

"The force of the explosion was most terrific—far more so than the explosion at Messrs. Merrick & Sons foundry. A five-story brick chimney, several feet square, standing against the north building and alongside the boiler-house, was completely razed to the ground, not one brick being left standing upon the other. Two "dipping" shops and the boiler-house were also laid in ruins, and all the windows in the establishment, several hundred in number, were more or less damaged. Some idea of the force of the explosion can be imagined when it is stated that a portion of the exploded boiler, about 750 pounds in weight, was carried to Twelfth and Cherry streets, and there striking a man on the head, killed him instantly. The deceased was employed in loading his wagon at the time of the accident.

"The boiler which did not explode was carried from its place up into the air, and was landed over a distance of a square from the factory. It passed through the top of the William Penn stables, running from Market to Filbert streets, and between Eighth and Ninth, instantly killing one horse and so badly injuring two others that they are not expected to live. The boiler did considerable damage to the stable. It passed through the roof and second floor, and forced one side of the stable out so far as to place it in an unsafe condition. Large pieces of the boiler and other flying debris were also hurled with force to a great distance, and windows for several squares off broken, although no one except the cartman mentioned above, was injured in this way. The yard—a hollow square formed by the buildings, was filled in some places half-way to the second story with piles of ruins. The five-story stack chimney, the boiler-house and the two dipping sheds were all a mass of ruins together."

[The cause of this disaster as of ninety-nine out of every hundred is carelessness of some kind. Attempts made to throw a veil of mystery over these disasters ought to be discontinued, it is simply begging the whole question and discreditable to the age we live in and the state of the mechanical arts.—Eds.]

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Applying Steam Power to Car Brakes.—This invention consists in the employment or use of a steam chest provided with a valve, a steam cylinder provided with a piston, and a spring and a valve regulator, all arranged in connection with a brake-actuating mechanism, in such a manner that the brakes may be subjected to any degree of pressure which may be necessary, and the communication between the boiler of the locomotive automatically opened and closed so as to render the desired pressure constant, whether the same be greater or less. The invention also consists in the employment or use of an escape valve applied to the steam cylinder and arranged in such a manner as to obviate any sudden increase of tension or pull on the brake chain, a contingency which frequently occurs when the train "stretches," and also to exhaust steam from the cylinder when the brakes are to be relieved. The invention further consists in a novel means for connecting the piston-rod with the brake chain whereby a short movement of the former is made to give the necessary length of pull to the latter, and admitting of a short cylinder being used, which is very desirable on account of space being limited where it is most desirable to place the cylinder. William Loughridge, of Neverton, Md., is the inventor of this improvement.

Bilge Block.—This invention consists in the addition to a bilge block of a piece so arranged on the top thereof and transversely thereto that it may adapt itself readily to the longitudinal curvature of the bilge of the vessel, and of such length that it may support two or more of the ribs of an iron vessel and thereby be prevented from indenting the outer skin thereof. It also consists in combining the hinged or adjustable upper portion of a bilge block with the base or body of the block by means of a screw by which it may be adjusted with greater facility than by the wedges commonly employed. Phineas Burgess, of Brooklyn, N. Y., is the inventor of this improvement.

Pulp Ink.—The object of this invention is to obtain an ink suitable for use on or in canceling stamps and for other purposes, the coloring matter of which will not separate itself from the menstruum and which will always be in condition for use, and which may be applied to a stamp or other device for producing an impression with the use of a pad; and to this end it consists in the admixture with coloring matter and a menstruum to form an ink, of the fiber or dust of leather by which the ink is brought to the condition of a permanent pulp throughout which the coloring matter is uniformly distributed. It also consists in the addition to such ink of paper sawdust, or finely reduced paper and cork dust or finely reduced cork either separately or together, when desired to give the ink greater solidity and to prevent the leather fiber from adhering to the face of the stamp or printing device. Richard H. Rogers, of New York City, is the inventor of this improvement.

Slide and Guide for Molding Flasks.—The two parts of a flask now used in molding or forming molds for casting are provided with two slides attached permanently to two opposite sides of one part of the flask, while the guides between which the slides work are attached to the corresponding sides of the other part of the flask. These slides and guides being permanent attachments, are very liable to become disarranged in withdrawing the casting, and the molder is required to resort to a carpenter to readjust them, and two slides and four guides are required for each flask. This invention consists in having the guides connected with plates, attached to one part of the flask and having the slides made separately and attached to the plates secured to the other part of the flask; all being so arranged that the slides may be readily connected to one part of the flask and the guides of one plate made adjustable, so that the slides and guides may always be kept adjusted in proper position and detached from the flask during the withdrawal of the casting, and two slides and four guides rendered sufficient for an indefinite number of flasks. S. A. Traugh, of Cincinnati, Ohio, is the inventor of this improvement.

Steel Shirt Collar.—This invention consists in the manufacture of a steel collar of a single strip of tempered steel plate painted and varnished, and so indented all round near its edges in imitation of stitching, that it may be worn either as a "turn-down" or "stand-up" collar. It also consists in the employment as a fastening for a steel collar of a metal stud soldered or otherwise fastened to its interior near one end to operate in combination with a hole near the other end, in such manner that no portion of the fastening is visible on the outside of the collar, whereby when worn as a "turn-down," it presents the same appearance as a linen collar made with an inside band and having its fastening in such band. It further consists in providing a steel collar on the inner side with metallic eyes or loops for the attachment of india-rubber or other flexible rings or loops by which to attach it to the buttons of the band of the shirt, such metallic eyes or loops also serving to keep the cravat or neck-tie in place when the collar is worn as a "turn-down. Louis Billon, of Brooklyn, N. Y., is the inventor of this improvement. Further information may be obtained of Messrs. Billon & Foggan, 76 Nassau street, New York City.

