Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

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THE
Scientific American,
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BY MUNN & COMPANY.
O. D. MUNN, S. H. WALES, A. E. BEACH.

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An Indian Shroud of Gold.

Hon. Thomas Ewbank, ex-Commissioner of Patents, communicates to the *National Intelligencer* some interesting information in regard to recent discoveries in the excavation of Peruvian tumuli. The information was received by Mr. Ewbank from W. W. Evans, engineer of the Arica and Tacna railroad in Peru. Mr. Evans states that in making excavations for the railroad at Arica hundreds of graves are demolished, in which are numerous Indian relics. The excavations are seventy feet deep, and the soil is loose sand. Among other intersting relics, an Indian was started out of his resting place rolled up in a shroud of gold. Before Mr. Evans had knowledge of the incident the workmen had cut up this magnificent winding-sheet and divided it among themselves. With some difficulty he obtained a fragment, and dispatched it to Mr. Ewbank. Mr. Evans notices as a remarkable fact that in hundreds of Indian skulls which he has examined not one has a decayed tooth. Mr. Ewbank thinks the weight of the entire shroud must have been eight or nine pounds, and had it been preserved would have been the finest specimen of sheet gold that we have heard of since the times of the Spanish conquest.

Decimal Currency in England.

Decimal currency is to be introduced into Great Britain. The pound will be retained as the unit, and divided into one thousand parts; the half-crown will be abolished—the shilling fifty, the sixpence twenty-five, and a new coin will be introduced representing five farthings, while the present farthing will be depreciated one twenty-fifth in value—that is, there will be a thousand to the pound sterling, instead of nine hundred and sixty.

Early Manufactures in Rhode Island.

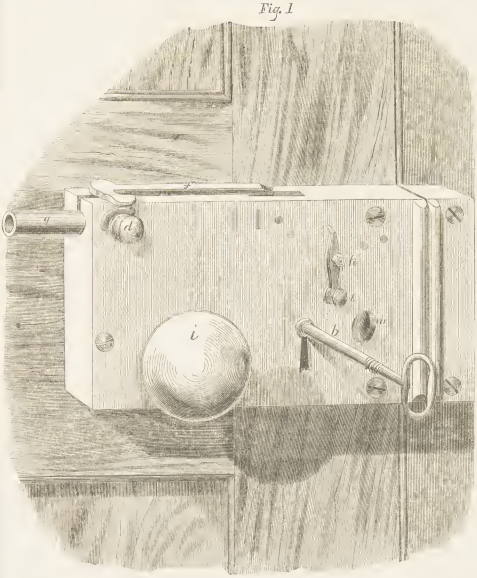
A correspondent of the Providence, R. I., *Journal* gives some curious information relative to the early manufactures of Scituate. One Charles Hopkins used to manufacture cedar pails there about 70 years since, some of which are still in use, and have been ever since they were made. These are pails worthy of the name. The most of those made at present are very cheap, but as poor in quality as their price is low. One Jabez Hopkins used to make iron smoking pipes there, and his son Ezekiel made excellent swords. In 1735 Samuel Waldo, a merchant of Boston, bought an iron mine in Scituate, and erected a foundry, in which iron cannon were afterwards cast that did good service during the Revolution.

New Beacon Light.

A new lighthouse and keeper's dwelling have been erected at Watch Hill Point, near Stonington., R. I. Instead of the present revolving light, a fixed white light will, on and after the first of February, 1856, to be shown from the new tower, which is fifty feet N. W. of the old site. The light will be 62 feet above mean low water, and will be visible from the deck of a coaster, about 12 1-2 nautical miles.

PATENT SAFETY AND ALARM LOCK.

Fig. 1

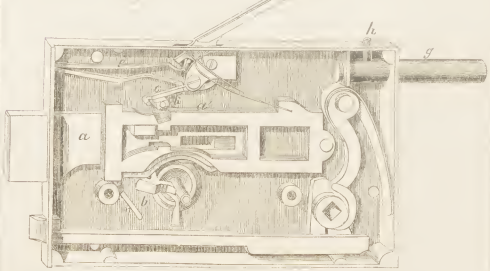


The accompanying engravings are illustrative of the ingenious Safety Alarm-Lock, patented by John Schneider, of Rochester, N. Y., May 1st, 1855.

The chief feature of novelty consists in the combination of a pistol with the interior parts of the lock, in such a manner that if a burglar should be so far successful as to introduce the proper shaped key, he will, by the very act of pushing back the bolt, cause the pistol to fire off, and thus instantly alarm the whole household, and perhaps neighborhood. The attachment and operation of the pistol is done in a very simple manner, and the expense is quite small. There is also no alteration in the size or general form of the lock, as will be observed by a glance at the exterior view, fig. 1. A side view, showing the interior portions of the lock, is seen at fig. 2.

In fig. 1, *b* is the key, and *i* is the usual knob or handle; *g* represents a small pistol barrel having a cap nipple *h*; *f* is the hammer for striking the cap on the nipple, to discharge the pistol. The inner end of the hammer, *f*, fig. 2, is provided with a curved plate through which a pivot passes into the case, thus forming a fulcrum pin on which it turns; it also has a projection which acts upon the end of a bent spring, *e*, similar to that of a gun lock *c* is the trigger, resting upon a small dog, *k*.

