE LEVER

AND STAND.

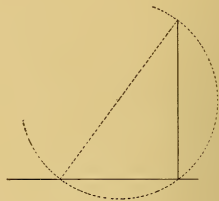
Lever Wrought Iron, Stirred Cast Iron.

Scale 3"-1-Ft

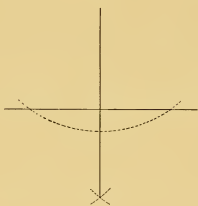
PROBLEM 1: To bisect a straight line..



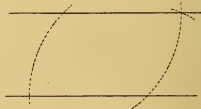
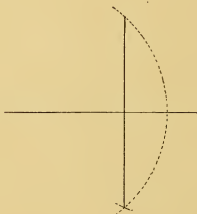
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.

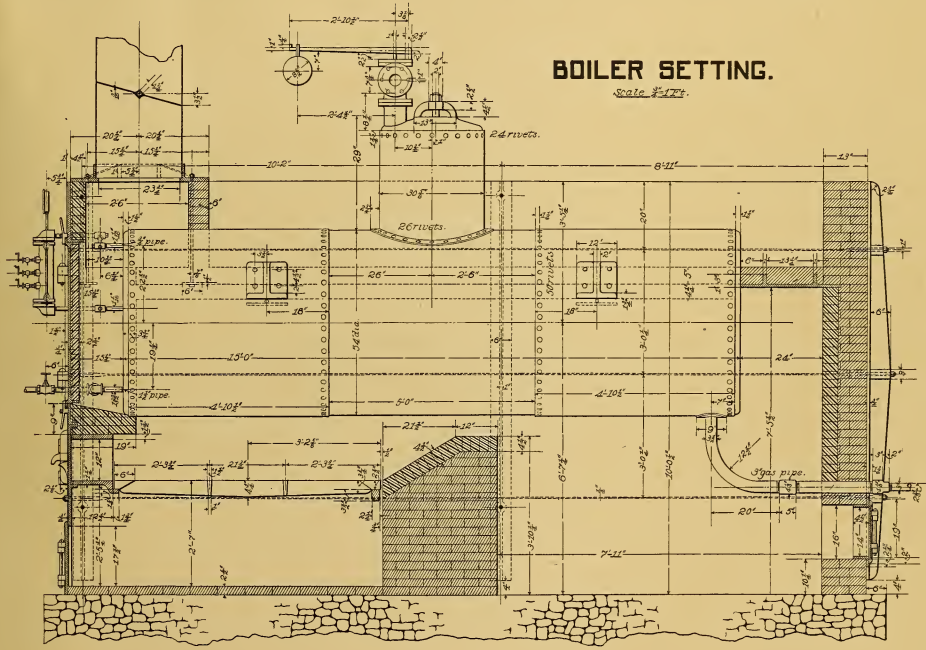


PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



BOILER SETTING.

Scale 3/4" = 1'-0"

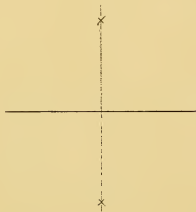


MAR. 21, 1896.

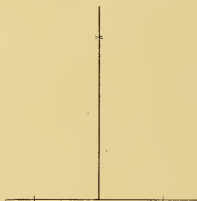
Photograph of Plate Drawn by C. W. Johnson, C. 2666, Age 19,
140 W. Mahoning Street, Danville, Pa.

C.W. JOHNSON, CLASS No. C2666.

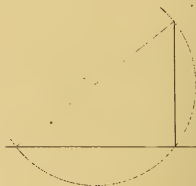
PROBLEM 1: To bisect a straight line



PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line,
CASE I



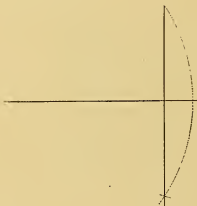
CASE II



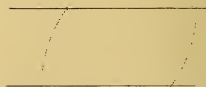
PROBLEM 3 To draw a perpendicular to a straight line from a point without it,
CASE I

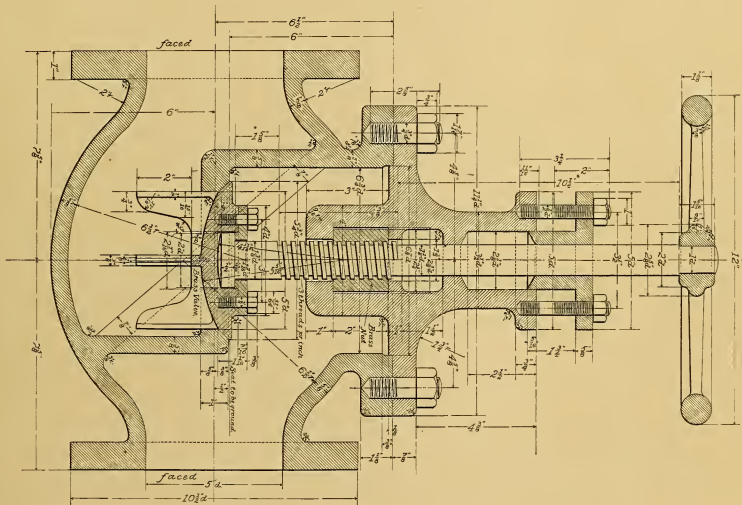


CASE II



PROBLEM 4 Through a given point to draw a straight line parallel to a given straight line.



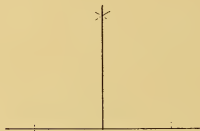


5 INCH GLOBE VALVE.
Cast Iron
Half Steel

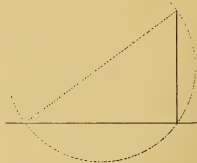
PROBLEM I: To bisect a given straight line



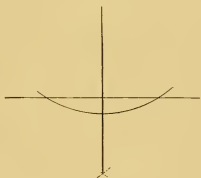
PROBLEM To draw a perpendicular to a straight line from a given point in that line.
CASE I



CASE II



PROBLEM 3: To draw a perpendicular to a straight line from a given point without it,
CASE I.



PROBLEM 4 Through a given point to draw a
straight line parallel to a given straight line

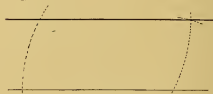
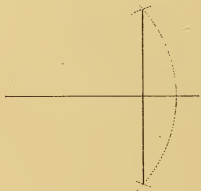


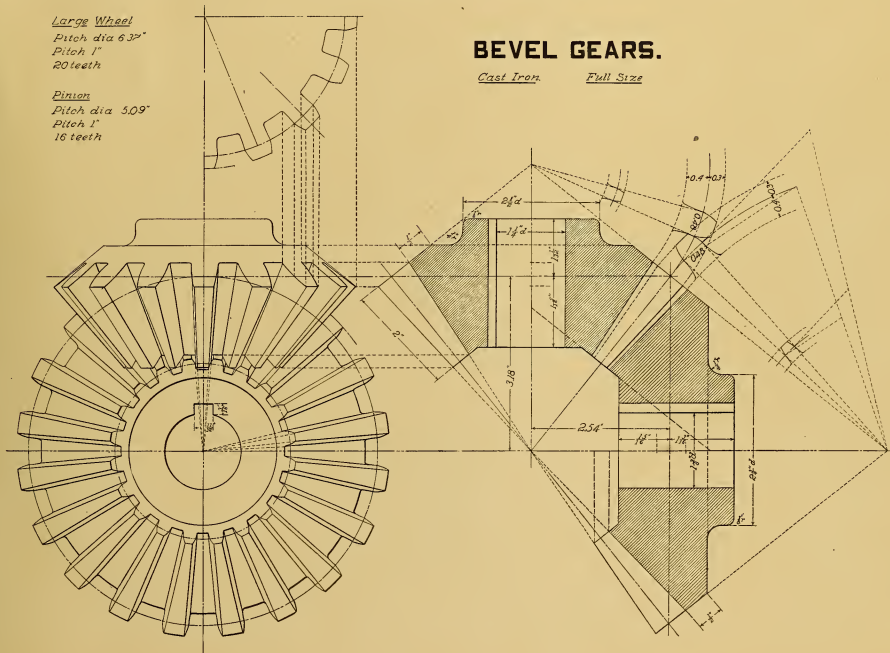
PLATE XXI.

Large Wheel
 Pitch dia 6.37"
 Pitch 1"
 20 teeth

Pinion
 Pitch dia 5.09"
 Pitch 1"
 16 teeth

BEVEL GEARS.

Cast Iron Full Size



MARCH 31 1897.

GEO. K. WAGNER. CLASS JNC 97.

Photograph of Plate Drawn by Geo. K. Wagner, C. 97, Engineer, Age 23,
 Box 18, Watsontown, Pa.

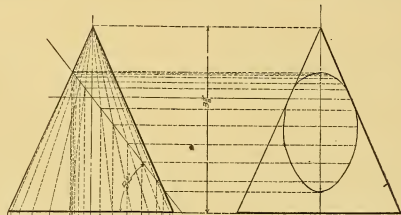


Fig. 1.

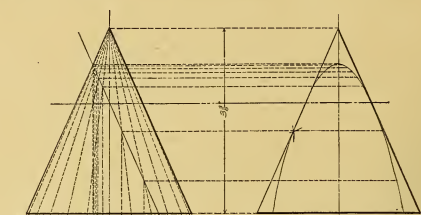


Fig. 2.

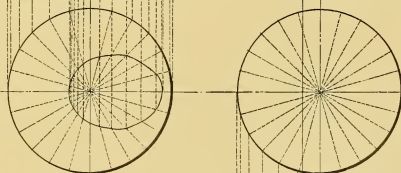


Fig. 3.

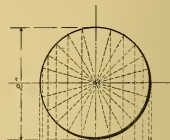


Fig. 4.

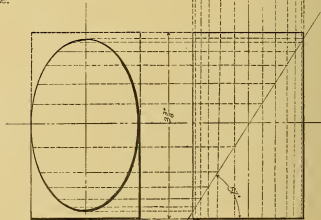
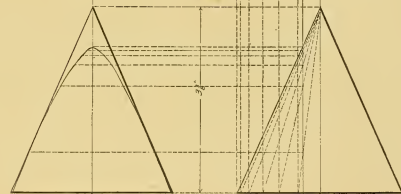
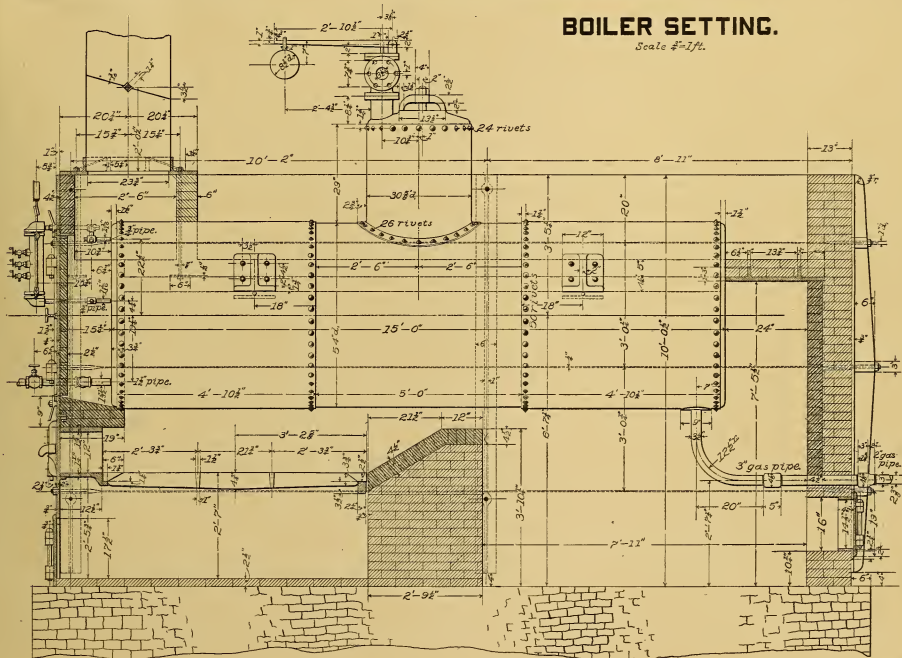


PLATE XXIV.

BOILER SETTING.

Scale $\frac{1}{2}$ "=1ft.



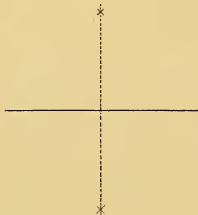
MARCH 15, 1896.

Photograph of Plate Drawn by O. S. Pike, C. 1548, Farmer, Age 25,
New Lisbon, Ohio.

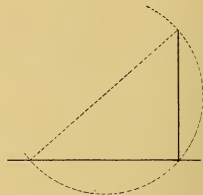
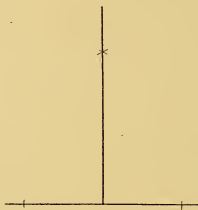
O. S. PIKE CLASS No. C 1548.

PLATE I

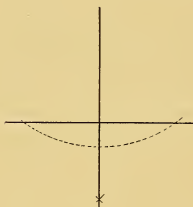
PROBLEM 1: To bisect a straight line



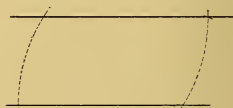
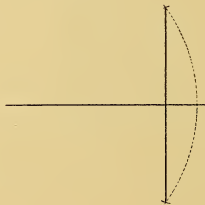
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line



LARGE WHEEL

Pitch dia 6.37"

Pitch 1"

20 Teeth

PINION

Pitch dia 5.09"

Pitch 1"

16 Teeth

BEVEL GEARS.

Cast Iron. Full Size.

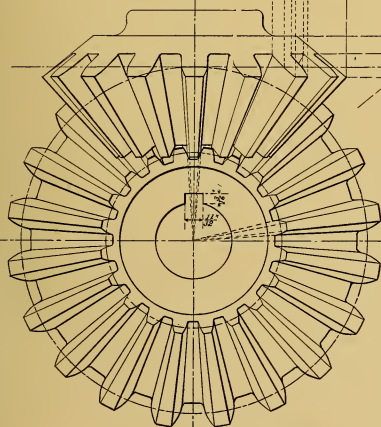


Fig. 2.

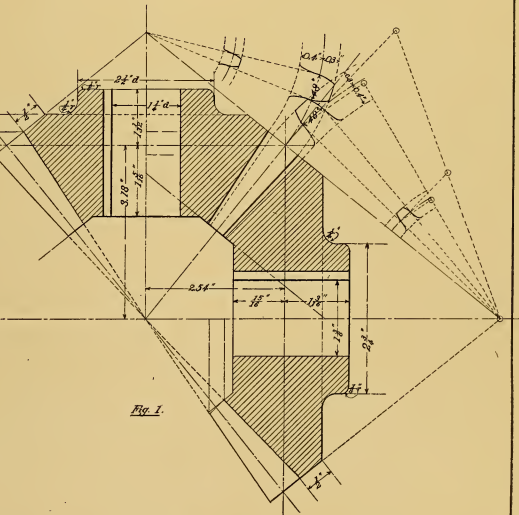


Fig. 1.

MAY 21. 1897.

Photograph of Plate Drawn by Fred. Kuhlmann, C. 2597, Machinist, Age 31,
880 N. Campbell Avenue, Chicago, Ill.

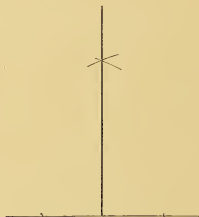
FRED. KUHLMANN. CLASS No. C. 2597

PROBLEM 1: To bisect a straight line

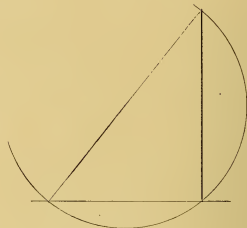


PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line

CASE I.

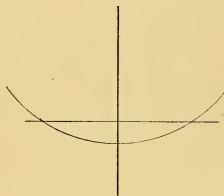


CASE II.

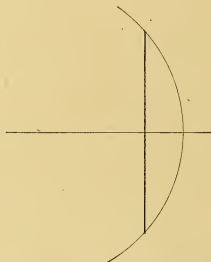


PROBLEM 3: To draw a perpendicular to a point without it

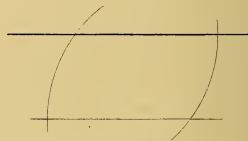
CASE I.



CASE II.



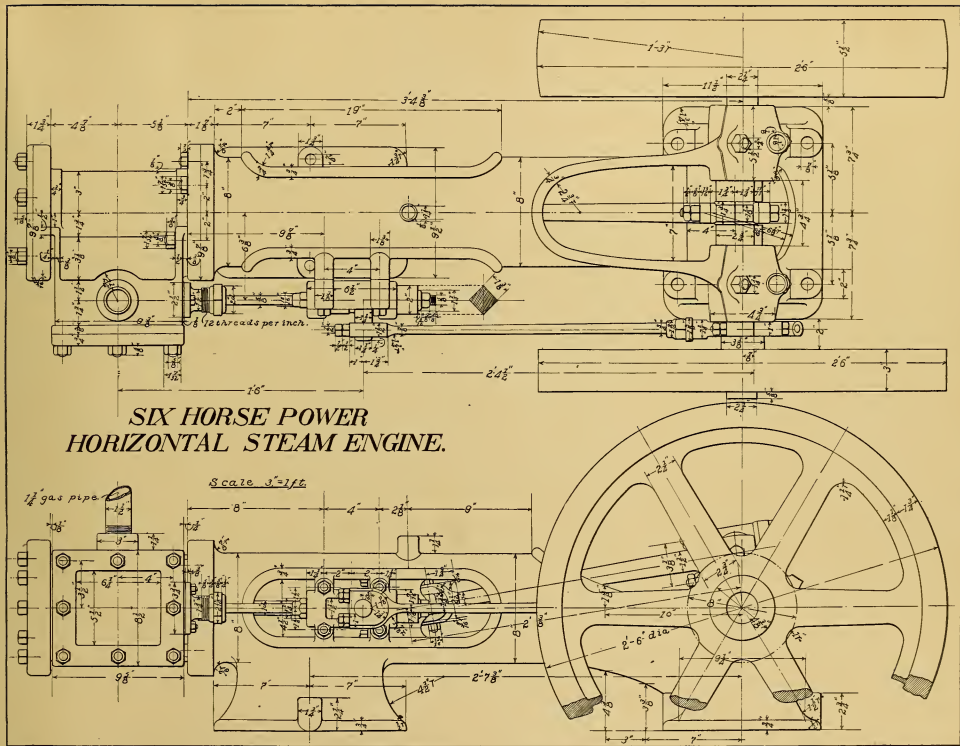
PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line



MAY 18. 1890.