Fig. 2



The tumblers, when the bolt moves back, turn the dog, and cause it to press up and discharge the trigger, *c*. The dog, *k*, is connected with the button, *l*, seen on the exterior of the lock; the use of this button is to move the trigger by hand, and thus permit the hammer to be gently uncocked whenever desirable, as, for example, in the day time.—When the hammer is uncocked, the bolt is disconnected from the pistol, and operates like an ordinary lock. The connection is instantly resumed, however, by simply cocking the hammer. *a* is the bolt, and *a'* represent three tumblers which are operated by the prongs or forks of the key, to throw them up, and in line to allow the bolt, to be moved back and forth to lock and unlock the door. The spring, *e*, under the heel of the hammer, holds the same in position, like the main spring of a gun lock; but when the key is inserted in the lock, the tumblers thrown up, and the bolt acted upon to unlock the door, the trigger, *c*, is slightly pressed up by the dog, *f*, as before described, which relieves the spring, *e*, the hammer, *f*, is tripped or set free, and comes down upon the cap, discharging the pistol, and causing an alarm that will put to flight the most ferocious and daring burglar. *d*, fig., is the breech-pin, which secures barrel *g*.

Independent of the alarm, the lock is a good one. For additional security it has a safety hasp, *n*, terminating in a button, *m*, on the exterior of the lock, as will be seen in fig. 1. By turning the button, the hasp, *n*, will be thrown up against and across the tumblers of the lock, in such a manner as to prevent any key whatever from moving the same. The knob is also arranged, if required, to operate the hammer of the pistol barrel, so that the lock can be set to give an alarm by the report of the pistol, either when locked, or simply fastened by the common catch bolt.

The above is a safe lock to the careful owner but a dangerous one to the thief.

More information may be obtained by letter addressed to the patentee, at Rochester, N. Y., by whom it is manufactured in various forms.

Belgian Broadcloth Works.

An English paper gives a very interesting description of the celebrated establishment of Messrs. Bolley, at Verviers, who were the first to give a world-wide reputation to Belgian broadcloths. Their works are driven by four water-wheels and five steam engines, and they employ between 1300 and 1400 laborers, many of them the most skilled in Europe. It is not easy for an artisan to obtain a situation in their establishment, but once employed, he is supported through all illness and infirmities to the end of his days, unless he forfeits his place by gross misconduct.

To Make Lard and Tallow Candles.

The following method of making the above-named candles is described in the New England *Farmer* by a correspondent:—"I kept both tallow and lard candles through the last summer, the lard candles standing the heat best, and burning quite as well, and giving as good light as tallow ones. Directions for making good candles from lard: For 12 lbs. of lard take 1 lb. of saltpeter and 1 lb. of alum; mix and pulverize them; dissolve the saltpeter and alum in a gill of boiling water; pour the compound into the lard before it is quite all melted; stir the whole until it boils, and skim off what rises let it simmer until the water is all boiled out, or till it ceases to throw off steam; pour off the lard as soon as it is done, and clean the boiler while it is hot. If the candles are to be run, you may commence immediately; if to be dipped, let the lard cool first to a cake, and then treat it as you would tallow."

To Prevent the Alteration of Bank Notes.

Ulysses B. Vidal, of Philadelphia, proposes the following plan to manufacture bank bills, to prevent them from being altered from lower to higher denominations. "Fine floss silk is to be woven into open patterns, delineating the various denominations of the bills. A single pattern for each bill is then pressed into the paper during the process of the manufacture." This method of making bills, he believes, would insure the public against fraudulently altered bank notes. The lines of the floss silk must extend invariably across each bill.

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Veterinary.

Wash for Wounds on Cattle.—Dissolve one ounce of sulphate of zinc (white copperas) in a quart of soft water, and wash the wound with this, morning and evening. It is an excellent wash for common sores, but for virulent ulcers of long standing, the following is also an excellent and more powerful wash: Sulphate of zinc, one ounce; corrosive sublimate, one dram; and muriatic acid (spirit of salt,) 4 drams,—all dissolved in a pint of soft water and bottled for use. Apply it with a sponge morning and evening.

Oil for Wounds—Take one pint of neat's foot oil, and half an ounce of the oil of thyme; mix them together and add, by degrees, 6 drams of the oil of vitriol. These ingredients must be well stirred in a glass or stone-ware vessel until they are perfectly incorporated, then bottled up for use. This is an excellent oil for bruises in the feet of horses, and oxen.

Hoof Ointment—Take one pound each of tar and tallow, and mix them with half a pound of common turpentine in a stone-ware dish. Stir them well until they are thoroughly incorporated together. This forms an excellent dressing for the sore hoofs of horses and oxen.

How to Plant Potatoes.

A pamphlet has been published in Scotland by a farmer named Craig, on the potato disease and its cure. By planting three different kinds of potatoes together last year, very favorable results were achieved. Two out of the three varieties planted had been on previous occasions affected by the disease, all were found to be perfectly healthy and sound when dug, and experience has shown that they kept well during the winter. He believes that the potato disease may be safely attributed to the violation of one of the laws of nature, and that the generation of the malady is occasioned by the plants being too closely bred, or, in other words, by "sub-breeding."

The lesson we derive from this is, that two or more varieties of seed potatoes should be planted in each hill.

Improvement in Mariner's Compasses.

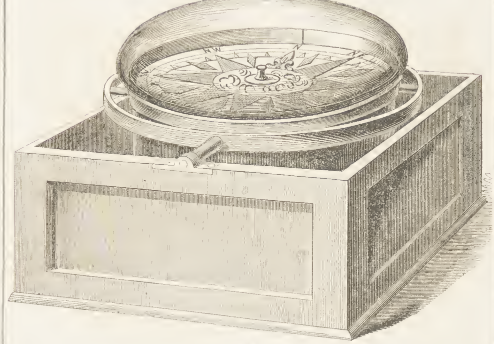
Mr. John Prime, of Washington, N. C., has suggested and patented the method of covering the boxes of all kinds of compasses with a *convex* glass, so as to shed water, and thus exclude moisture. Our engraving exhibits the improvement. Simple as the invention may seem, it is, nevertheless, an important one. The common plan is to use a flat glass placed within the lips of the compass box; this forms a shallow cup, which catches water; the glass is somewhat smaller than the diameter of the box, so as to allow for contraction and expansion occasioned by differences of temperature.

The compass is an instrument that must be always in sight; consequently, on shipboard, or in surveying, it is more or less exposed to the weather. When water falls upon the flat glass it obscures the sight of the needle, and also penetrates through the cement into the box. Here it turns into vapor and lodges on the underside of the glass, again obstructing the vision; it also defaces the card, rusts the needle, and endangers its proper operation. It is alleged that the electricity induced by the conversion of the water in the box into vapor, although quite trifling in amount, is sufficient, however, to affect the magnetic properties of delicate instruments like the compass. In stormy weather, when a correct compass is most needed on shipboard, it is, as at present constructed, most likely to become deranged.

All of the objections named are obviated by Mr. Prime's improvement. As shown in our engraving the glass is convex, and placed wholly outside of the compass box, forming a complete cover. The space between the rim of the glass and the box is filled with an elastic material, which permits expansion, and always preserves a tight joint, so that water cannot beat in. Indeed, a compass thus fitted could be submerged without the least detriment. This invention is worthy the attention of all ship owners, instrument makers, and others. It is applicable to surveyor's compasses and all other kinds.

Address the inventor as above for further information. Patented in the U. S. Feb. 12, 1856. Also patented in England through the Scientific American Agency.

IMPROVEMENT IN THE MARINER'S COMPASS.



IMPROVED FOUNTAIN PEN.

New Fountain Pen.

In this improvement the pen handle is made hollow, and in its upper part there is a small india rubber bag, A, which contains the ink A' is a cork which is removed when the ink bag is to be filled. The lower part of the bag terminates in a tube, B, down which the fluid flows and escapes at valve C, on to a bulb or ink collector, D, thence to the under side of the pen. Valve B is opened and closed by the finger, a lever, E, and spring being provided for that purpose; the finger button, F, of the outside of the pen, connects with the valve lever, E; by pressing the button, the valve opens, and a supply of ink is thrown upon bulb D, and runs to the pen. When not wanted, the ink remains tightly enclosed, so that there can be no leakage. The end piece, G, encases and protects the pen point, so that the whole may be safely carried in the pocket. For traveling and other purposes, this contrivance is well adapted. Its construction is simple, economical for manufacture, &c. H. K. McClelland, M. D., Eldersville, Pa., is the inventor, of whom, and of G. W. Simons, maker, Ransted Place, 4th above Chestnut street, Philadelphia, Pa., further information may be obtained. Patented April 17, 1855.

Many-Colored Bank Note Counterfeits.

The Boston Association to suppress counterfeiting, has issued a circular, in which it is stated that Mr. Serapyan's method, to prevent counterfeiting, is not safe in preventing impositions. The supposed security of this plan consisted in the printing the notes in several supposed permanent colors. It was found that some of the colors could be removed, and the denomination of the bills altered, in such a manner as to pass for genuine ones, even with pretty close scrutiny. The Association has passed a resolution condemnatory of notes so printed. This Association advertised through our columns for a method to prevent counterfeiting, but it has not met with the *right* invention yet.

The Shortest Passage across the Atlantic.

The new iron steamer *Persia* left this port on the 2nd of last month at 3 P. M., and arrived at Liverpool on the 12th, at 8h. 40m. A. M., making the actual run in 9 days, 12 hours, and 7 minutes—allowing for the difference of apparent time. She then discharged cargo loaded up and sailed from Liverpool for this port on the 19th, at 10h. 25m. A. M., and arrived at the Light Ship at 15 minutes past 9 P. M., on the 28th, and next morning came up to the dock in 1 hour 35 minutes, making the actual Western run in 9 days, 16 hours 58 minutes, adding the apparent time to the actual time of sailing. She has thus made the two voyages back and forth, right after one another in 19 days, 5 hours, 5 minutes. The fastest western passage heretofore made was by the *Baltic*, in July, 1854. The voyage from dock to dock was made in 9 days, 17 hours, and 15 minutes, which was, (if we take the time the *Persia* lay outside, into account.) the shortest western passage west yet made. The *Persia's* eastern voyage was the shortest ever made by five hours.

Copper Ore a Dangerous Cargo.

The ship *Georgia*, which recently arrived at Liverpool, Eng., from Savannah, brought some copper ore in cases, which proves to be an exceedingly dangerous cargo, for so great was the heat evolved during the passage, from the sulphur contained in the ore, that some of the cases were taken out of the ship completely charred, the lids being a mass of charcoal; while the cotton stowed immediately above them was partially burnt, and when landed from the ship, so hot as to make it painful for a man to thrust his hand into the bales. These ores should be first roasted to dispel the sulphur in them before they are shipped across the Atlantic.

A new Hot Air Locomotive.

We have seen the statement in some of our cotemporaries, that a hot air locomotive was very recently tried on some part of the New York and Erie Railroad, and proved a complete failure; also, that it is to be converted into a steam locomotive. Is there any truth in these statements? Will some one who knows give the public the facts of the case.

Another Steam Balloon.

A. M. Tippet, in Washington, D. C., is at work on a steam balloon, and it is stated in some of the papers, that an appropriation is about to be applied for in the Senate, to enable him to construct one to carry the mails to California.

The famous brazen column of Constantinople, described by Gibbon, has been discovered in that city. It consists of the bodies of three serpents, twisted into a column of brass—from the head of one of which Mahomet II. smote an under jaw with his battle-axe.

Science and Art.

Fish Eggs.

At a late sitting of the French *Societe Zoologique d'Aclimation*, M. Millett detailed a series of experiments he has lately made in conveying fecundated fish eggs, The result was, he said, that the eggs, when wrapped up in wet cloths and placed in boxes with moss, to prevent them from becoming dry and being jolted, may safely be conveyed not only during twenty or thirty, but even more than sixty days, either by water, railway, or diligence. He added, that he had now in his possession eggs about to be hatched, which have been brought from distant parts of Scotland and Germany, and even from America. M. Millet stated a fact which was much more curious—namely, that fecundated eggs of different descriptions of salmon and trout do not perish, even when the cloths and moss in which they are wrapped become frozen. He had even been able, he said, "to observe, by means of a microscope, that a fish just issuing from the egg, and of which the heart was seen to beat, was not inconvenienced by being completely frozen up. This he explained by the fact that the animal heat of the fish, even in the embryo state, is sufficient to preserve around it a certain quantity of moisture."