Photograph of Plate Drawn by Fred. Krainek, C. 782, Machinist, Age 20,
Box 687, 914 N. Eighth Street, Manitowoc, Wis.

Fred Krainek, CLASS, No. 782.



**SIX HORSE POWER
HORIZONTAL STEAM ENGINE.**

Scale $\frac{3}{4}'' = 1'$

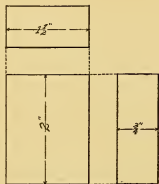


Fig. 1.

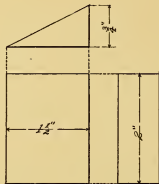


Fig. 2.

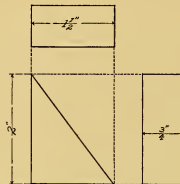


Fig. 3.

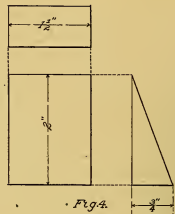


Fig. 4.

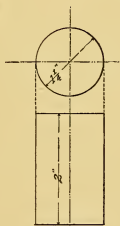


Fig. 5.

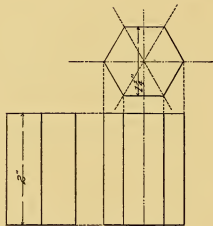


Fig. 6.

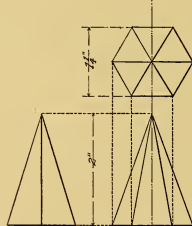


Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.

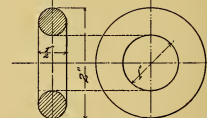
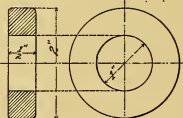
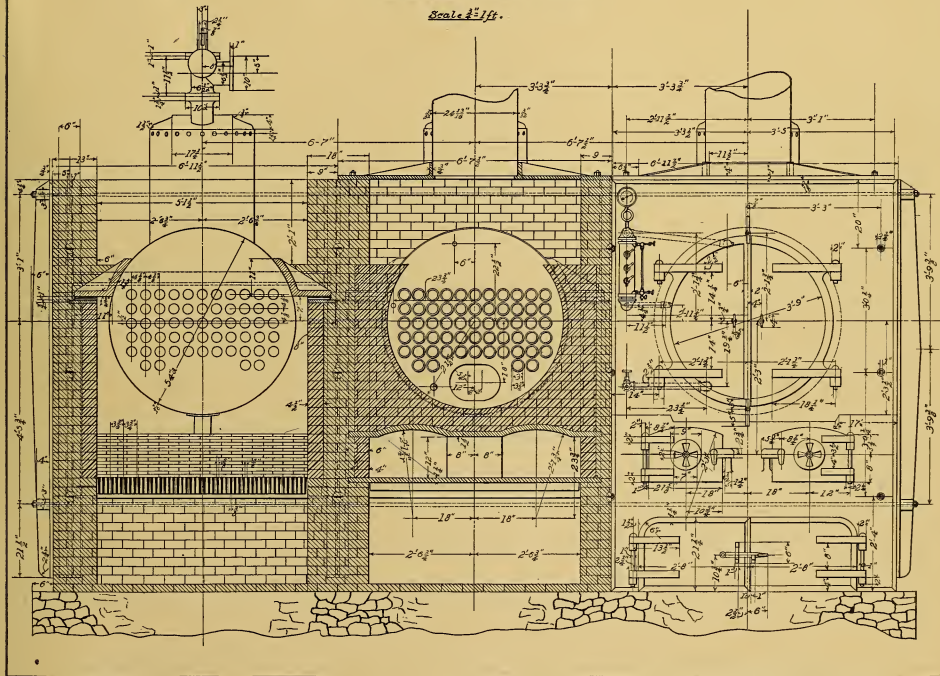


Fig. 13.

PLATE XXIII.

BOILER SETTING.

Scale $\frac{1}{2}$ " = 1 ft.



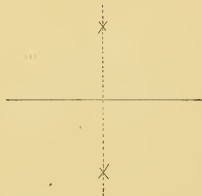
FEBRUARY 17, 1897

Photograph of Plate Drawn by Chas. Kuderer, C. 417, Machinist, Age 30,
40 West Second Street, Elizabethport, N. J.

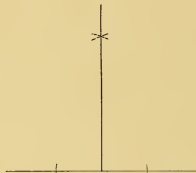
CHARLES KUDERER, CLASS N^o C 417.

PLATE I

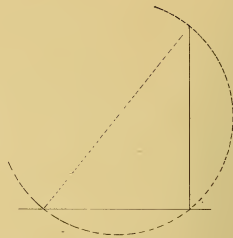
PROBLEM 1: To bisect a straight line.



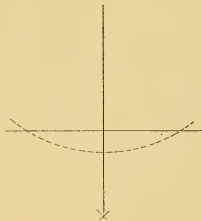
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I



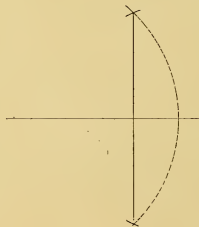
CASE II



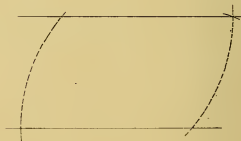
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I



CASE II



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.

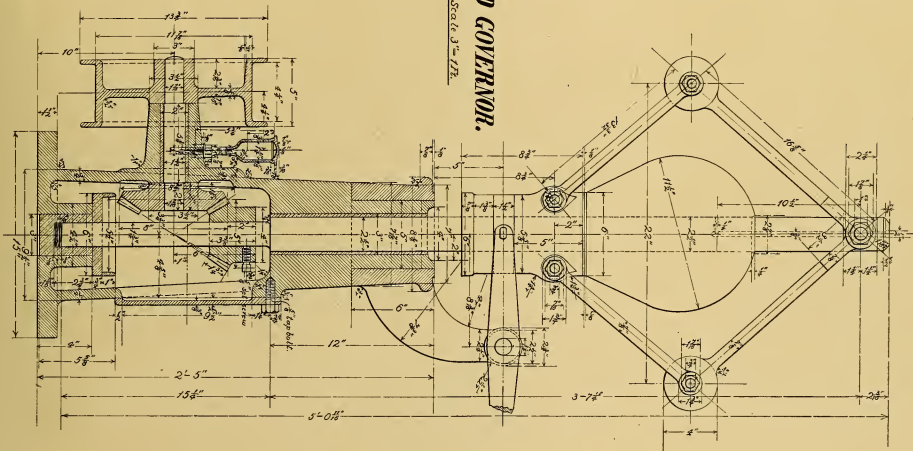


NOVEMBER 5 1894

G. Wiebe Class C 753.

WEIGHTED GOVERNOR.

Scale 3/16" = 1".

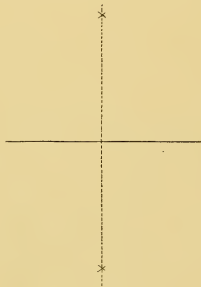


D.C. 9 1895.

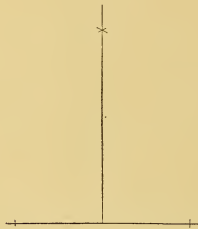
G. WIEBE CLASS No C 753.

Photograph of Plate Drawn by G. Wiebe, Jr., C. 753, Engineer and Fireman, Age 21,
Box 48, Halstead, Kan.

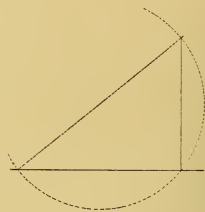
PROBLEM I.—To bisect a given straight line



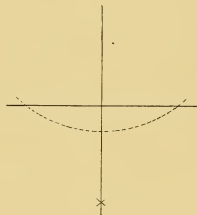
PROBLEM 2.—To draw a perpendicular to a straight line from a given point in that line:
Case I.



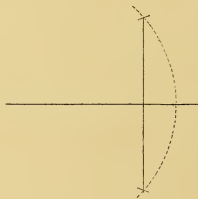
Case II.



PROBLEM 3: To draw a perpendicular to a straight line from a given point without it:
Case I.

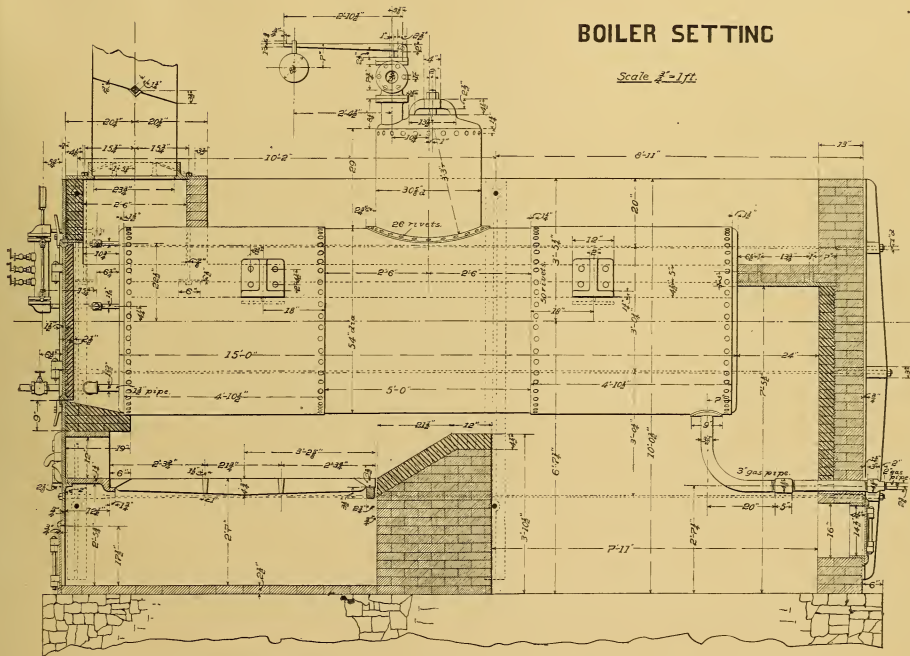


PROBLEM 4.—Through a given point to draw a straight line parallel to a given straight line



BOILER SETTING

Scale $\frac{1}{4} = 1 ft.$

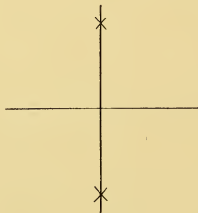


JANUARY 20 1897.

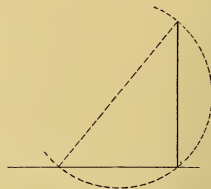
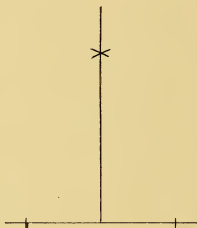
JOHN LLOYD, CLASS 377425 SR

Photograph of Plate Drawn by John Lloyd, M. D. 526, Machinist, Age 32,
58 Dana Street, Wilkes-Barre, Pa.

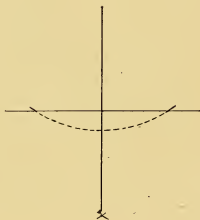
PROBLEM 1: To bisect a given straight line:



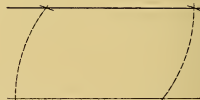
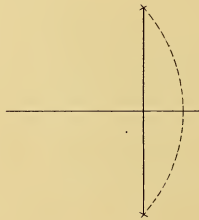
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line:
CASE I.



PROBLEM 3: To draw a perpendicular to a straight line from a given point without it:
CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line:



WEIGHTED GOVERNOR.

Scale 3"=1 FT.

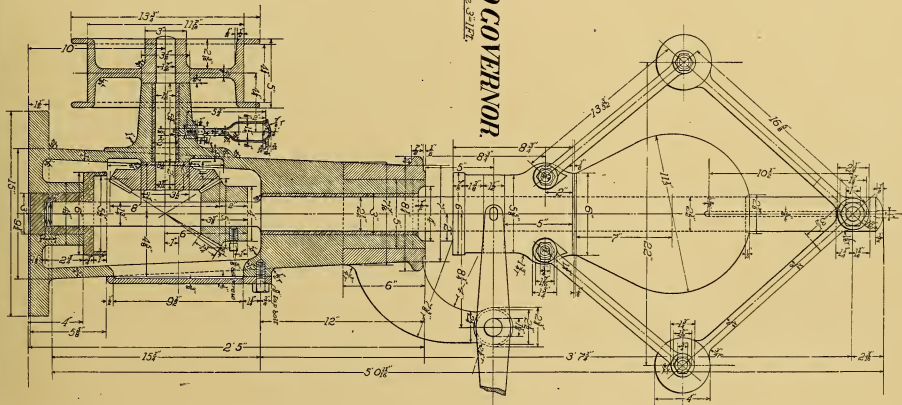
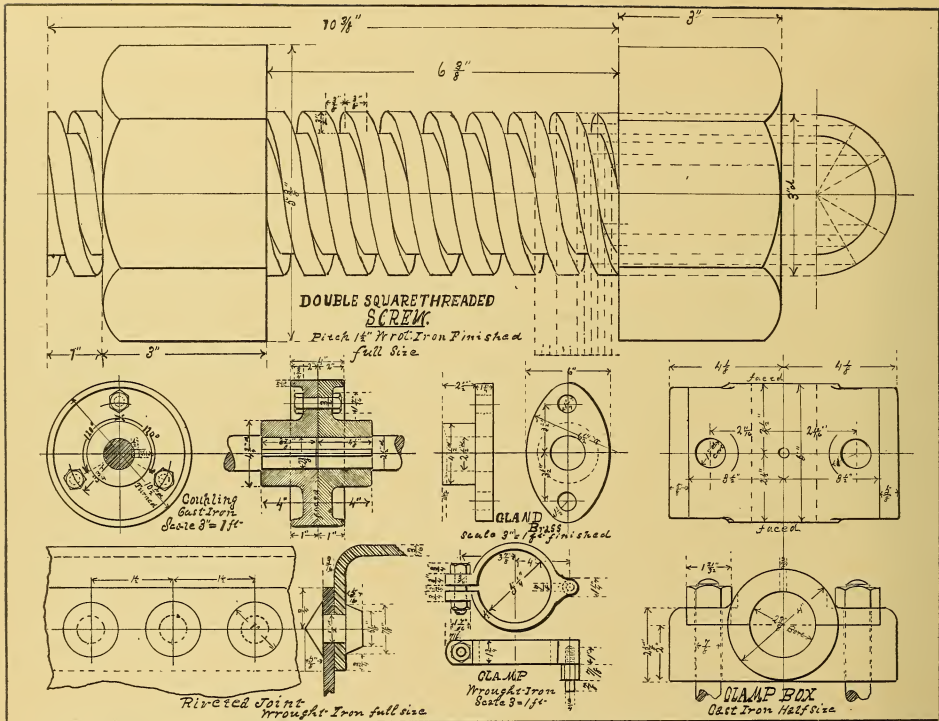


PLATE XI.

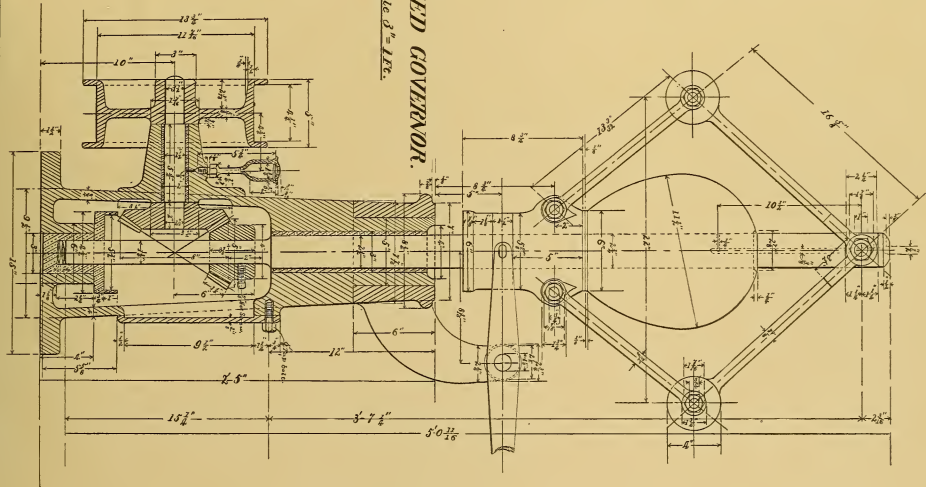


Sept 11-1894

R. J. Bliss Class E. 87.

WEIGHTED GOVERNOR.