Does the Moon Rotate.

In all works on astronomy, it is assumed and taught as a fact, that the moon revolves on its axis once in twenty-eight days. J. Symonds, an inspector of schools, in England, wrote a letter to the *London Times*, expressing his surprise that natural philosophers should have maintained such a dogma, and that it should be taught in all schools as a fact of science. If his conclusions were wrong, it would have been very easy for astronomers to have set him right, but not one of the eminent astronomers in England, have presented a single good and conclusive argument in favor of the moon rotating theory, while some have rather abused the inspector for questioning the old dogma. It is a positive fact, that a great deal of what is taught in schools is assumption, not fact. Assumptions hy frequent uncontradicted repetition come to be regarded in the course of time, by students, as facts. This has been the experience of every man of an original mind, and it has thus been the means of clogging the wheels of science. As it relates to the common astronomical assumption, viz., that of the moon's rotation on her axis once in 28 days, how can this be so when it contiuually presents the same face to the earth? If it has a rotation on its axis, it should preeent different phases. We perceive than Evan Hopkins, C. E., and David Mushat, M. E., in the *London Mining Journal*, have sustained the views of Mr. Symonds in very able articles.

Form of the Earth.

The earth below round like a ball, it follows that at a certain distance, eveu though our vision can reach much further, its form will prevent us from seeing objects even if its surface were perfectly smooth. It has been calculated that at 600 yards an object one inch high cannot be seen in a straight line; at 900 yards, two inches; at 1400 yards, five inches; at one mile, eight inches; three miles, six feet, so at that distance a man would be invisible. In leveling, it is usual to allow the tenth of an inch in every two hundred yards, or eight inches in a mile, for convexity.

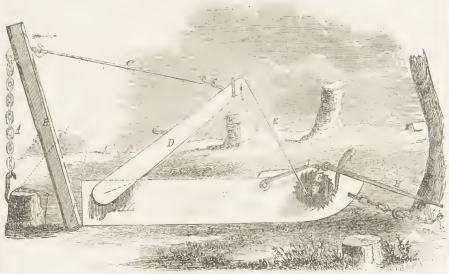
Improved Stump Puller.

The old fashioned way of getting rid of stumps was to let them stay in the soil and rot. The clearing-up of a piece of ground required half a generation; our forefathers took things easy, and were in no hurry. But the modern "go-ahead" principle recognizes no such waste of time. Our modern farmers enter a forest in the morning, fell the trees, cut them into lumber, and pull the stumps, all by machincry; in the afternoon they plow the ground, and seed it down into smooth meadows.

Our engraving shows a recent improvement in stump pullers, for which letters patent were granted to Mr. Solomon W. Ruggles, Fitchburg, Mass., May 6, 1856.

The chain, A, is attached by a hook, at one end, to the stump, and at the other to a strut, B; this is connected by rod, C, with lever D, the forward end of which has a strap, E, which winds around the shaft, F; this shaft has a ratchet wheel, G, upon it, operated by lever, H. When the lever is raised, the pawl, I, catches in the teeth of the ratchet wheel, G, and turns it in direction of the arrow; and prevents the ratchet wheel from turning back. By the winding of strap E on shaft F, the lever, D, is brought down, strut, B, raised to a perpendicular position, and the stump pulled. Most of the parts are attached to the sled, K, on which they are eouveniently transported from place to place.

MACHINE FOR PULLING STUMPS.

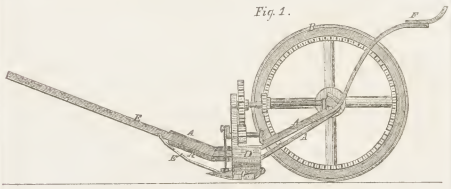


row; the pawl, J, holds the purchase obtained

This machine is very compact, portable, and economieal to manufacture. It is also very powerful. A force of 200 lbs. applied to the end of lever H, will lift 2000 tuns on chain, A. The power of the apparatus is only limited by the strength of the wood and iron of which it is made. Address the inventor for further information.

IMPROVEMENT IN MOWING MACHINES.

Fig. 1.



New Mowing Machine.

Machines for mowing are coming into such general use, that any improvement which has for its object the lessening of the expense of their construction, is worthy of attention.

The invention illustrated by the accompanying engravings belongs to this class. Figure 1 is a side elevation; figure 2 a top view, and fig. 3 a section.

One improvement consists in making the frame, A, of light strong iron, and placing the driving wheel, B, between, as shown in fig. 2. The driving wheel has cogs upon it, by means of which, and suitable pinions, pitman, &c., motion is given so the cutters, C. The lower parts of frame A bend down and connect with the har, D; they also extend forward far enough to receive and support the draft tongue, E; the tongue is further secured by a brace, E'; the upper part of frame A terminates in a driver's seat, F. The finger har, G, is made of wood; it is attached to D, hy an over-lap and holts, as seen in figure 3; the connection is further strengthened hy bolts and plates on the opposite sides of the parts, shown in dotted lines; the finger har is of wood, made in the usual manner. The pinions are placed quite near the driving wheel, so that the gearing is out of the way, and protected from the grass, dirt, &c., while the machine is rendered very compact. The method of constructing the frame and attaching the tongue is at once simple, strong, and economical in construction. The joint hetween hars D and G is also cheap, hut very strong. This invention possesses several valuable features, and will, no doubt, find favor among agrieulturists.

Fig. 2.

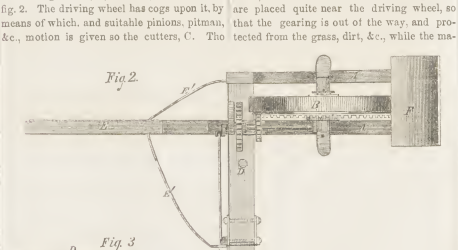
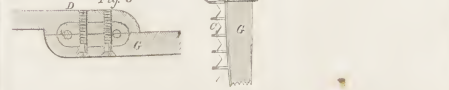


Fig. 3



The inventor is Mr. Collins B. Brown, Alton, Ill. Further information can be had hy addressing Messrs. Buckmaster & Wise, as above, who are jo nt'owners and extensive manufacturers. Patented Sept. 4, 1855.

Gold Coinage.

In March last, $2,850,000, in double eagles, were coined at the Branch Mint in San Francisco.

Every real invention is a point gained by the world.

Improved Ventilation of Ships.

A very great improvement has taken place in the ventilation of ships trading between our Atlantic and Pacific ports. Great losses had been experienced upon goods sent to California from *sweating*, caused by defective ship ventilation. These losses fell upon the owners of the merchandise; for, strange as it may seem, it had been decided in suits at law that the ships were not liable for damages. An improved system of ship ventilating was imperitively demanded, and we understand, by the San Francisco *Chronicle*, that this want has been supplied. The clipper ship *Electric Spark*, from Boston, arrived at San Francisco on the 9th April, with an improved plan of ventilation, which operated so well that all the goods were found in the most excellent order, and the very paint between decks looked as fresh as when put on—something not witnessed there before. The plan of ventilation is seeuingly very simple; its object being the continual ingress of a current of fresh air between decks, and the egress of foul air to prevent the heavy moisture, while in the tropics condensing (sweating) on the sides and under the decks The apparatus consists in having hetween decks two large perpendicular spouts forward under the top-gallant forecastle, which can be kept opeu in all weathers; ten smaller spouts descending on the inside of the main deck house, hut receiving air outwardly from the side of the house; and lastly, six similar spouts aft in front of the poop. The spouts in the main deck house only are closed in bad weather. Theso spouts are square and made of wood and are arranged in such a manner as to occupy little space while the ship is under way; the greater part of the time a constant and free circulation of air is going on helow; and even in the worst of weather, the two spouts forward remaiu open to permit the egress of foul air. Other ships trading to California have also adopted the same ventilating system and with equal success.

Science and Art.

Experiments with the Chinese Sugar Cane.

Some of the seeds of the Chinese sugar millet having been obtained by Ex-Governor Hammond, of South Carolina, he has recently reported the results of his experiments, which have been published in the Charleston *Mercury*. He planted a pint of seed on half an acre of rather poor soil, on the 22nd of last March; the seeds were dropped 18 inches apart in 3 feet wide rows. When the plants came up they were frequently hoed, to keep down grass and weeds. On the 22nd of July some of the advanced heads had passed the milk stage, and he had a rude mill put up, consisting of two wooden rollers, to ascertain whether the millet would make syrup. About 1750 canes were cut, and 400 passed through the rollers twice, and the remainder four times; the yield was 194 quarts of juice, and ten selected canes put through the mill seven times, yielded three quarts. The juice was received in common wooden tubs, and tested with a thermometer, and a sacchrometer having a scale of 40 degrees. The temperature of the juice was 78° Fah., the strength 23·5°, and floated a fresh egg. It was boiled in a deep old-fashioned cow pot, for seven hours, and yielded 32 quarts of tolerable syrup. Next day he selected more of the canes in different stages of progress, and submitted them to the mill seven times, and from every 10 again obtained 3 quarts of juice. This was also boiled, and he obtained a rather better syrup. To every five gallons of the cold juice a teaspoonful of limewater was added. The canes were one inch thick at the butt, and seven feet long, after cutting off the head. The syrup was equal to the best New Orleans. Respecting this plant, Ex-Governor Hammond says:

"I did not attempt to make sugar, no having prepared for that. There can, however, be no doubt that sugar can be made from such syrup as this. And, as they make more syrup in the West Indies per acre than they do in Louisiana, only because the cane matures better, it is not unreasonable to infer that the millet, which matures here perfectly, and will even make two crops in one year, will yield more and better sugar than the Louisiana cane.

Beginning to cut the cane as soon as the head is fully developed, it may be cut for a month before it will all ripen—how long after that I do not know. A succession of crops might be easily arranged so as to insure cutting and boiling from the 1st of July—probably earlier—until frost. I have housed some stalks immediately from the field, to ascertain, hereafter, whether thus treated it will yield juice and make syrup next winter."

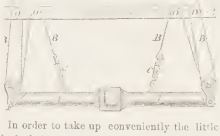
Sugar has now become a most important article of food; it is used for more purposes in cookery than any other agricultural product, and the demand for it is increasing more rapidly than it can be supplied. This is the cause of its recent great rise in price. We have been assured by a large dealer in sugar and molasses, that our Western States alone now consume more sugar than is produced in our whole country; hence we are dependent for the most of that which we use on the West India islands, Cuba especially. It would certainly be of great advantage and benefit to our people if our country produced as much sugar as it consumed and required. This it never will be able to do we believe, from the common sugar cane, because the climate most suited to its culture in any of the States is not equal to that of the West India Islands—rather—it is not properly adapted to the climate of any of our States. We therefore hope our southern planters will give the Chinese sugar millet full and fair trials, and we hope that it may yet prove to be the source from whence our country will be able to supply itself with an abundance of good sugar, syrup, and molasses.

Photographic Bank Notes.

An artist in Paris, M. Agnado, has succeeded in deceiving the most expert clerks in the Bank of France with photographic copies of bank notes. It was found to be impossible to tell the copied from an original one thousand franc note.