Scale $\frac{3}{16}'' = 1''$.

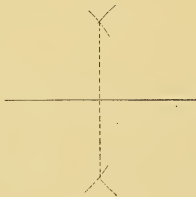


NOV 24 1894.

R. J. BLISS, E-37.

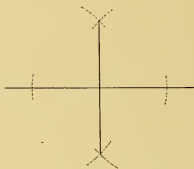
Photograph of Plate Drawn by R. J. Bliss, E. 37, Mechanical Engineer, Age 40,
Cor. Fifth and Mulberry Streets, Wilmington, N. C.

PROBLEM 1: To bisect a straight line.

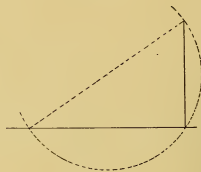


PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.

CASE I.



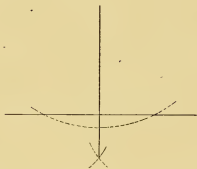
CASE II.



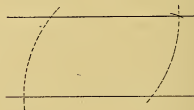
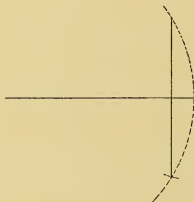
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.

CASE I.

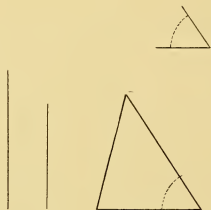
CASE II.



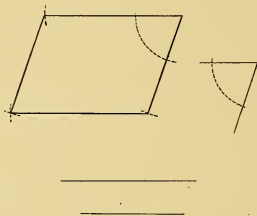
PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



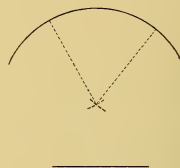
PROBLEM 10: Two sides and the included angle of a triangle being given, to construct the triangle.



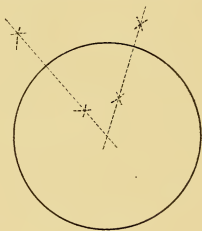
PROBLEM 11: To draw a parallelogram when the sides and one of the angles are given:



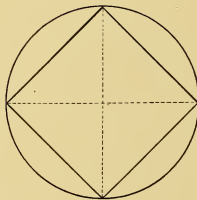
PROBLEM 12: An arc and its radius being given, to find its centre:



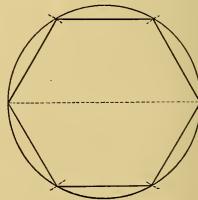
PROBLEM 13: To pass a circumference through any three points not in the same straight line:



PROBLEM 14: To inscribe a square in a given circle:

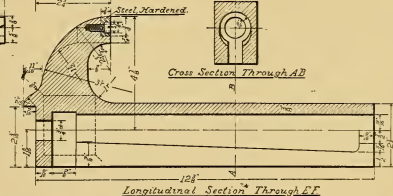
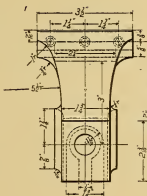
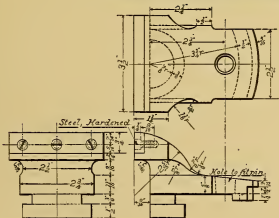
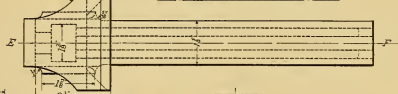
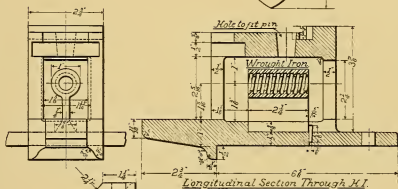
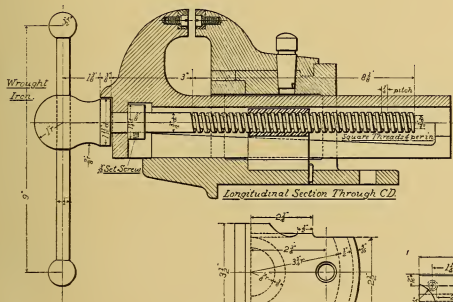
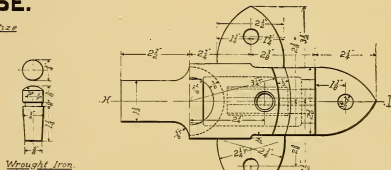
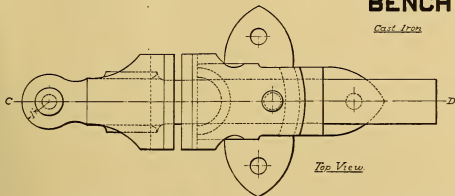


PROBLEM 15: To inscribe a regular hexagon in a given circle:



BENCH VISE.

Cast Iron Wrought Iron

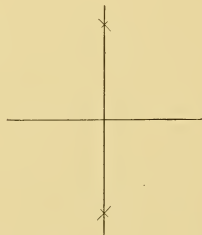


MAY 14 1897

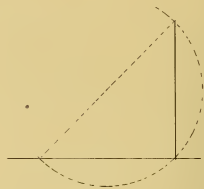
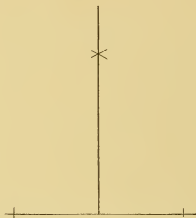
Photograph of Plate Drawn by E. Thompson, M. E. 1138, Clerk, Age 29,
69 Schaeffer Street, Brooklyn, N. Y.

E. THOMPSON CLASS. NO ME. 1138.

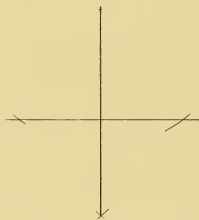
PROBLEM 1: To bisect a straight line.



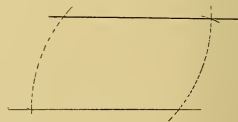
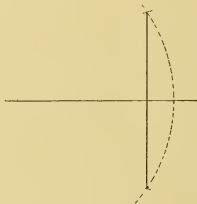
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line. CASE I.

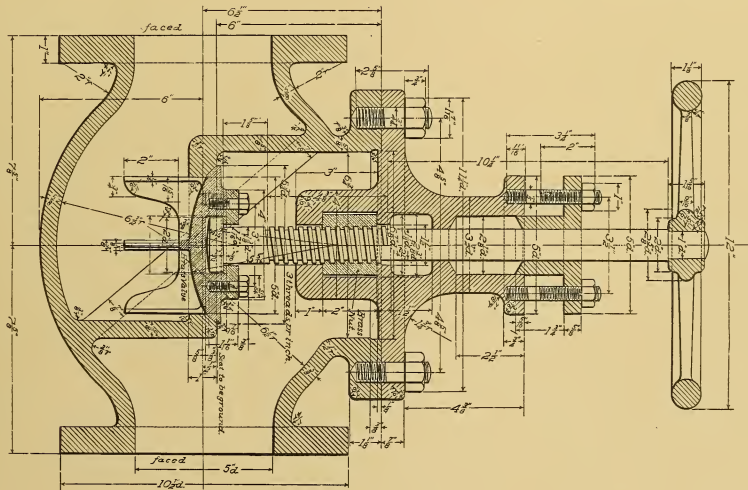


PROBLEM 3: To draw a perpendicular to a straight line from a point without it. CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.





SINCH GLOBE VALVE.

Cross View.

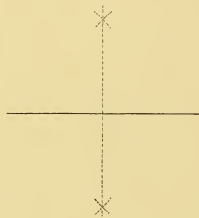
Half Size.

MAY 20, 1897.

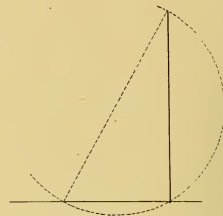
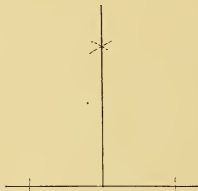
Photograph of Plate Drawn by A. E. Judge, M. E. 37, Pres. Electric Light Co., Age 45,
533 W. Erwin Street, Tyler, Texas.

AE JUDGE, CLASS M.E. 37.

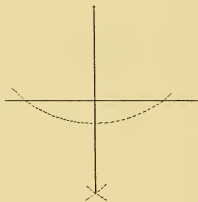
PROBLEM 1: To bisect a straight line.



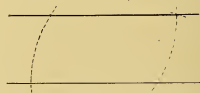
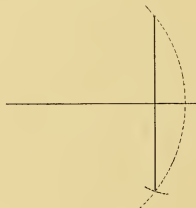
PROBLEM 2: To Draw a perpendicular to a straight line from a given point in that line.
CASE I.

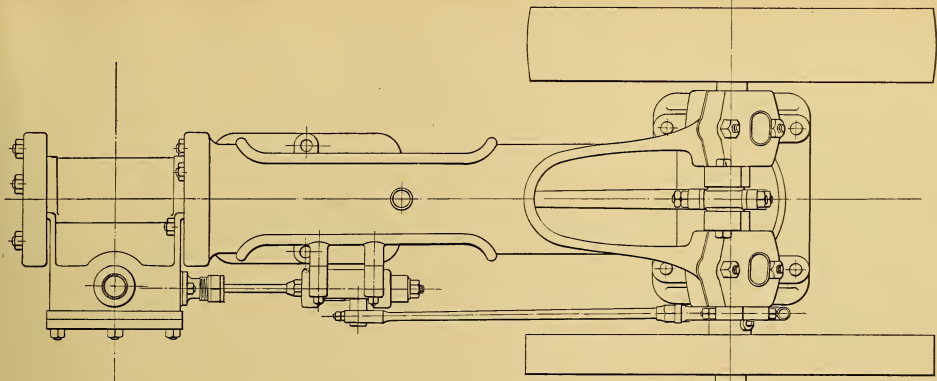


PROBLEM 3: To draw a perpendicular to a straight line from a point without it
CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.





**SIX HORSE POWER
HORIZONTAL STEAM ENGINE.**

Scale 1/2" = 1 ft.

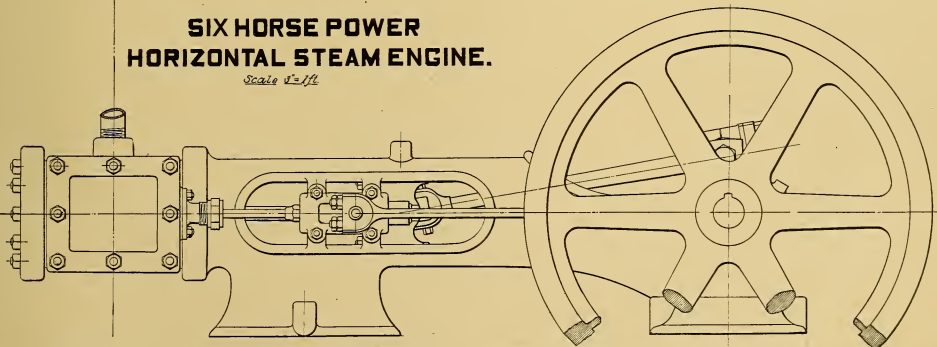
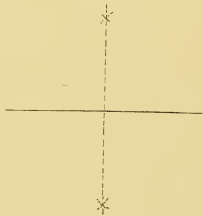
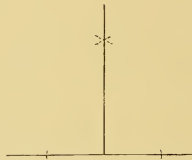


PLATE I

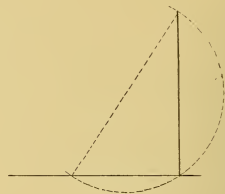
PROBLEM 1: To bisect a straight line



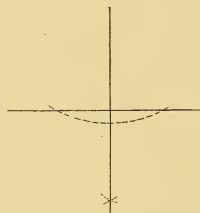
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.



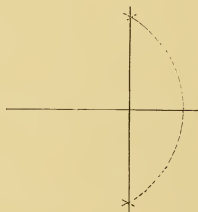
CASE II.



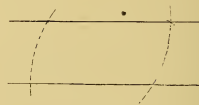
PROBLEM 3: To draw a perpendicular to a straight line from a point without it



CASE II.

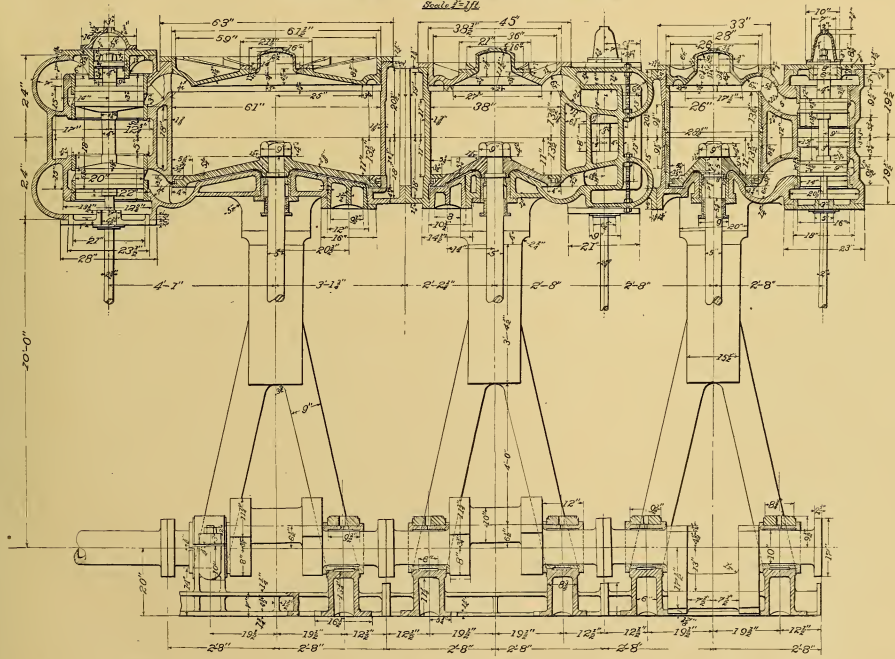


PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line



TRIPLE EXPANSION ENGINE.

Scale 1/16

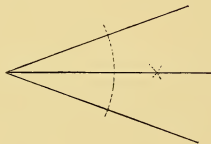


NOVEMBER 2, 1897

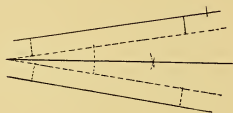
SAMUEL MURRAY, CLASS NO H-P044.

Photograph of Plate Drawn by Samuel Murray, H. 3014, Fireman, Age 37,
U. S. S. "Oregon," Care of Navy Pay Office, San Francisco, Cal.

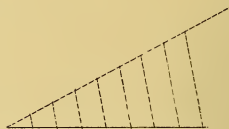
PROBLEM 4: To bisect a given angle.
CASE 1.



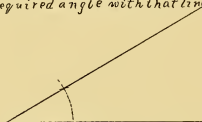
PROBLEM 5: To bisect a given angle



PROBLEM 6: To divide a given straight line into any required number of equal parts



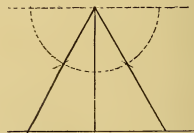
PROBLEM 7: To draw a straight line through any given point on a given straight line to make any required angle with that line



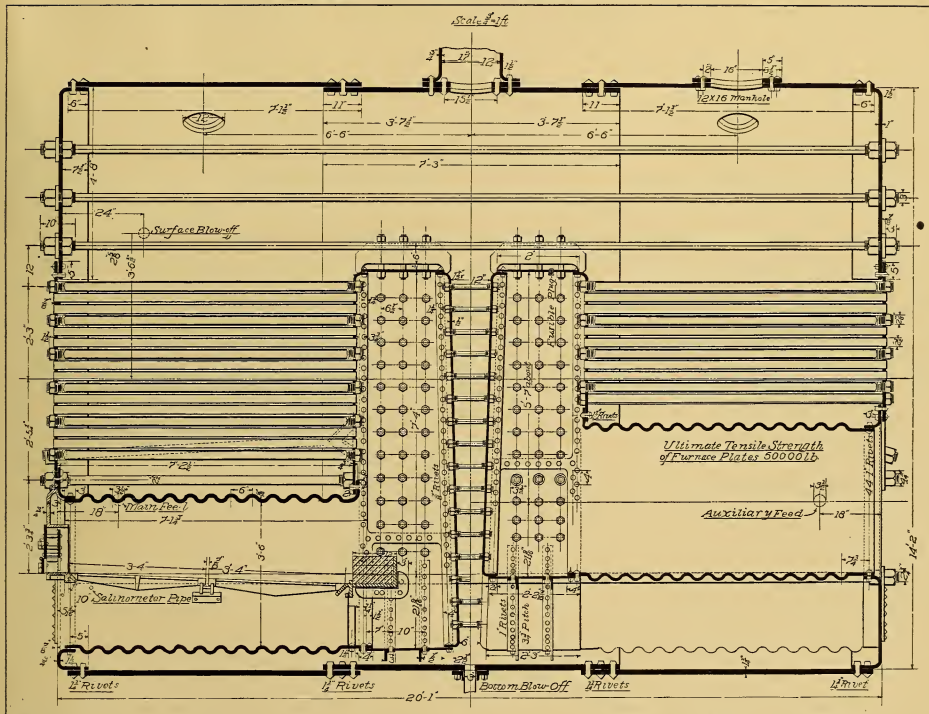
PROBLEM 8: To draw an equilateral triangle, one side being given.



PROBLEM 9: The altitude of an equilateral triangle being given to draw the triangle



DOUBLE-ENDED MARINE BOILER-II



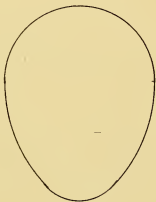
October 27, 1897

JAREED CLASS N°H-761

Photograph of Plate Drawn by J. A. Reed, H. 761, Marine Engineer, Age 27,
41 Natoma Street, San Francisco, Cal.