English Patents.

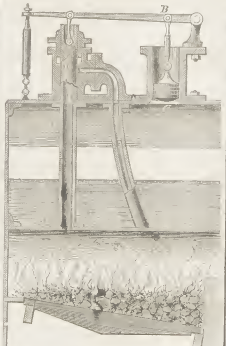
Kidman's Improvement in Tillers or Yokes—This invention consists in making the standing part of the steering rope or chain fast to the tiller or yoke, the rope or chain being then led through side sheaves or blocks to single or double sheaves or blocks in the tiller or yoke, and then through other single or double side sheaves or blocks to the barrel of the steering wheel. By this arrangement, all the slack of the steering rope or chain is taken up, and an additional purchase obtained over those arrangements in which the standing part of the rope or chain is made fast to chocks or carlings at the sides of the tiller or yoke, and not directly thereto. It is preferred with a single purchase to place the after side sheaves in such a position that one shall be abaft and the other ahead of their corresponding sheaves in the tiller when that is hard over, or at an angle of 45°, or thereabouts, with the fore and aft line of the vessel.



In order to take up conveniently the little slack that may result from the stretching of the steering rope, when rope is used, instead of attaching the standing part of the rope directly to the tiller or yoke, it is attached to a screw shackle (or by a lashing, if preferred.) which is connected by an eye bolt or otherwise to the tiller or yoke. By means of this screw shackle, the small amount of slack in question may be readily taken up.

The cut shows a plan of an arrangement, when movable sheaves or blocks are fitted at each end of a yoke. A is the yoke; B is the steering rope or chain; C C are the screw shackles attached to the yoke. A; D D are the sheaves, and E E the single sheaves on the end of the tiller. These latter sheaves are capable of revolving about a pin, F, passing through the yoke, in order that the steering rope may be led more fairly to the side sheaves, D, when the yoke is in any other than the fore-and-aft position.

Hackett's Improved Safety Valve for Boilers.—The object of this improved valve is to secure boilers from explosion. The ordinary safety valves are supposed to be loaded to 50 lbs. per inch. The new valve consists of a cylinder, C, open at the bottom, fitted with a



steam-tight piston, having metallic packings, the piston being exposed to the action of the steam. The top of the piston is pressed down by springs giving a resistance of 80 lbs. per inch. Connected with the piston is a valve, D, for the admission of water from the boiler on to the fire. When the piston is pressed upwards, the valve, D, moves upwards through three times the space of the piston, and by this means opens the communication, F, between the boiler and fire grate. When steam is up in the boiler, the superincumbent pressure of steam would force water into the pipe, F, thus causing a constant flow of water through the valve D over the fire grate. It will appear that when the pressure in the boiler exceeds 80 lbs. per inch, the piston in the cylinder, C, will be forced upwards and open the communication for the water to extinguish the fire, and thus prevent the possibility of an explosion.—[London Engineer.

Cultivation of American Indigo.

The sulphate of indigo (chymic) is used in great quantities for coloring silk and woolen goods, and fine sheepskins. It is the principal coloring ingredient for light blues and greens. It is made by dissolving finely pulverized indigo in pure strong sulphuric acid. The very best of indigo is required for its manufacture, because inferior indigo requires more sulphuric acid while it gives out far less coloring matter, thereby involving a loss of material in connection with an inferior product. All indigo contains more or less lime, but the inferior kind the most; this is the reason why it takes up more sulphuric acid to manufacture an inferior chymic.

At the present moment, and for the past two years, the supply of the first quality of indigo has not been equal to the demand for it, and that demand is constantly increasing. Some very excellent indigo, well adapted for making chymic, used to be obtained from Guatamala, but the kind most esteemed is the first quality of Bengal, for which we are dependent on a colony of Great Britain.—About twelve years ago, the best Bengal indigo could easily be obtained, but at present it is almost unknown in the market. A spurious article, however, much resembling it, is abundent, but it does not possess one half the coloring matter of the genuine, and yet it is sold at a retail price varying from six to fourteen shillings per pound.

Our object is to direct the attention of our southern planters to the cultivation of the indigo plant, and the manufacture of the best kinds of indigo, for inferior kinds are by far too plentiful.

About sixty years ago—and within that period—some very fine qualities of indigo used to be cultivated in South Carolina; its character was much higher than the finest Guatamala or the best Bengal, but it is now unknown in the arts, to the great regret of calico printers, dyers, and leather dressers.—In the fermentation of the indigo plant so much oxygen is absorbed that its manufacture was found to be very injurious to the health of the negroes on the plantations; this was one reason for giving up its culture; and another, and perhaps the strongest, was the higher profits derived from the cultivation of cotton. It appears to us now, however, that with the exercise of sufficient care, the health of the negroes may be maintained as well as in the rice culture; also that the price which could now be obtained for it would be very remunerative. There are hundreds of persons in our country who would rather pay two dollars per pound for the best kind of indigo—that quality which was manufactured at one time in South Carolina, or the kind that was sold for the best Bengal twelve years ago—than that which is now sold for seventy-five cents per pound. We think these considerations ought to induce some of our planters to engage in the cultivation of the finest qualities of indigo.

Since our planters have beat all the efforts of the East India Company to rival them in the cultivation of cotton, it appears to us that their honor is somewhat at stake to regain their lost reputation in the cultivation of indigo.

The golden crops of California are still abundant. The steamer *Illinois* arrived at this port on the 29th ult., with one million and a half of the yellow metal.

A joint stock company has been formed to deepen the Illinois river, and render it navigable at all seasons. This is a commendable enterprise.

The latest accounts from Polynesia describe severe shocks of earthquakes in Hawaii.

Literary Notices.

THE WESTMINSTER REVIEW.—This able Review for the present quarter contains a most interesting and, on the whole, very impartial article on Foreign Missions. It ought to be extensively read and pondered. The Natural History of German Life, etc., Popular Amusements, [illegible] History of England &c. form subjects for other essays. It is a capital number. Published at 54 Gold st. by L. Scott & Co.