PLATE V.

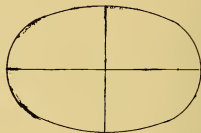
Problem 22.— To draw an egg shaped oval



Problem 23.— To draw an ellipse the diameters being given.



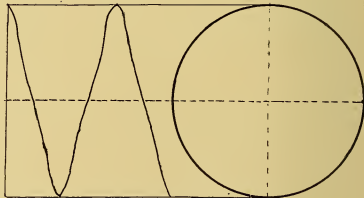
Problem 24.— To draw an ellipse with circular arcs.



Problem 25.— To draw a parabola the axis and longest double ordinate being given



Problem 26.— To draw a neck the pitch and the diameter being given



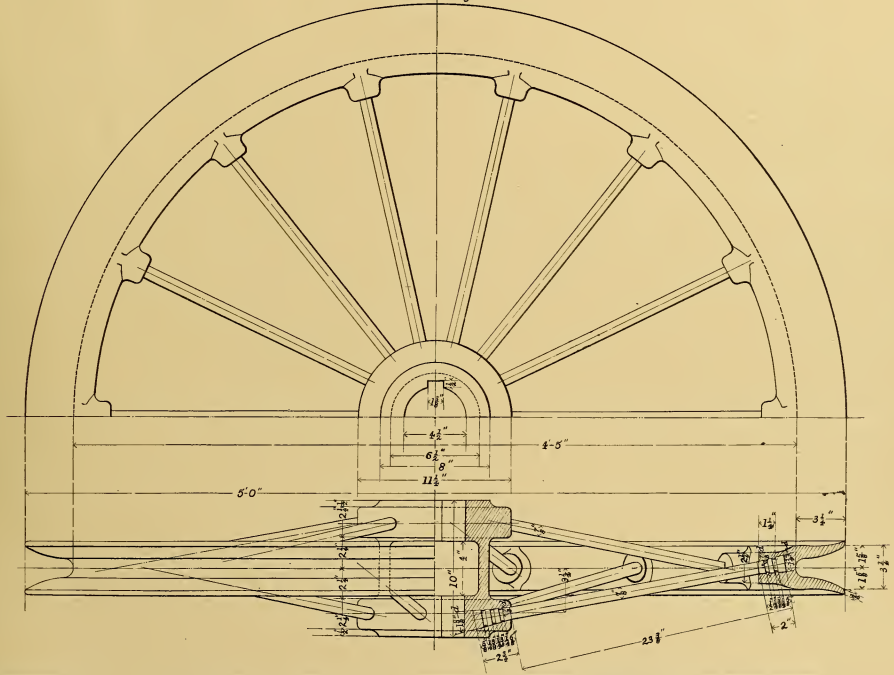
JAN. 9. 1874.

ROBT HALLUM. CLASS. No. 80
 Photograph of Plate Drawn by R. Hallum, M. 80, Hoisting Engineer, Age 23,
 Desloge, Mo.

PLATE XII.

4'-5" SHEAVE

Scale 3" = 1ft.



SEPT. 30 1894

Photograph of Plate Drawn by R. Hallum, M. 80, Holsting Engineer, Age 22,
Desloge, Mo.

ROBT HALLUM CLASS NO 80

PART II

ARCHITECTURAL AND MECHANICAL
DRAWING, AND MAPPING

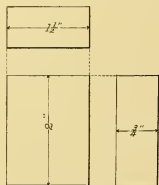


Fig. 1.

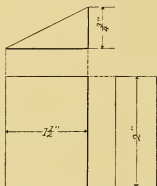


Fig. 2.

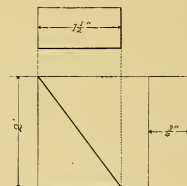


Fig. 3.

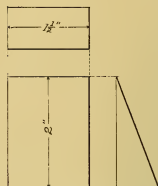


Fig. 4.

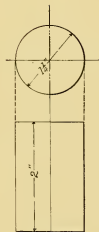


Fig. 5.

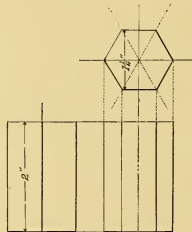


Fig. 6.

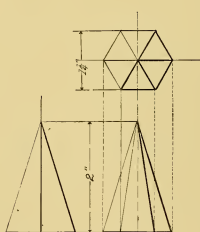


Fig. 7.



Fig. 8.

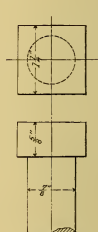


Fig. 9.

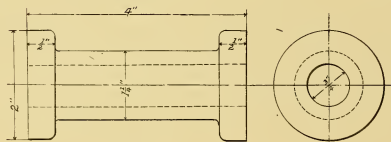


Fig. 10.

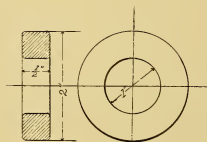


Fig. 11.

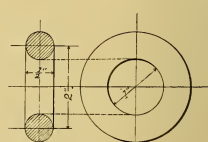
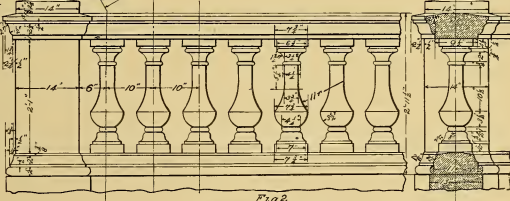
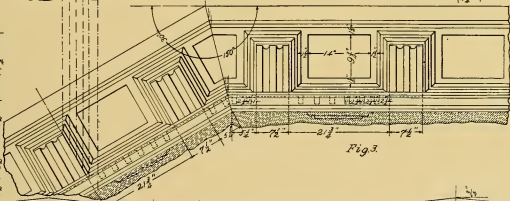
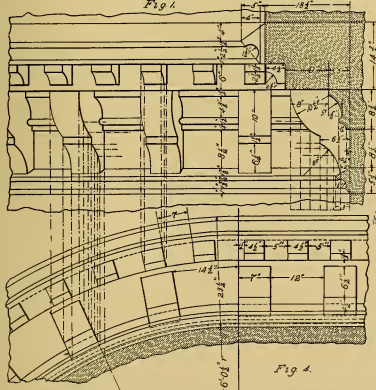
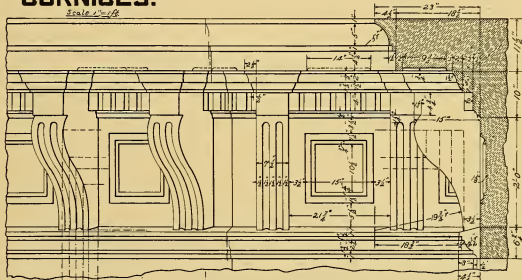
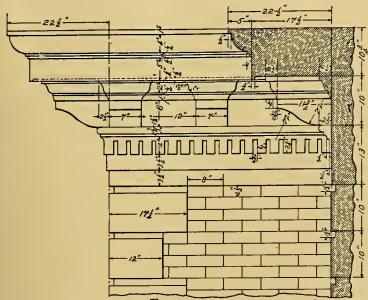


Fig. 12.

CORNICES.

SCALE 1/2" = 1'



MAY 3, 1897

Wm. HUBER, CLASS N^o. A 389.
 Photograph of Plate Drawn by Wm. Huber, A. 389, Jeweler, Age 23,
 584 Third Avenue, New York City.

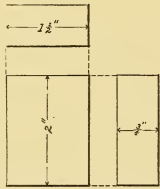


Fig. 1.

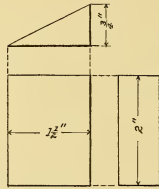


Fig. 2.

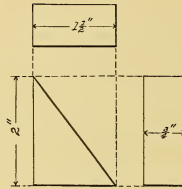


Fig. 3.

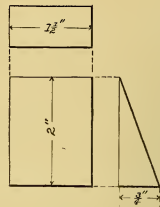


Fig. 4.

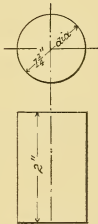


Fig. 5.

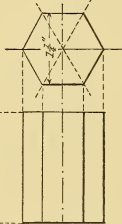


Fig. 6.

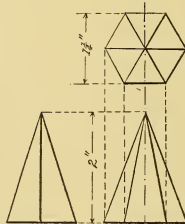


Fig. 7.



Fig. 8.



Fig. 9.

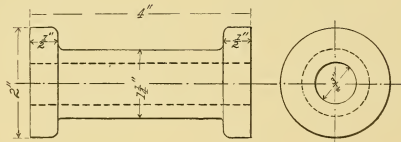


Fig. 10.

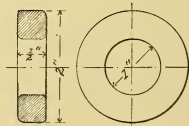


Fig. 11.

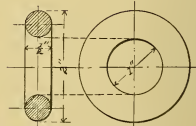
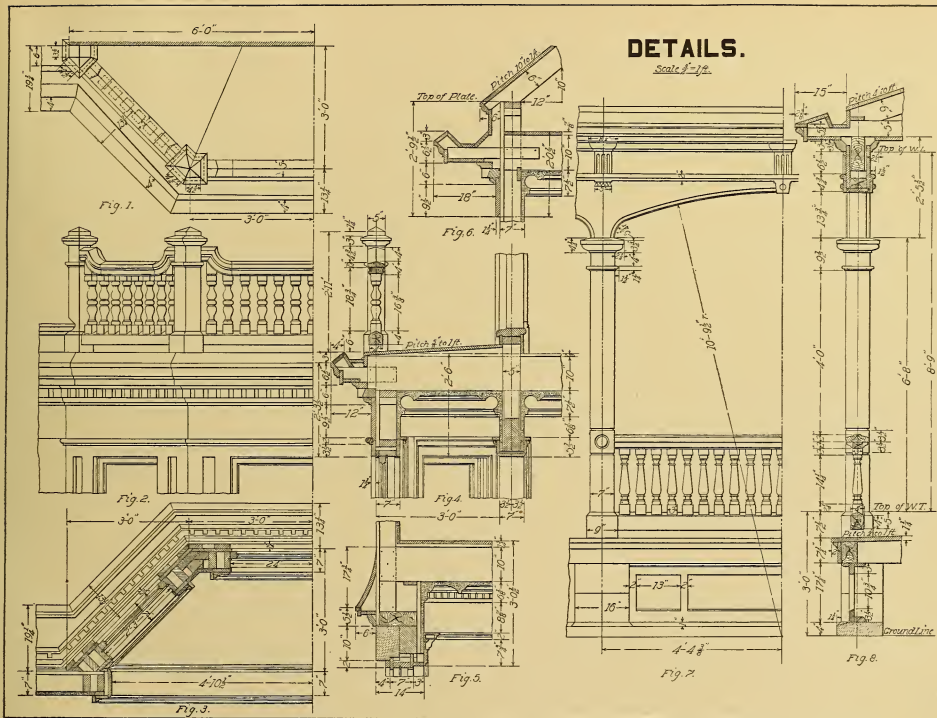


Fig. 12.



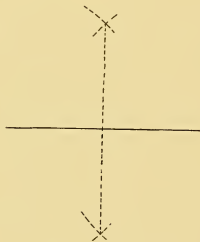
APRIL 9 1897.

Photograph of Plate Drawn by E. Gunther, A. 204, Tin and Sheet Iron Worker, Age 19,
3 West Montgomery Street, Baltimore, Md.

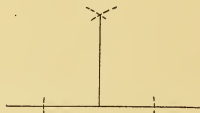
E GUNTHER, CLASS N^o A 204.

PLATE I.

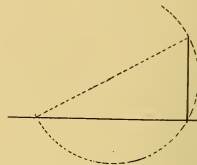
PROBLEM 1: To bisect a straight line.



PROBLEM 2: To draw perpendicular to a straight line from a given point in that line.
CASE I.



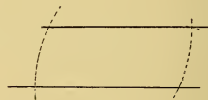
CASE II.



PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



APRIL 12, 1895.

Photograph of Plate Drawn by H. H. Harkness, A. 88, Tel. Operator, Age 23,
303 Wildwood Avenue, Salamanca, N. Y.

HOWARD H. HARKNESS, CLASS No 88. A.



Fig. 1.

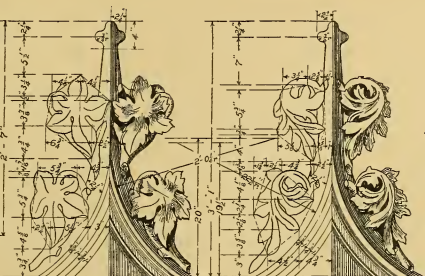


Fig. 2.

Fig. 3.

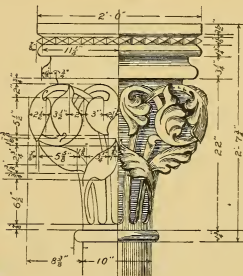


Fig. 4.

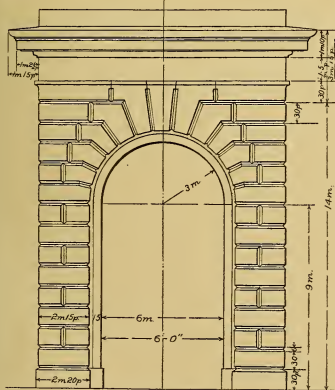


Fig. 5.

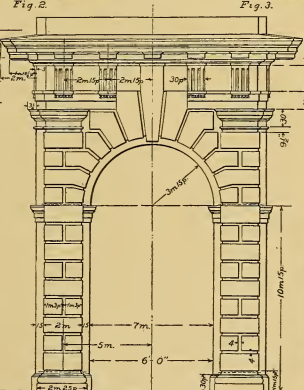


Fig. 6.

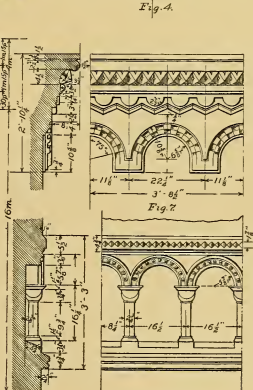


Fig. 7.

Fig. 8.

Scale
Parts Modules.

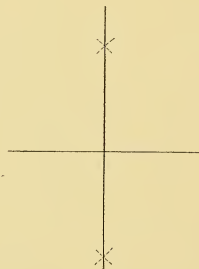
Scale
Parts Modules.

AUGUST 28, 1896.

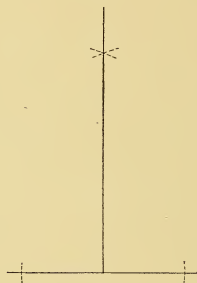
Photograph of Plate Drawn by H. H. Harkness, A. S. S. Tel. Operator, Age 23,
303 Wildwood Avenue, Salamanca, N. Y.

H. HARKNESS CLASS NPA-88.

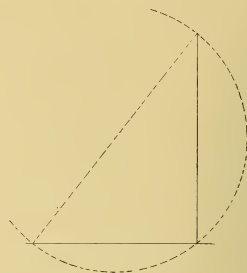
PROBLEM 1 - To bisect a straight line.



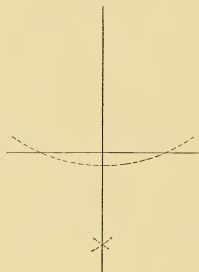
PROBLEM 2 - To draw a perpendicular to a straight line from a given point in that line
CASE I.



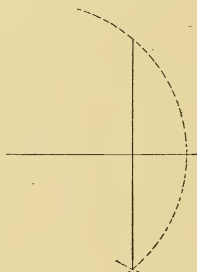
CASE II.



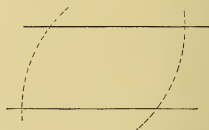
PROBLEM 3 - To draw a perpendicular to a straight line from a point without it.
CASE I.

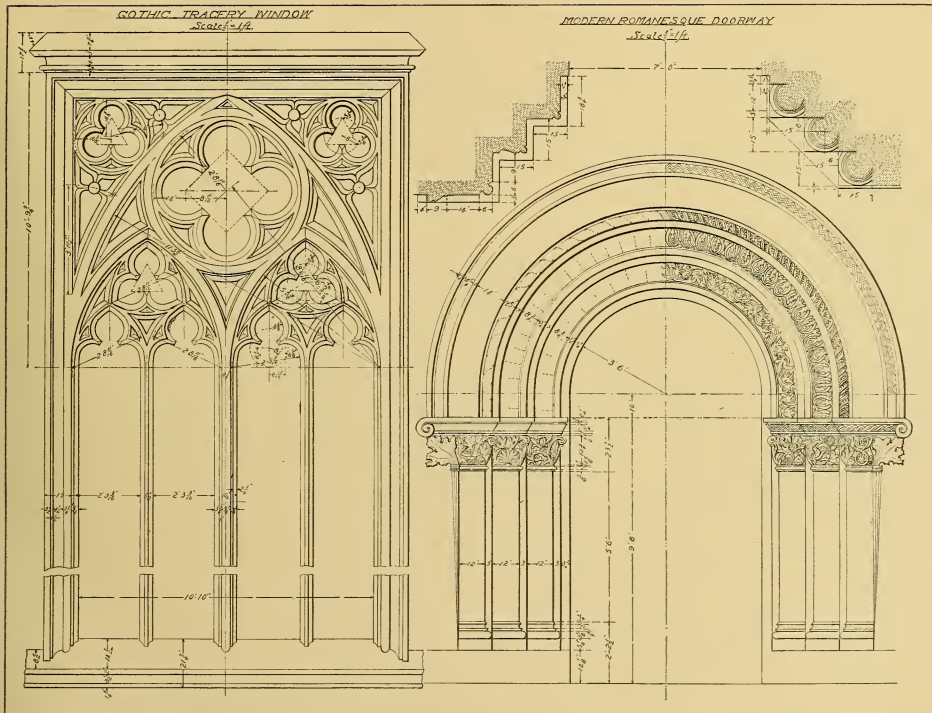


CASE II.



PROBLEM 4 - Through a given point to draw a straight line parallel to a given straight line.



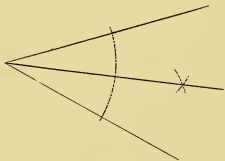


OCTOBER 19 1897

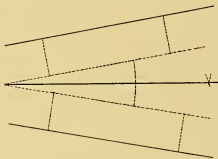
Photograph of Plate Drawn by C. R. Hunter, A. 711, Lather, Age 24,
46 Archbald Street, Carbondale, Pa.

CRHUNTER CLASS No A 711

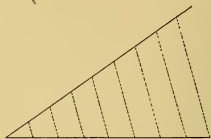
PROBLEM 5: To bisect a given angle.
CASE I.



PROBLEM 5: To bisect a given angle.
CASE II.



PROBLEM 6: To divide a given straight line
into any required number of equal parts.



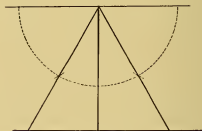
PROBLEM 7: To draw a straight line through
any given point on a given straight line to make
any required angle with that line.



PROBLEM 8: To draw an equilateral triangle one
side being given.

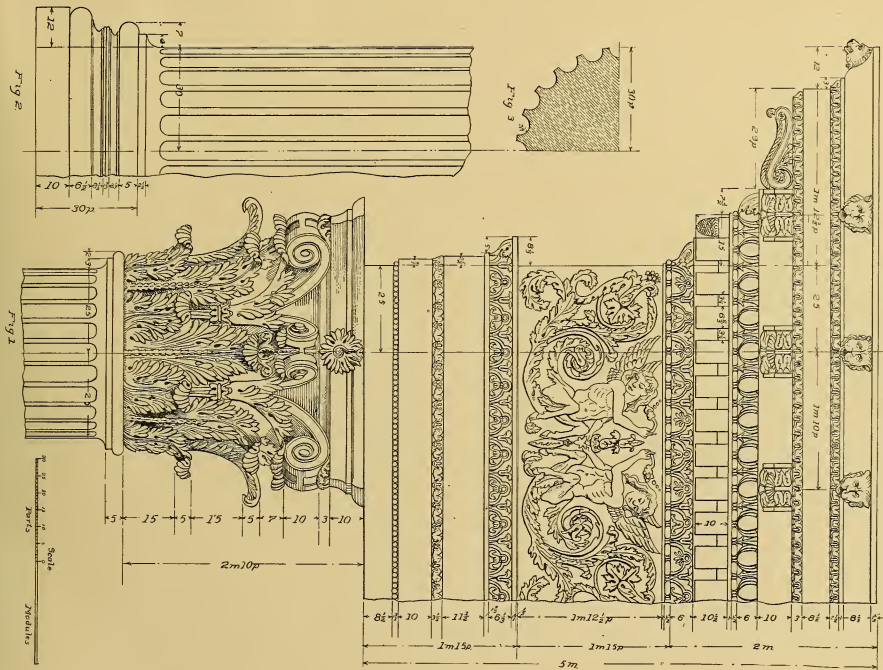


PROBLEM 9: The altitude of an equilateral
triangle being given, to draw the triangle.



AUG. 11 1896.

CORINTHIAN ORDER



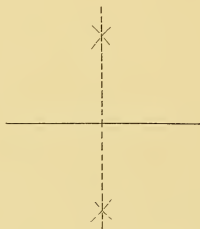
SEPT. 23 1897

Photograph of Plate Drawn by Lyle H. Olsen, A. 687, Draper, Age 21,
1200 Pabst Building, Milwaukee, Wis.

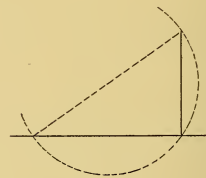
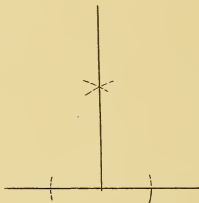
LYLE HOLSON CLASS A 687

PLATE I.

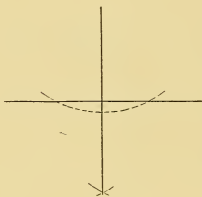
PROBLEM 1: To bisect a straight line



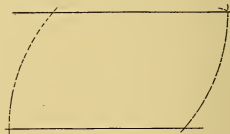
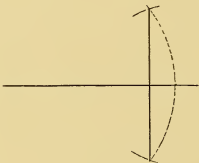
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line
CASE I.



PROBLEM 3: To draw a perpendicular to a straight line from a point without it
CASE I.



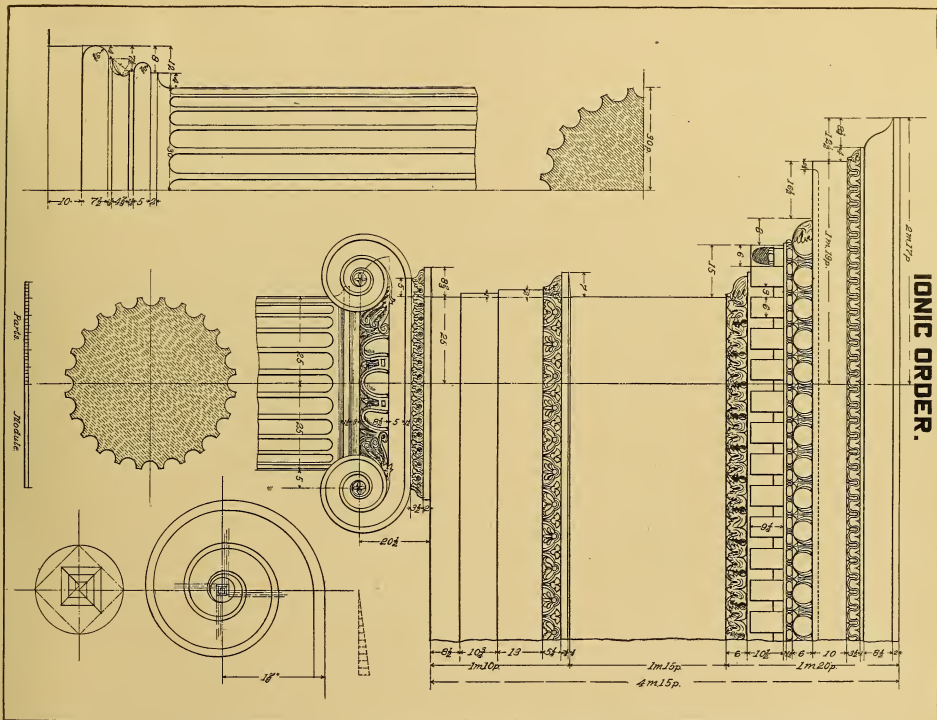
PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



MARCH 17, 1896.

Photograph of Plate Drawn by Frederick A. Patterson. A. 327, Wood Worker, Age 28,
359 Main Street, Bangor, Maine.

FREDERICK A. PATTERSON. CLASS NO 327.

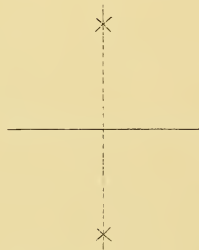


OCT 18 1897

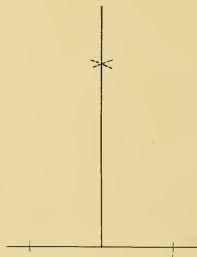
FREDERICK A. PATTERSON, CLASS N^o A 327
 Photograph of Plate Drawn by Frederick A. Patterson, A. 227, Wood Worker, Age 28,
 359 Main Street, Bangor, Maine.

PLATE I

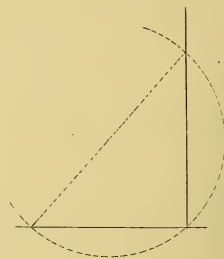
PROBLEM 1: To bisect a straight line



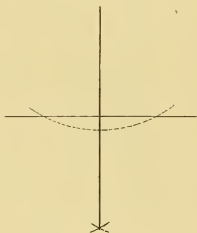
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



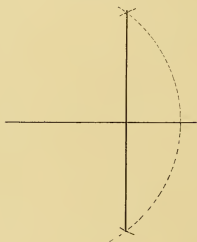
CASE II.



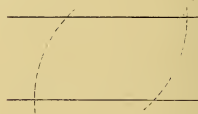
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



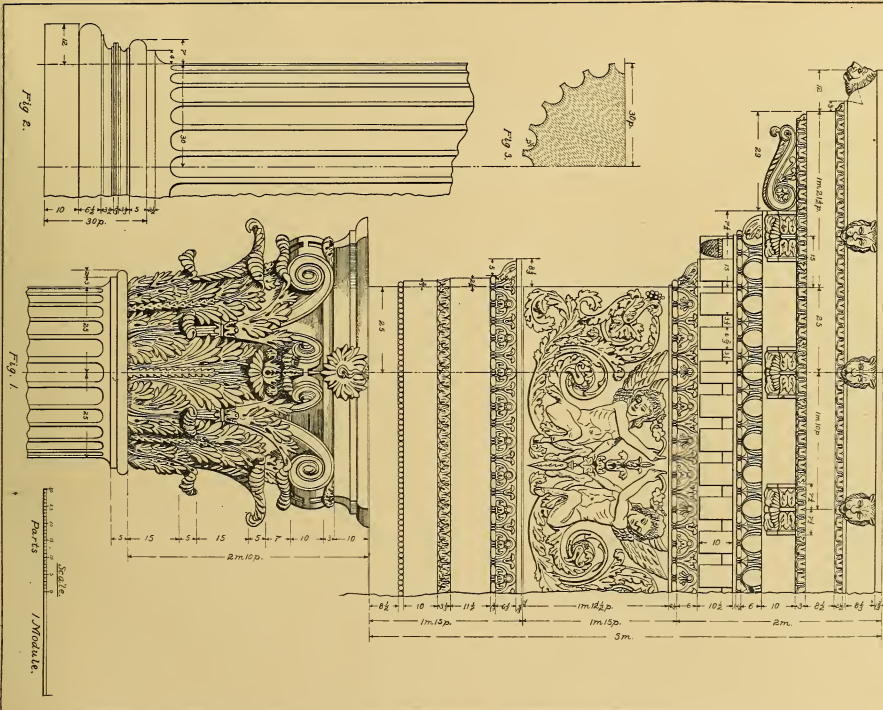
CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



CORINTHIAN ORDER.

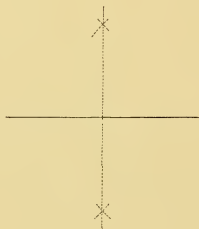


JUNE 16, 1837.

W. J. STEWART CLASS A N° 138.

Photograph of Plate Drawn by W. J. Stewart, Jr., A. 138. Carpenter, Age 23,
Box 21, Sewickley, Pa.

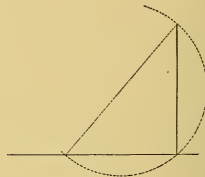
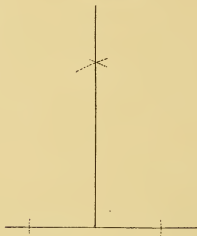
PROBLEM 1: To bisect a straight line.



PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.

CASE I.

CASE II.

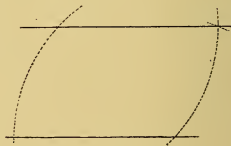
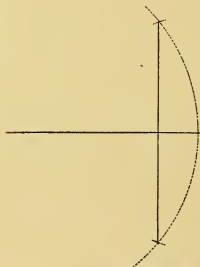
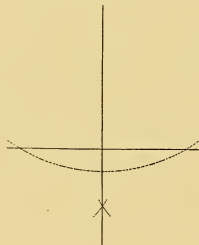


PROBLEM 3: To draw a perpendicular to a straight line from a point without it.

CASE I.

CASE II.

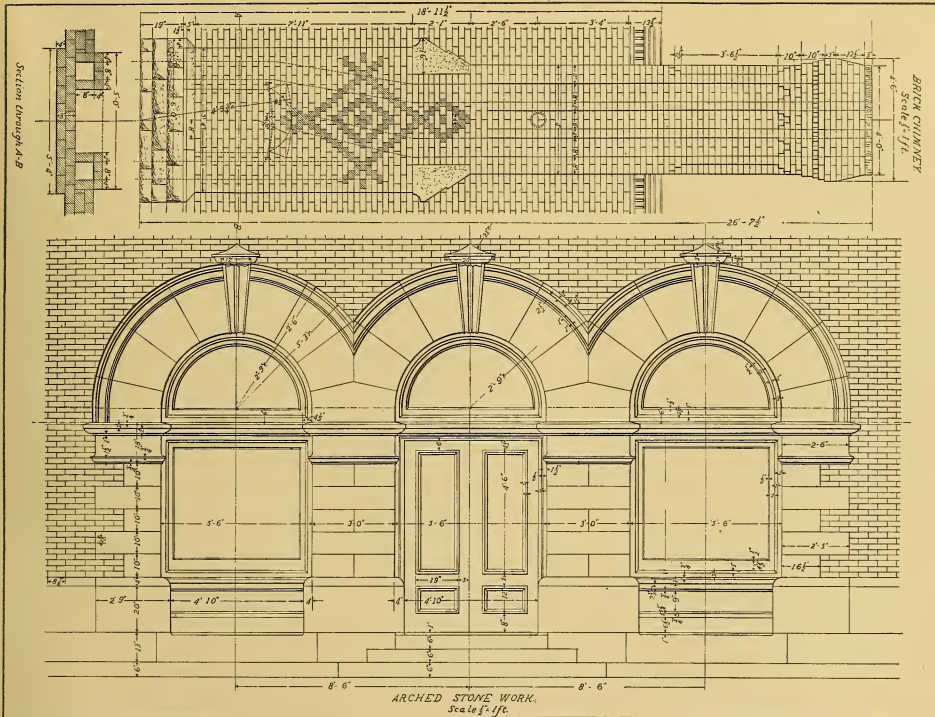
PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



Aug. 1, 1896.

Lena Beecher, Class Letter and No. A. D. 114.

PLATE III



APR. 14 1897.

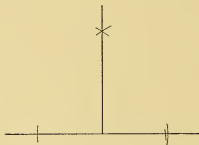
Photograph of Plate Drawn by Miss E. Lena Beecher, A. D. 114, Stenographer, Age 24,
3 Front Street, Owego, N. Y.

LENA BEECHER, CLASS N^o AD 114.

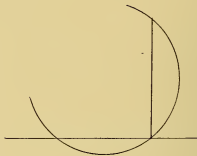
PROBLEM 1: To bisect a straight line



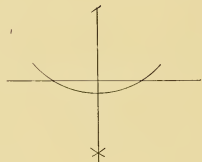
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



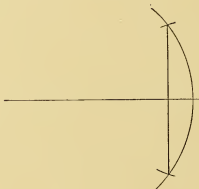
CASE II



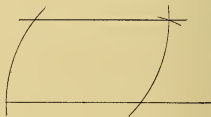
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.

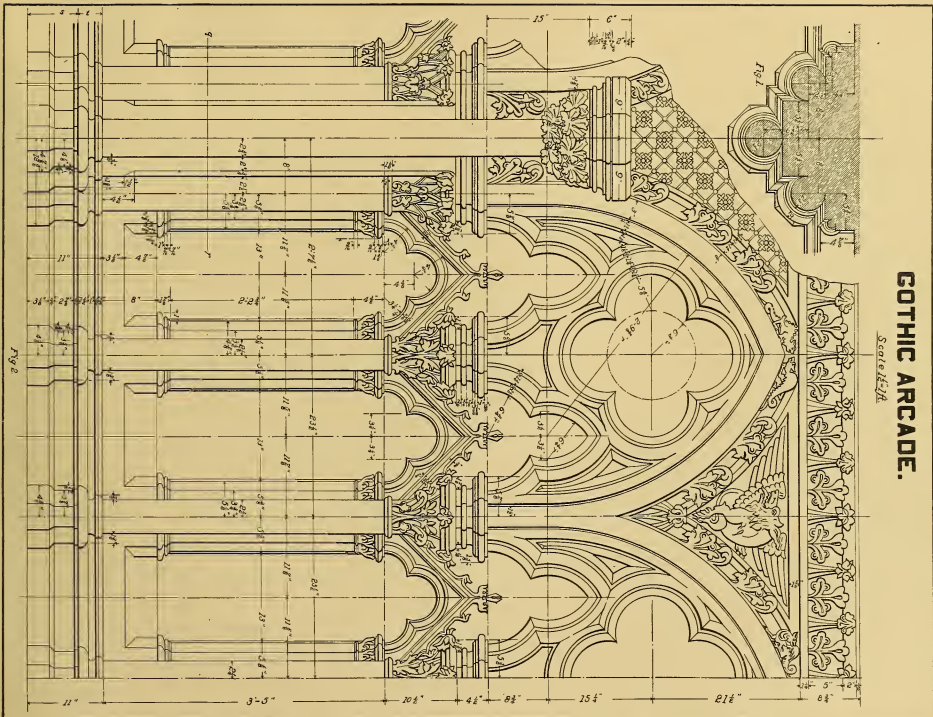


CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.