THE LONDON QUARTERLY REVIEW, just issued, contains seven very able articles.—Savonarola, [illegible] History of Greece, Causes of Civil War, [illegible] upon the more recent publication of [illegible] The Police and the Thieves, Public Works and Improvements of Paris, a charming article for those who have visited this famous city. The Papal Government, and the Disputes with America in which the writer takes up the cudgel in right good earnest, in behalf of the sincerity and good faith of our [illegible] the British nation. An Englishman does not like to admit the possibility of wrong doing on the part of his Government. England is always magnanimous in the eyes of an Englishman. All right—we do not object, but, we do insist upon it that America and Americans, are not always blindly [illegible] wrong. We are among those who think [illegible] maining a little virtue and good manners [illegible] Leonard Scott & Co are the re-publishers of the British Reviews.

BLACKWOOD'S MAGAZINE.—The present number of this veteran Magazine opens with a criticism on Macaulay's late volume, which is brilliant, but not very [illegible]. The story of the "Athelings" is continued. There is a review of Prof. Ay[illegible] entitled "[illegible]," in which it is stated, he [illegible] of the magazine as has been generally supposed. [illegible] Lord Dalhousie," is the best article we think, in the number; it is full of information. Published by Leonard Scott & Co., No. 54 Gold street, this city.

THE AMERICAN VETERINARY JOURNAL.—This is a monthly periodical devoted to the diffusion of veterinary knowledge, edited by Geo. H. Dad, Veterinary Surgeon, and published by S. N. Thompson, Boston. We hail it as a new co laborer in the walks of science. It is edited with marked ability, and [illegible]. It contains much sound and useful information relating to domestic animals, and deserves a very extensive circulation.

UNITED STATES MAGAZINE for September contains an illustrated article upon the [illegible] House at Washington. This house is one of the [illegible] simplicity, inside and out, and if any of our readers are curious to know all about the [illegible] House, let them procure a copy of this Magazine. [illegible] this domicil will be anxious [illegible] not to embrace its realities. J. M. [illegible] & Co., N. Y. publish the United States Magazine.

THE OLD VICARAGE, by Mrs. Hubback, is a novel of an interesting and thrilling [illegible] and morality seems to pervade its narrative [illegible]. It appears to be a book that [illegible] and satisfaction. Fetridge & Co., Publishers, New-York and Boston.

THE ORPHAN SISTERS [illegible] Mrs. Marsh. For sale by E. D. [illegible] New York.

Prospectus

OF THE

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Science and Art.

Zincing Iron.

Alex. Watt, editor of the electro-metallurgical department of the *London Chemist* has taken out a patent for the following method of covering steel and iron with a coating of zinc. He dissolves 12 1-2 lbs of the commercial cyanide of potassium in twenty gallons of rain water in a suitable vessel, and to this adds 5 lbs. of strong liquid ammonia. These are stirred together, and several large porous cells, like those employed in a Daniell's battery, are placed in it, and a strong solution—6 lbs. to the gallon—of the cyanide of potassium poured into each, until the hight of this solution is on a level with the ammonia cyanide liquor outside. Several pieces of copper are now attached to a copper wire connected to the negative pole of a galvanic battery—some of these pieces of copper are placed in each porous cell. Several pieces of zinc are now immersed in the solution outside of the cells, and they are connected by the copper wire to the positive pole of the battery, which is set into action and allowed to continue until three ounces of zinc to every gallon of the solution, has been dissolved from the pieces of zinc immersed in it. This amount can be found out by measuring the liquid and weighing the zinc before the latter is immersed. The porous cells are now removed, and a solution of carbonate of potassa (5 lbs.) is added to the zinc cyanide ammonia solution in the vessel. The bath is then stirred, and a white precipitate falls to its bottom. When this has subsided, the clear is poured off into another vessel, and is fit for use. The iron articles to be coated, are first plunged in a pickle composed of one lb. of sulphuric acid, and half a pound of muriatic (hydrochloric) acid in two gallons of water. This pickle removes the scale or oxyd; they are then rinsed in rain water, brushed with a hard brush and sand, and finally rinsed in soft water—all the oxyds must be removed, and no grease or sweat from the hands allowed on them. They are now placed in the zinc solution described, and connected in the well-known way, to the negative pole of a battery, when a zinc deposition on them begins at once. As soon as they are sufficiently coated, they are removed, rinsed in warm rain water and placed in dry saw dust to dry them. They are afterwards rendered bright by a scratch brush, or gently scouring with fine sand and a soft brush.

This is a more expensive and troublesome method of zincing iron than that commonly practiced, of dipping the cleaned iron into a solution of salammoniac, and from thence into a bath of molten zinc covered with ground glass, but it may be superior to it. The zinc is liable to go on unevenly by the molten bath process, whereas it will be very evenly deposited by the electrotype process described. Iron plates and other articles can be tinned by the electrotype process, by using a solution of the chloride of tin, such articles will take on a coat of molten zinc, (if dipped into it.) on the top of the tin.

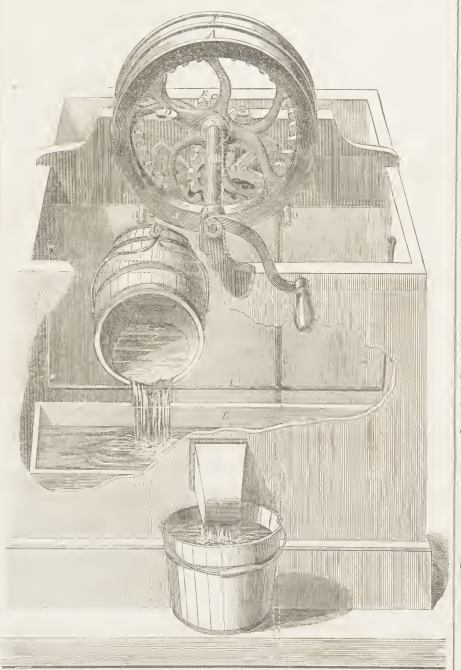
Silvering Metal.