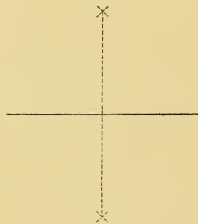




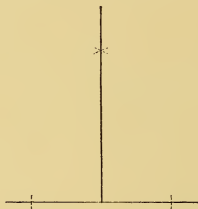
GOTHIC ARCADE.

Scale 1/2" = 1"

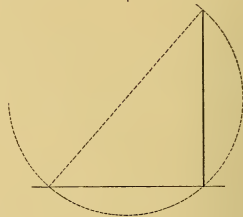
PROBLEM 1: To bisect a straight line.



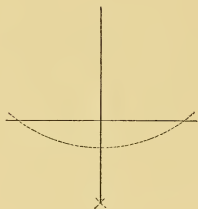
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



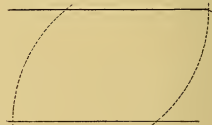
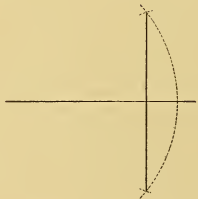
CASE II.

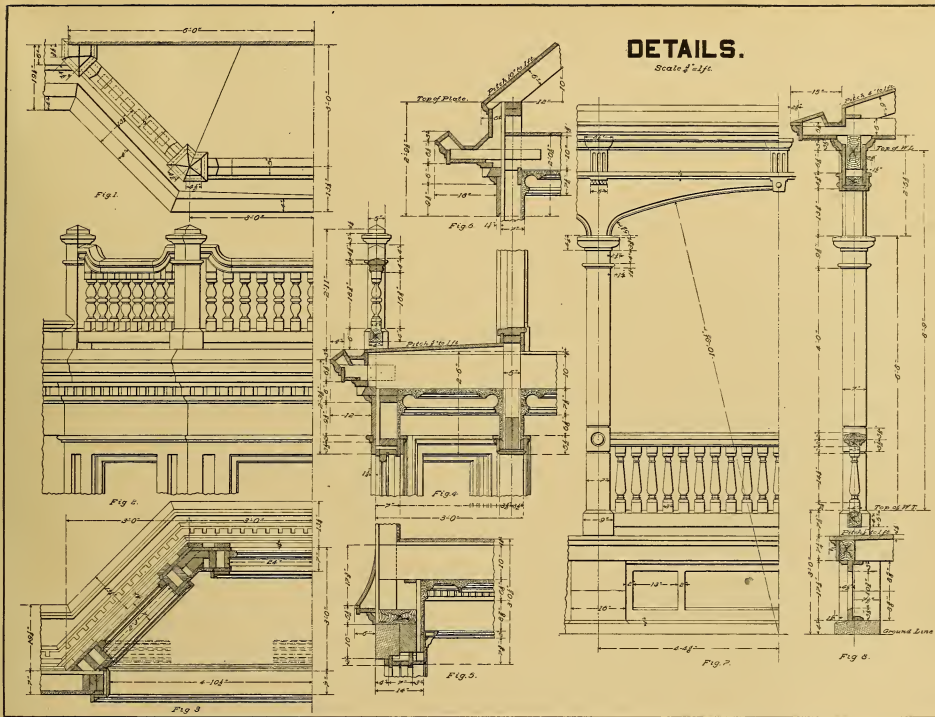


PROBLEM 3: To draw a perpendicular to a straight line, from a given point without it:
CASE I.



PROBLEM 4: Through a given point, to draw a straight line parallel to a given straight line.



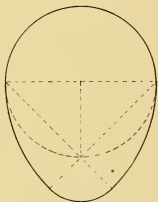


MAY 22, 1897.

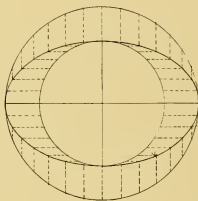
Photograph of Plate Drawn by H. H. Anderson, A. D. 146, Insurance and Drafting, Age 24,
Monumental Building, Sidney, Ohio.

H. H. ANDERSON, CLASS N° A. D. 146.

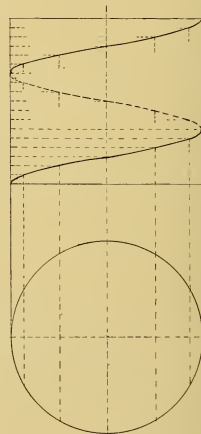
PROBLEM 22. To draw an egg-shaped oval.



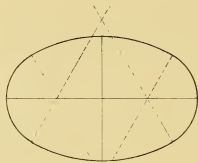
PROBLEM 23. To draw an ellipse, the diameters being given.



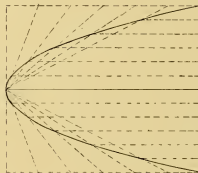
PROBLEM 26. To draw a helix, the pitch and the diameter being given.

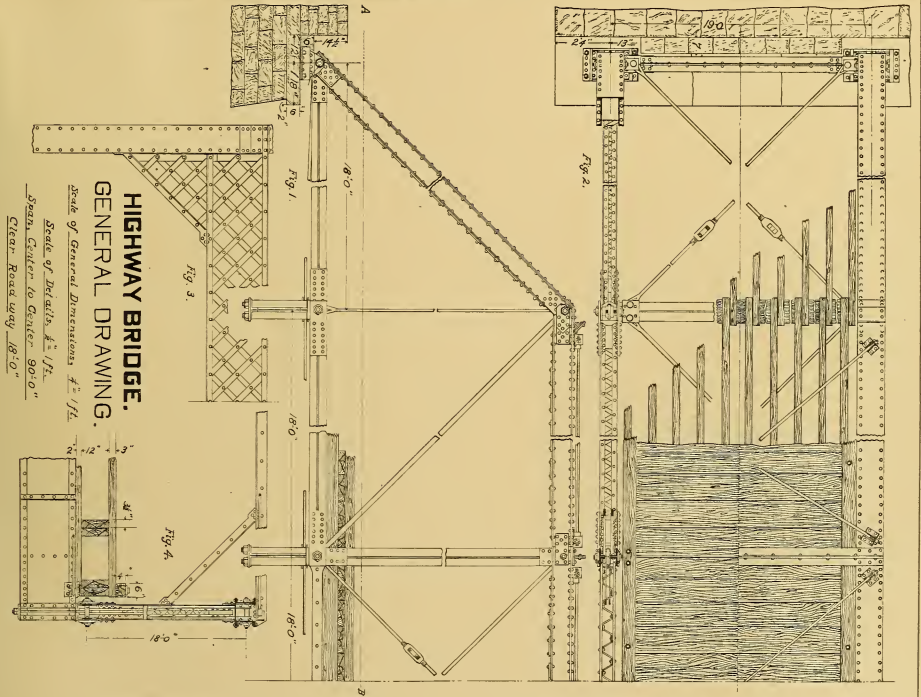


PROBLEM 24. To draw an ellipse with circular arcs.



PROBLEM 25. To draw a parabola, the axis and longest double ordinate being given.





OCT. 25. 1897.

SAMUEL M. EVANS. CLASS N° B 239.

Photograph of Plate Drawn by S. M. Evans, B. 239, Template-Maker, Age 31,
 Steelton, Pa.

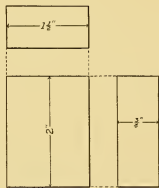


Fig. 1.

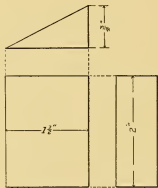


Fig. 2.

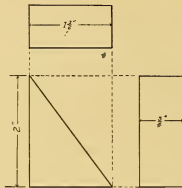


Fig. 3.

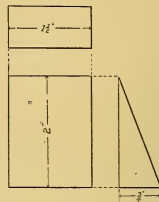


Fig. 4.

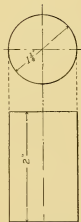


Fig. 5.

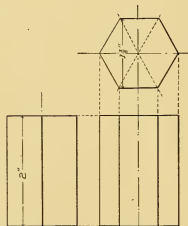


Fig. 6.

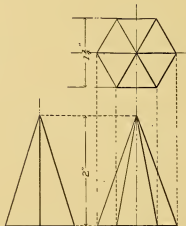


Fig. 7.



Fig. 8.



Fig. 9.

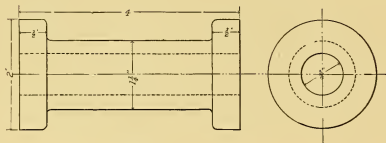


Fig. 10.

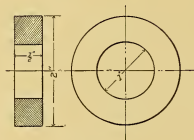


Fig. 11.

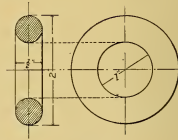
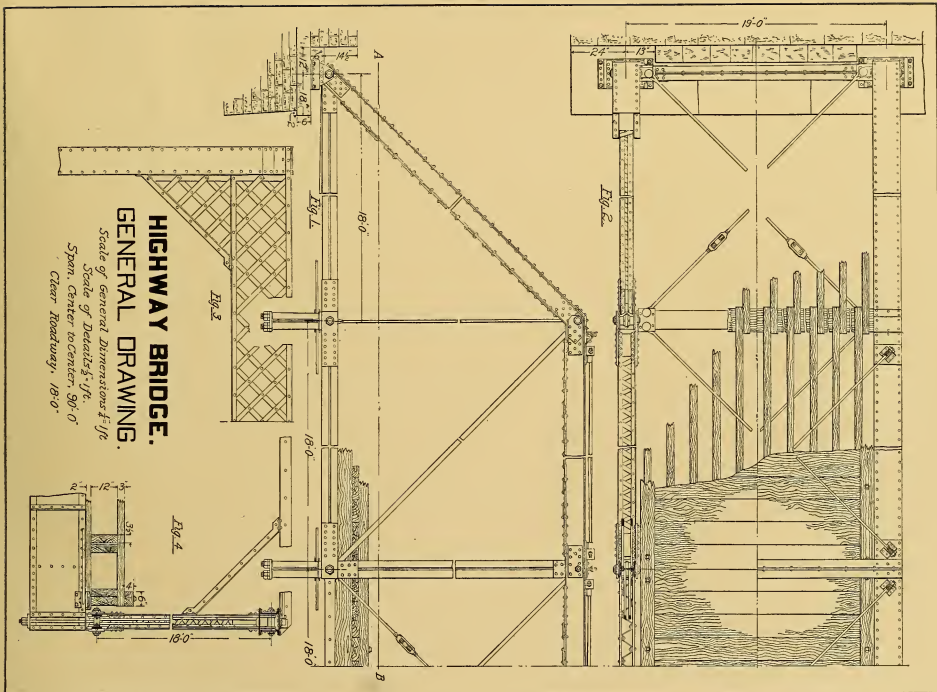


Fig. 12.



HIGHWAY BRIDGE.
GENERAL DRAWING.

Scale of General Dimensions $\frac{1}{16}$ "
Scale of Details $\frac{1}{8}$ "
Span, Center to Center, 30'-0"
Clear Roadway, 18'-0"

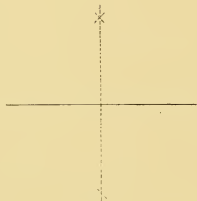
OCTOBER 9, 1897

Photograph of Plate Drawn by Chas. D. Boggess, B. 65, Surveyor, Age 27,
Box 466, Ashland, Ky.

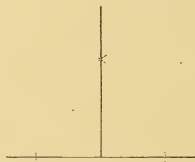
CHAS. D. BOGGESS CLASS B. 65

PLATE I

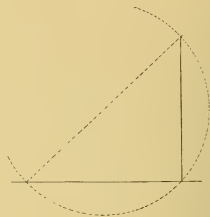
PROBLEM 1: To bisect a straight line.



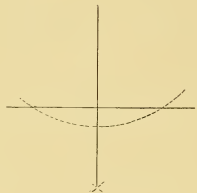
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



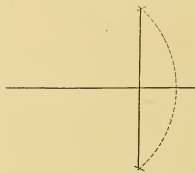
CASE II.



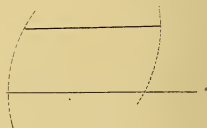
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



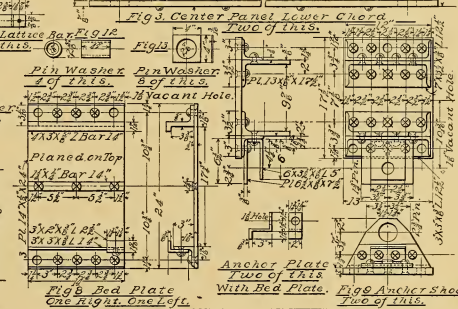
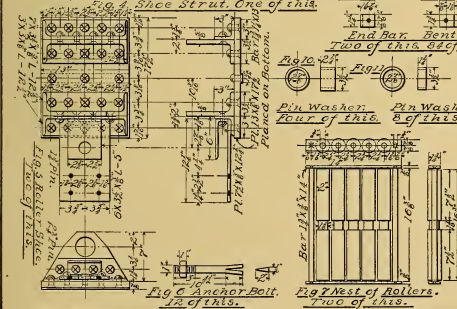
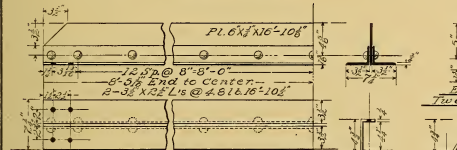
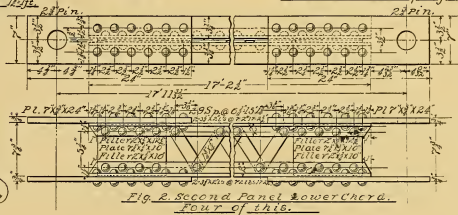
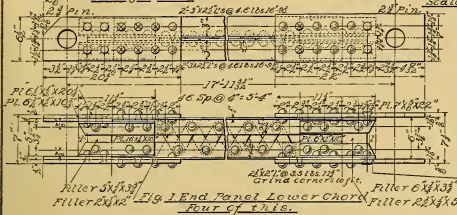
Dec. 30 1895

Photograph of Plate Drawn by W. A. Clafford, R. 162, Operator, Age 28,
Thelma, Ind. *W. A. Clafford, Class No. 691.*

90FT. BRIDGE DETAILS.

Material:
Wrought Iron.

Note: All rivets are $\frac{1}{2}$ " unless otherwise specified.

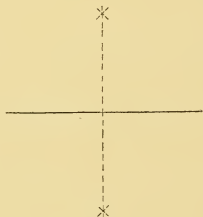


APR. 2, 1896.

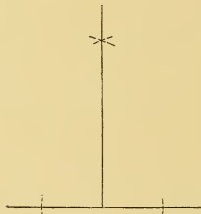
Photograph of Plate Drawn by W. A. Clefford, R. 162, Operator, Age 28, Thelma, Ind.

W. A. CLEFFORD. R. R. 162.

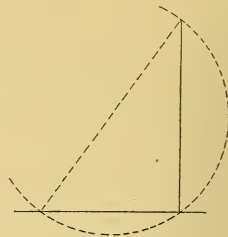
PROBLEM 1: To bisect a straight line.



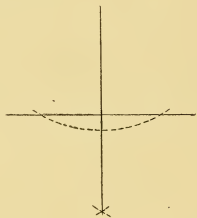
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



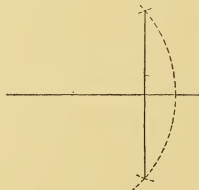
CASE II.



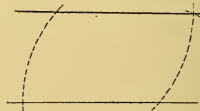
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



MAP OF A VILLAGE.

Scale 1 in. = 200 ft.



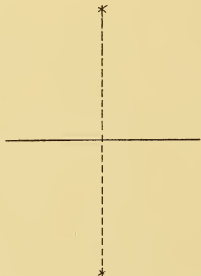
MAR. 17. 1896.

Photograph of Plate Drawn by John K. Walker, S. M. 16, Farmer, Age 38,
North Gage, N. Y.

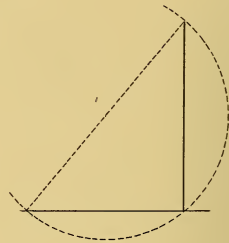
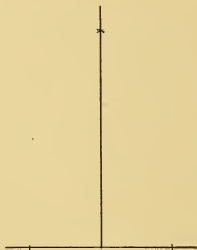
JOHN K. WALKER. No. 16 S.M.

PLATE 1

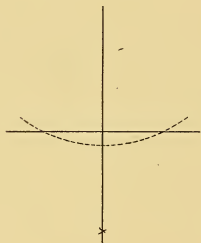
PROBLEM 1: To bisect a straight line.



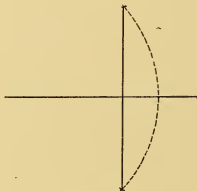
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



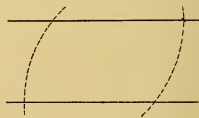
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I



CASE II

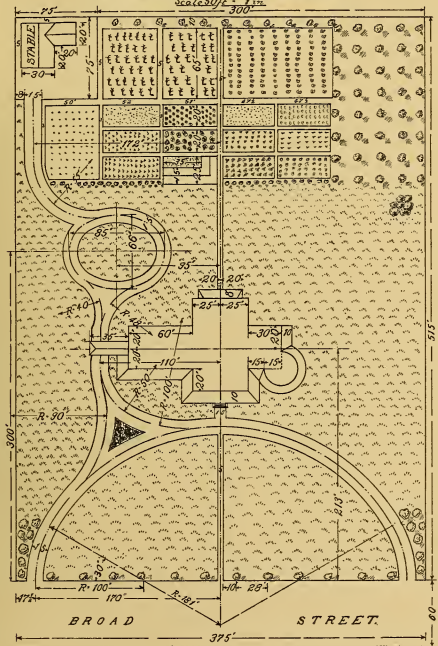


PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



PLAT OF HOUSE GROUNDS AND GARDENS

Scale 50 ft. = 1 in.



PLAT OF A PORTION OF A TOWN

Scale 250 ft. = 1 in.



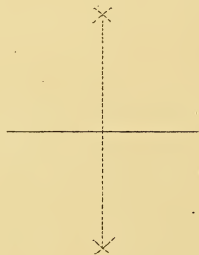
JULY 20 1896

Photograph of Plate Drawn by Theo. Schifflin, S. M. 23, Engineer and Solder, Age 24,
326 West Forty-ninth Street, New York, N. Y.

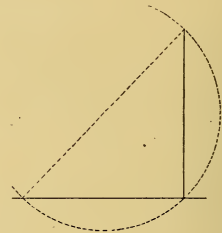
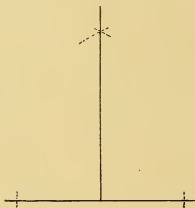
THEO. SCHIFFLIN CLASS N^o S. M. 23

PLATE I.

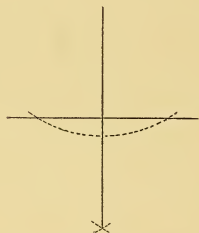
PROBLEM 1: To bisect a straight line.



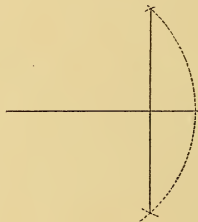
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line
CASE I.



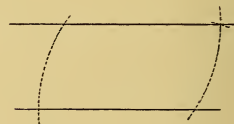
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



BOILER SETTING

Scale 1"=18".

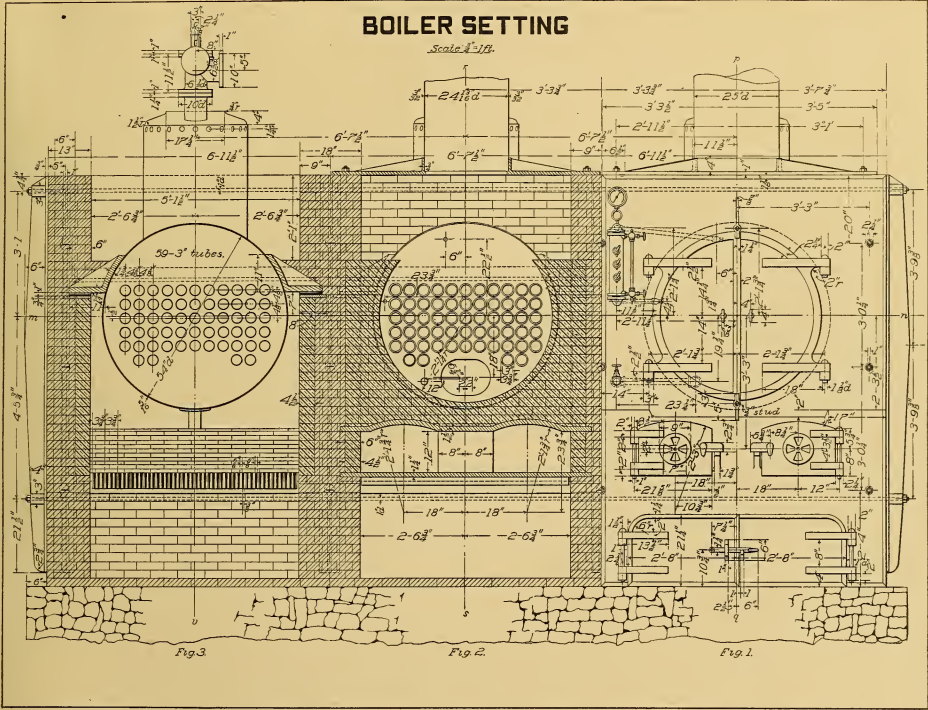


Fig. 3

Fig. 2

Fig. 1

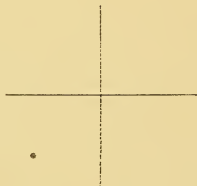
AUG. 18, 1896

Photograph of Plate Drawn by Geo. A. McDonnell, C. 2449, Machinist, Age 22,
Winooski, Vt.

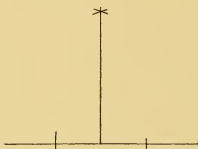
G. A. M^o DONNELL, CLASS N^o C. 2449.

PLATE I.

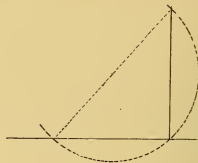
PROBLEM 1. To bisect a straight line.



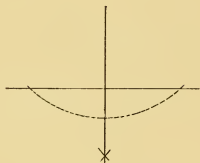
PROBLEM 2. To draw a perpendicular to a straight line from a given point in that line.
CASE I.



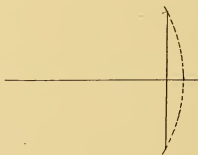
CASE II



PROBLEM 3. To draw a perpendicular to a straight line from a point without it.
CASE I.



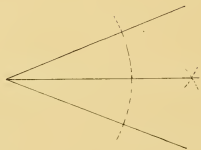
CASE II



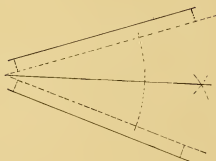
PROBLEM 4. Through a given point to draw a straight line parallel to a given straight line.



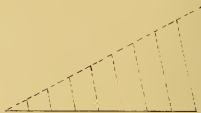
PROBLEM 5 To bisect a given angle:
CASE I.



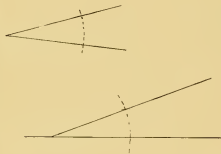
PROBLEM 5 To bisect a given angle:
CASE II



PROBLEM 6 To divide a given straight line into any required number of equal parts:



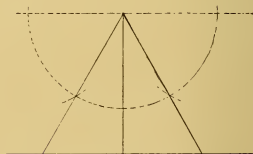
PROBLEM 7 To draw a straight line through any given point on a given straight line to make any required angle with that line:

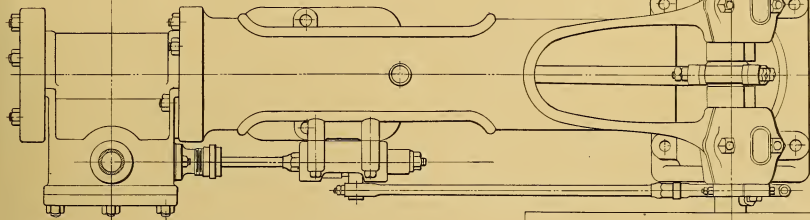


PROBLEM 8 To draw an equilateral triangle one side being given:



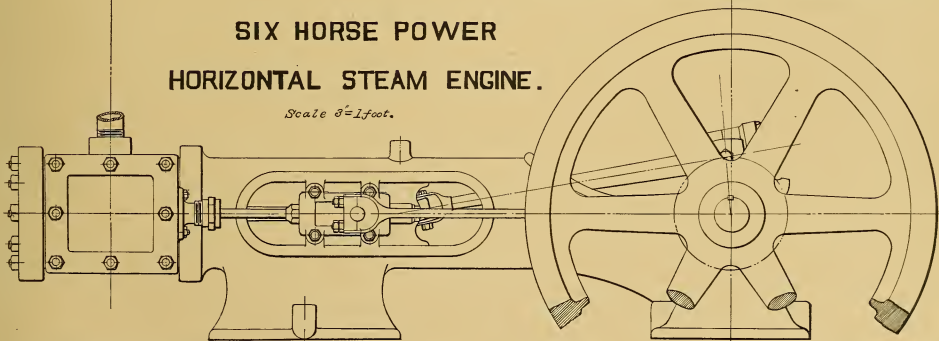
PROBLEM 9 The altitude of an equilateral triangle being given, to draw the triangle:



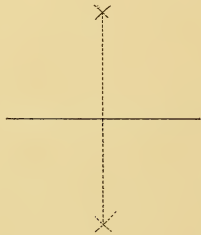


SIX HORSE POWER
HORIZONTAL STEAM ENGINE.

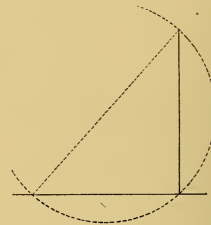
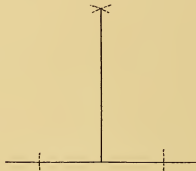
Scale 3/4"=1foot.



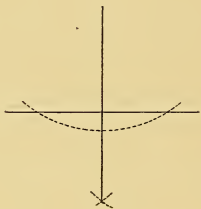
PROBLEM 1: To bisect a straight line.



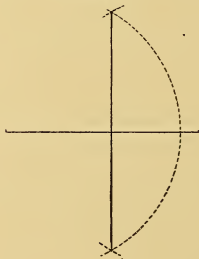
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



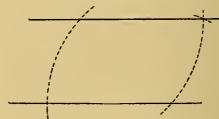
PROBLEM 3: To draw a perpendicular to a straight line from a point without it.
CASE I.



CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to given straight line.



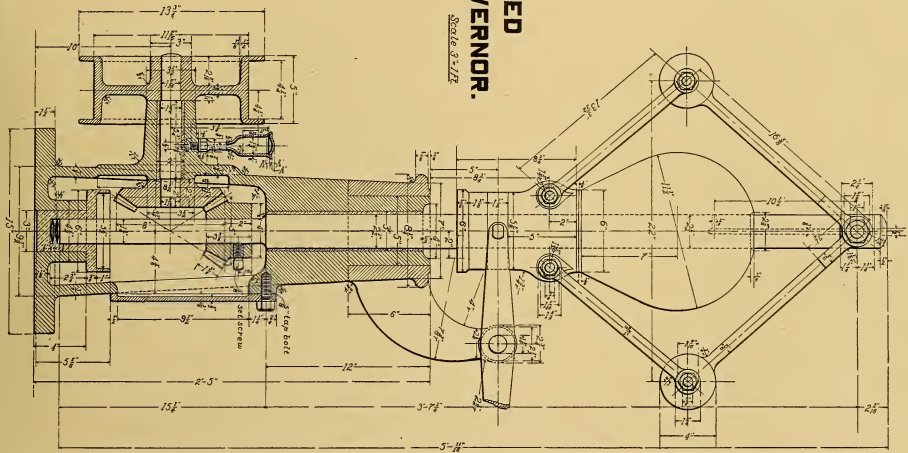
MAY 9, 1896.

Photograph of Plate Drawn by A. O. Foskett, M. D. 636, General Inspector, Age 25,
Box 34, Iilon, N. Y.

A. O. FOSKETT, CLASS No 636.

**WEIGHTED
GOVERNOR.**

Scale 3/4" = 1"



JULY 17, 1897

Photograph of Plate Drawn by A. O. Foskett, M. D. 636, General Inspector, Age 25,
Box 34, Ilion, N. Y.

A. O. FOSKETT, M. D. 636

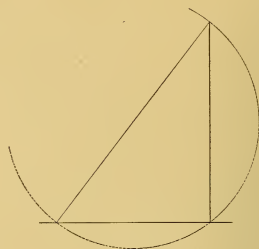
PROBLEM 1: To bisect a straight line



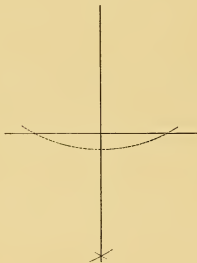
PROBLEM 2: To draw perpendicular to a straight line from a given point in that line.
CASE I.



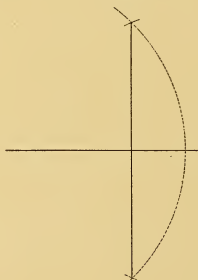
CASE II.



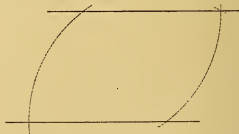
PROBLEM 3: To draw a perpendicular to a straight line from a point without it
CASE I.

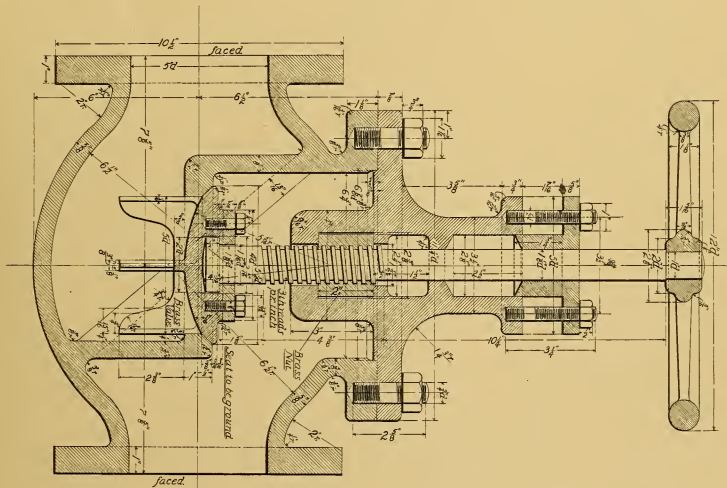


CASE II.



PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.





5-INCH GLOBE VALVE.
Cast Iron
Hand Stair

NOV. 2. 1897

Photograph of Plate Drawn by Louis Winter, M. D. 856, Student, Age 19,
 900 Center Avenue, Reading, Pa.

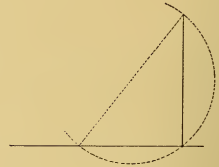
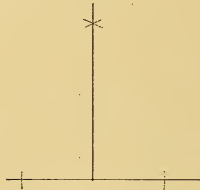
LOUIS WINTER, CLASS N^o MD 856.

PLATE I.

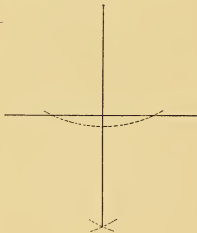
PROBLEM 1: To bisect a straight line.



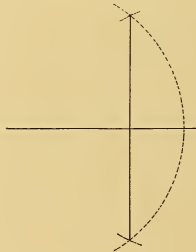
PROBLEM 2: To draw a perpendicular to a straight line from a given point in that line.
CASE I.



PROBLEM 3: To draw a perpendicular to a straight line from a point without it.

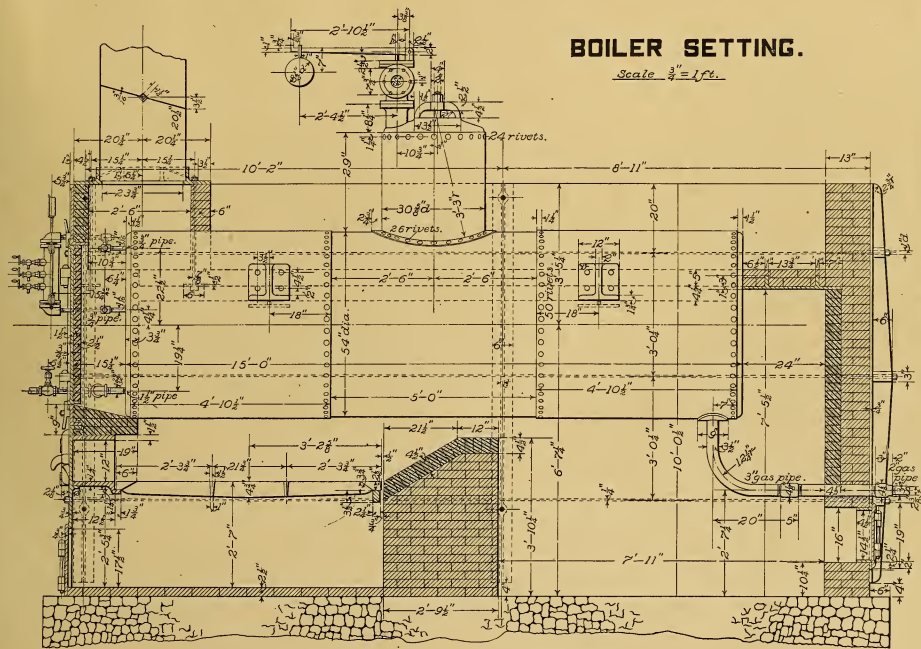


PROBLEM 4: Through a given point to draw a straight line parallel to a given straight line.



BOILER SETTING.

Scale $\frac{3}{4}'' = 1'.$

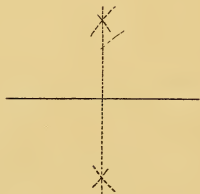


AUGUST 16, 1897.

CHARLES WALLRAFF, CLASS No. 42 M.D.

Photograph of Plate Drawn by Chas. G. Wallraff, M. D. 49, Engineer and Machinist,
Age 28, 53 Shepherd Street, Cleveland, Ohio.

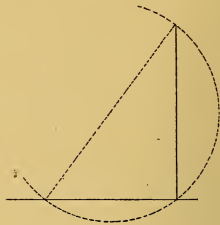
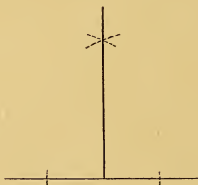
PROBLEM 1 To bisect a straight line.



PROBLEM 2 To draw a perpendicular to a straight line from a given point in that line

CASE I

CASE II



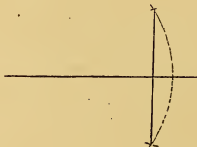
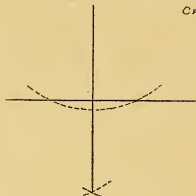
PROBLEM 3 To draw a perpendicular to a straight line from a point without it.