A patent has lately been taken out in France by B. Adville, of Paris, for a new method of silvering iron or copper. The process consists in dissolving about three ounces and a quarter of pure silver in double the quantity of nitric acid, and adding to it two pounds of cyanuret of potassium dissolved in ten quarts of water. When well stirred, seven ounces of fine whiting in powder are added, well stirred, then allowed to settle. The metal articles to be silvered are placed in a bath of the clear of this liquor diluted with twice the quantity of soft water. When they have remained a sufficient time in it to be impregnated (which can be known by examining them,) they are taken out rubbed with dry whiting, washed and then rubbed with a dry cloth, when they assume a brilliant white appearance. The articles to be silvrized in this manner, must be well cleaned before they are placed in the bath; no oxyd or grease must be allowed to remain on a single spot. When a new batch of articles are be silvered, the bath has to be strengthened by adding a fresh quantity of the cyanuret silver solution. The process is very simple, and is stated to be as effective as silvering by the use of a battery; if so it is a valuable improvement.

To Detect Photographic Bank Notes.

Make a saturated solution of the cyanate of potassium in soft water, and apply it with a pen or camel's hair pencil to the surface of the suspected bill. If genuine, the solution will have no effect upon it, but if a photograph, all the dark apparently printed part touched by the cyanate, is immediately decomposed, and the paper returns to its original whiteness.

NEW WATER ELEVATOR.



New Water Elevator.

Our engraving shows an improvement, the object of which is to afford an easy means of raising water, besides causing the buckets to fill and empty themselves, permit the use of one or two buckets, at pleasure, etc.

A A' are too pulley wheels with grooved peripheries, on which the bucket ropes. C wind. Pulleys, A A, are both placed on shaft, B, but they are loose upon it, and are also separate from each other. They are revolved by means of pinion, E, which is firmly attached to shaft B. This pinion, E, gears with another pinion, F, which meshes with a series of teeth located on the inside of pulley A. When the crank is turned, shaft B sets through the pinions, E F, on the cogged teeth of A', and causes it to revolve.

When it is desired to use both buckets simultaneously, one to rise, full of water, and the other, empty, to descend, the two pulleys are connected together by thumb screw, D, so that when A' revolves A will also turn. But when it is desired to use only one bucket, the thumb screw, D, is withdrawn, and then A, being loose on shaft, B, and separate from A', will not turn. This is a very quick and convenient mode of disconnecting the action of the pulleys.

G G are pawls, which alternately catch in the cogged teeth of A', and prevent the latter from revolving, except in the proper direction, hold it in any given position, etc. One of the pawls is always engaged with the teeth of A. The pawls, G, are connected with pins, H, which are so located that the bails of the buckets, when they come up, will strike their respective pins, H, and shift the pawls, throwing out the one that had been locked with A during the rise of the bucket, and causing the other pawl to lock. This permits the shaft B, to be revolved in a contrary direction, so as to return the bucket just raised to the well, and at the same time to lift the other bucket.

The buckets are emptied by means of a projecting pin, J, on the buckets, which catches under the cross rod, I, as the buckets rise, and cause them to tip over and pour their contents into trough L.

For further information address the inventor, H. B. Barker, Scott, Courtlandt Co., N Y. Patented July 8th, 1856.

Malachite.

This is a copper ore much prized in the ornamental arts. It is a peculiar variety of the green carbonate of copper, and is found in a number of localities, but perfect crystals are very rare. It usually accompanies other copper ores, and forms incrustations which, when thick, have the colors banded, and extremely delicate in their shades and blending. The copper mine of Cheshire, Conn., has produced handsome specimens, so have some of the copper mines of New Jersey, but the mines of Siberia are the most distinguished for large and fine specimens, and at the World's Fair, in London, the Russian Department was the admiration of all visitors, because of the numerous articles of ornamental malachite displayed. A pair of malachite doors, 14 feet high and 7 feet broad were much extolled. The mineral formed the veneering, one-fourth of an inch thick, built upon a frame of metal. The pieces were most tastefully arranged, and produced a fine effect. Thirty men were employed a whole year in cutting, fitting, and polishing the pieces, and the work went on, day and night, from May, 1850, to May, 1851. A fine chimney piece and numerous vases o the same material were grouped together, the whole being valued at $90,000.

In St Petersburg there is a large manufactory of malachite ornaments. The pieces—generally of only a few pounds weight—are first sawn into thin plates, with revolving metal disks, sand and water being fed into the slit, in the same manner that fine marble is cut. The curved pieces of this mineral are cut by bent saws, the management of which is very difficult.

The workman cuts his veneers according to the shades and veins of the mineral, so as to produce the best effect when all the pieces are fitted into the finished article. The edges of the pieces are ground quite smooth by revolving copper wheels, like those which our jewelers employ. The pieces are united with a cement colored with malachite powder, and when all fitted into a frame, the entire surface is ground and polished. The price of the finest specimens of malachite is about three dollars per pound. It receives a high polish, and is used for ear-rings, snuff-boxes, and other ornamental articles; but although it is so beautiful, owing to its delicate shadings of color, it is not much esteemed by jewelers, because it is so brittle, and difficult to work; it is sometimes passed off in jewelry for torquois, but it is inferior in hardness to this precious stone.

In the Palace of Versailles, Paris, there is one room furnished with tables, vases, and other articles of malachite. The specimens found in our own copper mines have only been employed to grace cabinets, in a mineralogical sense; but the time will yet arrive when it will be used in American ornamental art, rivalling the finest productions of the Russian Empire.