CASE I

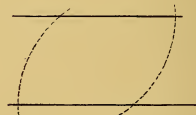
CASE 2

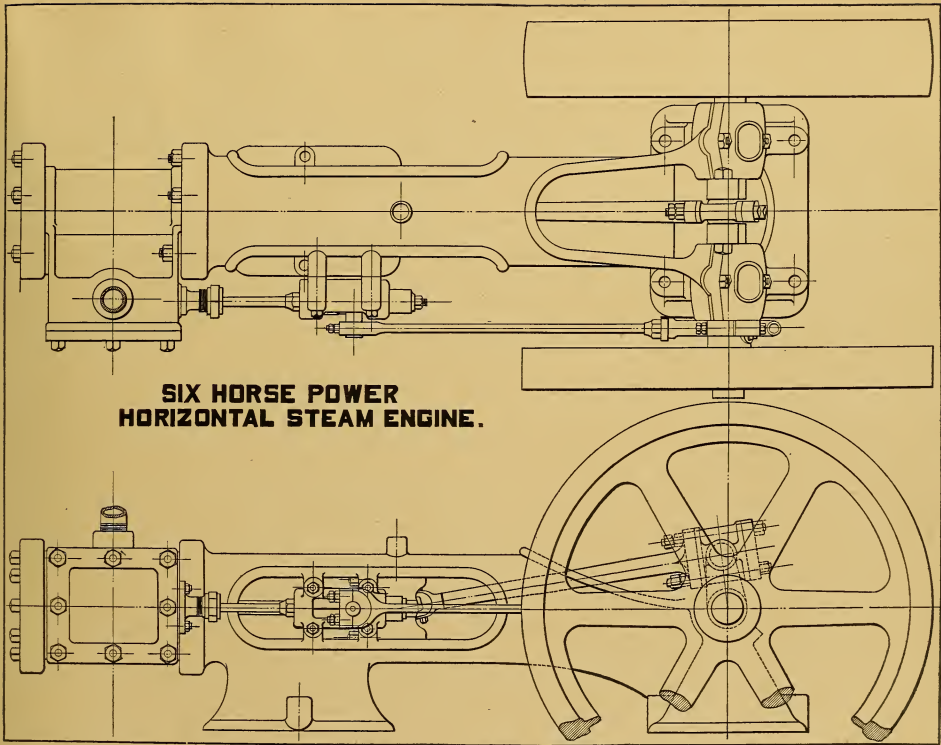
CASE II

CASE 1 CASE 2



PROBLEM 4 To draw a straight line parallel to a given straight line.





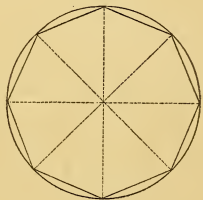
**SIX HORSE POWER
HORIZONTAL STEAM ENGINE.**

AUGUST 12, 1897.

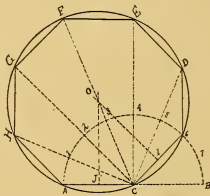
Photograph of Plate Drawn by Fred G. Waring, M. E. 1013, Laborer, Age 17,
Box 57, Jermyn, Pa.

FRED GWARING CLASS N^o M.E. 1013.

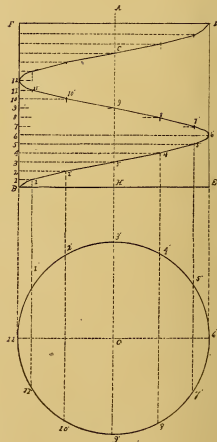
PROBLEM 16 To inscribe a regular octagon in a given circle.



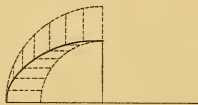
PROBLEM 17 The side of a regular polygon being given to construct the polygon.



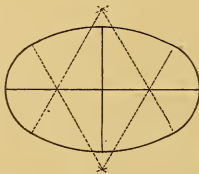
PROBLEM 20 To draw a helix the pitch and the diameter being given.



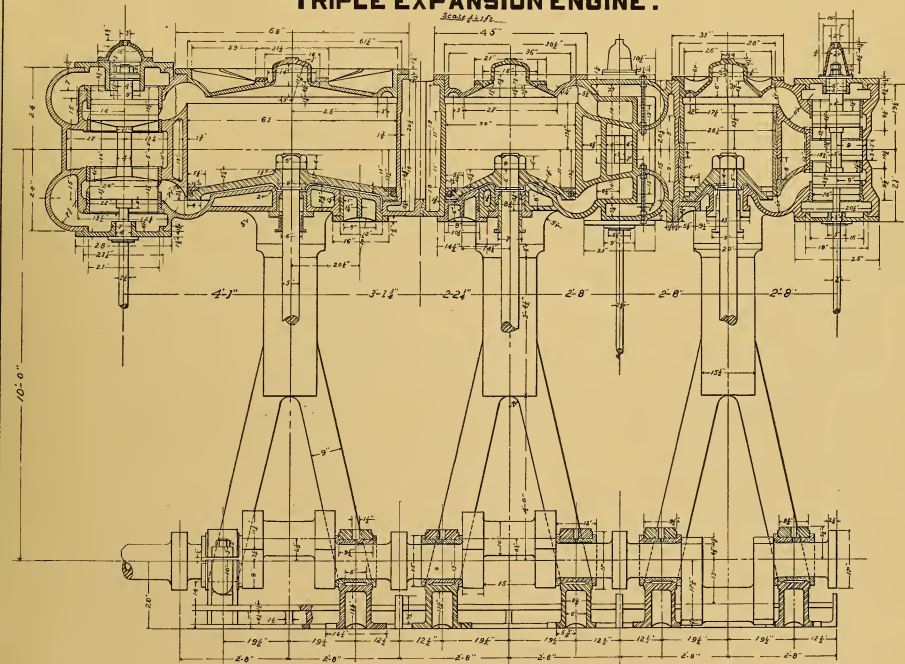
PROBLEM 18 To draw an eclipse the diameters being given.



PROBLEM 19 To draw an ellipse with circular arcs.



TRIPLE EXPANSION ENGINE.



NOVEMBER 3 1897.

Photograph of Plate Drawn by C. J. Smith, H. 2060, Boatman, Age 30,
Athens, N. Y.

C. J. SMITH CLASS NY#K 2060

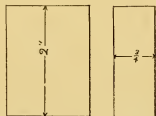


Fig. 1.

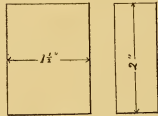
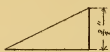


Fig. 2.

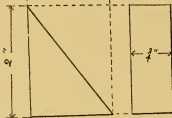
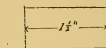


Fig. 3.



Fig. 4.

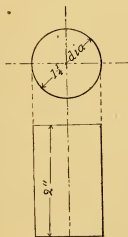


Fig. 5.

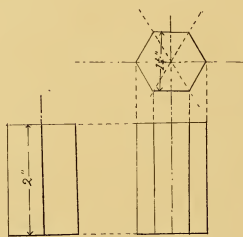


Fig. 6.

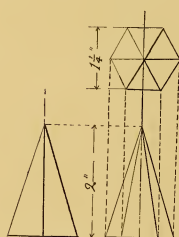


Fig. 7.

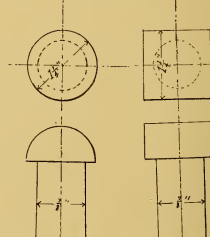


Fig. 8.



Fig. 9.

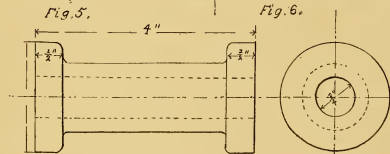


Fig. 10.

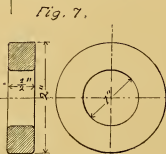


Fig. 11.

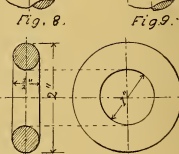
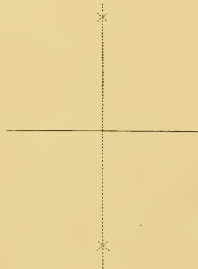
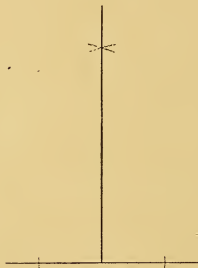


Fig. 12.

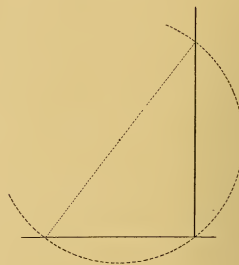
PROBLEM 1. To bisect a straight line



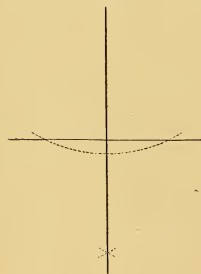
PROBLEM 2. To draw a perpendicular to a straight line from a given point in that line.
CASE I.



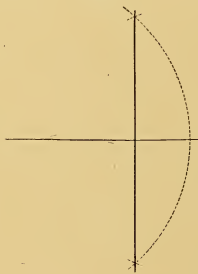
CASE II



PROBLEM 3. To draw a perpendicular to a straight line from a point without it.
CASE I



CASE II.



PROBLEM 4. Through a given point to draw a straight line parallel to a given straight line.



BENCH VICE

Steel Casting. Half Size.

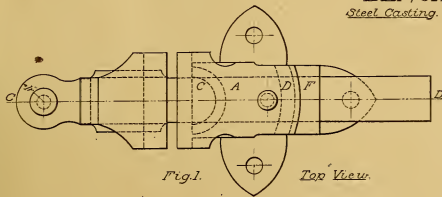


Fig. 1. Top View.

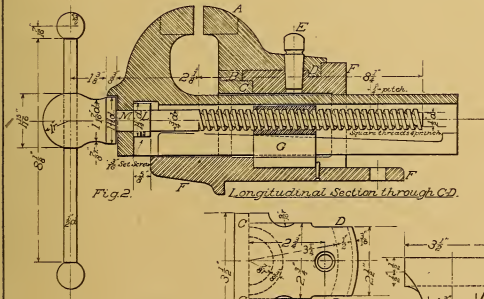


Fig. 2. Longitudinal Section through CD.

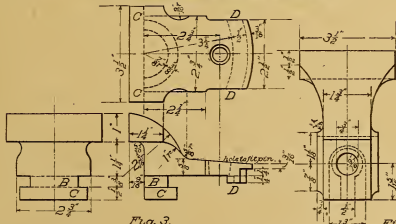


Fig. 3.

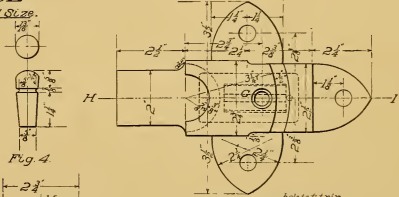


Fig. 4.

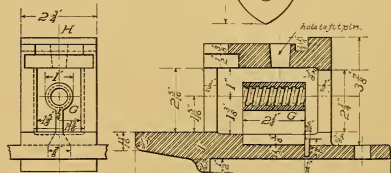


Fig. 5. Longitudinal Section through HI.

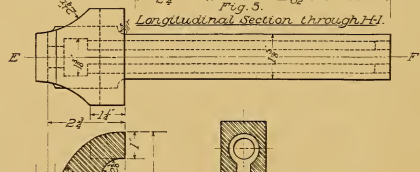
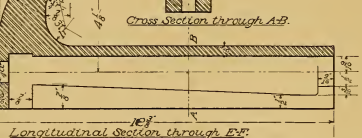


Fig. 6.

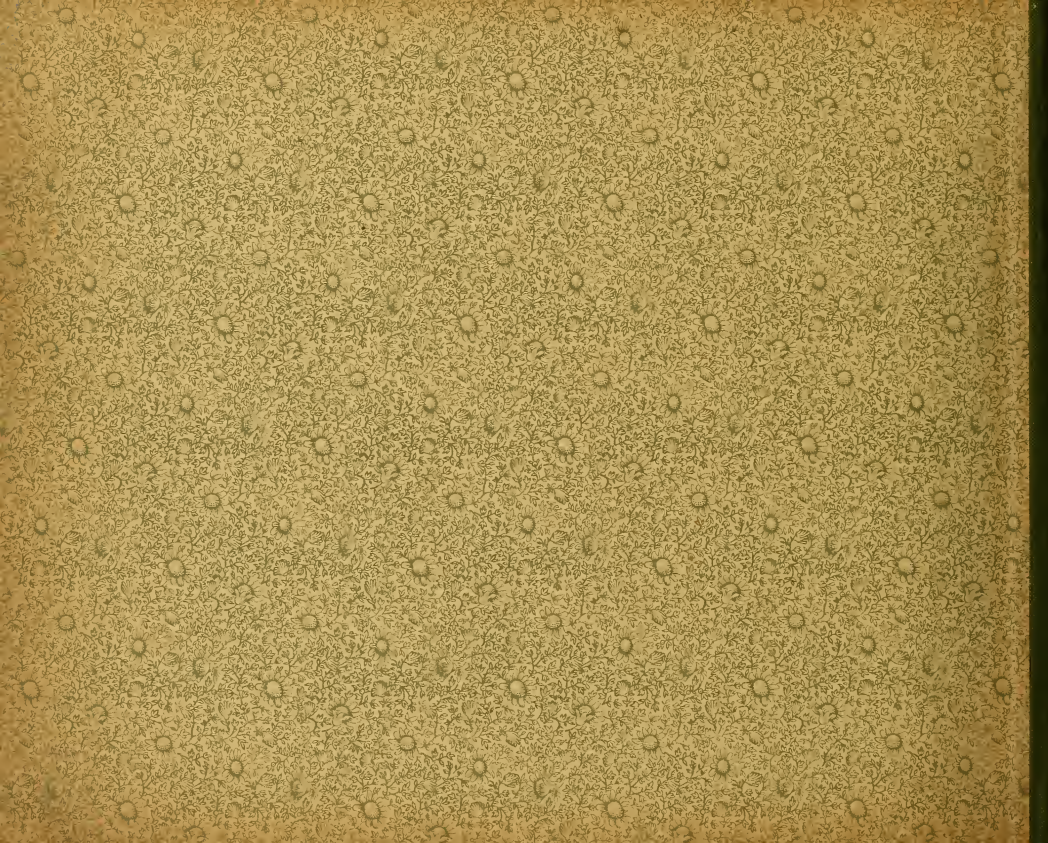


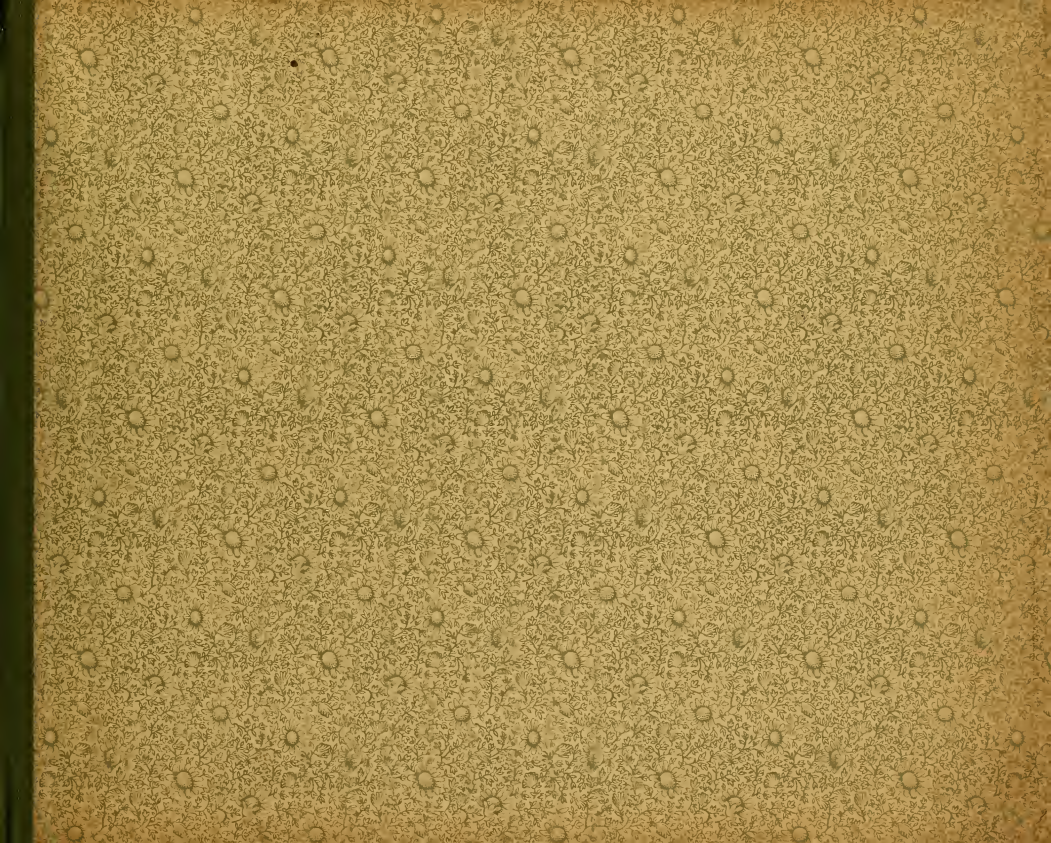
Cross Section through AB.

Longitudinal Section through EF.

July 1901

May-4. 1901





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