Apparatus for removing Starch Deposits.—This invention consists in the employment in a starch cistern of agitators secured to vertical shafts descending into said cistern at points outside its center and operated by means of a sun-and-planet gear, in such a manner that the effect of the agitators is equally powerful in the center of the cistern and at or near its skirts or circumference, and the accumulation of a deposit in the center of the cistern is obliterated; the invention consists further in the application of a scraper extending clear across the center of the cistern and suspended from rods to which a rising and falling motion can be imparted by toothed racks and pinions or other equivalent means, in combination with a revolving ring or annular turn-table, in such a manner that said scraper can be adjusted up and down to any desired height from the bottom of the cistern, and by its action, combined with that of the sun-and-planet agitators, the accumulation of a deposit on any part of the cistern is effectually prevented; the invention consists finally in the arrangement of a platform supported by and moving on rails

over a series of cisterns, in combination with agitators and scrapers (either alone or both combined), which are vertically adjustable by screw rods, toothed racks, and pinions, or other equivalent devices, in such a manner that the agitating mechanism can be raised above the top edge of the cistern and removed by means of the rails supporting the platform, from one cistern to the other, and by these means one and the same agitating mechanism will serve for a series of cisterns. Wright Duryea, of Glen Cove, N. Y., is the inventor of this improvement.

Apparatus for cooling and disinfecting the Air in Vessels, &c.—This invention consists in combining with a refrigerating chamber and room, vessel or other closed space, the air of which is to be cooled or disinfected, an air conduit provided with or without a fan blower and arranged in relation to the ice or freezing mixture contained in said refrigerating chamber, in such a manner that the air while passing through said conduit will become cooled and flow into the room, vessel, or other closed space, without coming in contact with the ice or freezing mixture, and that the air contained in said room, vessel, or other closed space can be passed once or several times through said conduit either by the natural draught caused by the changes in its temperature or by an artificial draught, until its temperature is brought down to the desired degree; the invention consists further in the peculiar arrangement of a series of revolving drums on a hollow shaft, the interior of which is divided into several channels, in combination with the refrigerating chamber and with or without the fan-blower, in such a manner that the current of air created by the changes of its temperature or by the fan-blower, as the case may be, is compelled to make a long circuit in the interior of the refrigerating chamber and that its temperature is reduced considerably before it is allowed to leave said chamber. Alois Peteler, of New Brighton, N. Y., is the inventor of this improvement.

Machine for grinding Oil Patms.—This invention consists in the employment of one or more mullers, adjustable on arms extending in a horizontal direction from a vertical shaft, in combination with slip-weights and with a stationary bed or platform, in such a manner that by means of the slip weights the muller or mullers can be depressed upon the bed with more or less force as occasion may require, and by imparting to said shaft a rotary motion the muller or mullers are carried over the bed, and the operation of grinding paints can be effected by steam or any other suitable power in contradistinction to the ordinary method of effecting this operation entirely by hand labor. H. W. Gear, of 653 Broadway, New York, is the inventor of this improvement.

Ruffling Machine.—This invention consists in the combination with a fluting machine of a folding guide, so applied as to fold and double a strip of muslin, silk, or other fabric, and deliver it in its folded state between the rollers that the doubling and fluting may be performed by a continuous process. It also consists in the combination with fluting machine and folding guide of a flattening guide interposed between the said folding guide and the fluting rollers. It further consists in a folding guide of novel construction for doubling a strip of muslin, silk, or other fabric, by turning in both edges toward each other on the same side of the strip. Thomas Robjohn, of Mott Haven, N. Y., is the inventor of this improvement.

THE bill to introduce the French metrical system into Great Britain has passed into a second reading in the House of Commons. The debate was not characterized by much profundity of thought or extent of information. We learn that Prof. Airey prefers of all others a binary division. From the beginning until now, it has been customary to divide by four rather than five. Four quarters are a natural division of anything.

ACCORDING to Kirchoff, the great spectrum analyzer, the evidence of the existence of potassium in the solar atmosphere has broken down under closer examination, but additional evidence has been obtained of the existence therein of iron, nickel, barium, copper, zinc, strontium, cadmium, &c., and that no additional elements have been found in the sun.

Improved Horoscope.

This apparatus is intended to show the hour of the day at any time when the sun shines. The engraving and description published herewith will serve to render the invention intelligible to all. The standard, A, carries an index arm, B, which works on a center at C. The vertical arm, D, is also fixed on a center at E, and carries the scale-board at the top; this is secured firmly to the arm, D. Close to the upper margin of the scale-board a scale of polar distances is drawn. The rest of the surface, except the ends, is occupied by the scale of hours formed of curved lines and marked from 4 A. M. to 8 P. M.; the hours are subdivided into spaces corresponding to two minutes; if desired still smaller divisions can be made on the scale. At the ends of the scale of hours are two other small divisions which indicate the different elevations of the pole.

Returning to the index arm again, we find that the lower arm has two small brass plates, G and H, fastened to it. The plate, G, is provided with two small holes to admit the rays of the sun, and the other plate, H, is marked with a black line on a white ground. At the upper end of the index arm there is another brass plate to which the plumb-line, I, is connected. The line is so fastened to the plate that it hangs between it and the scale-board. The hole, J, in the arm is merely to receive the plummet when the instrument is packed up, and the index arm is fixed in its place by a thumb-screw, so that it will not shift or move accidentally.

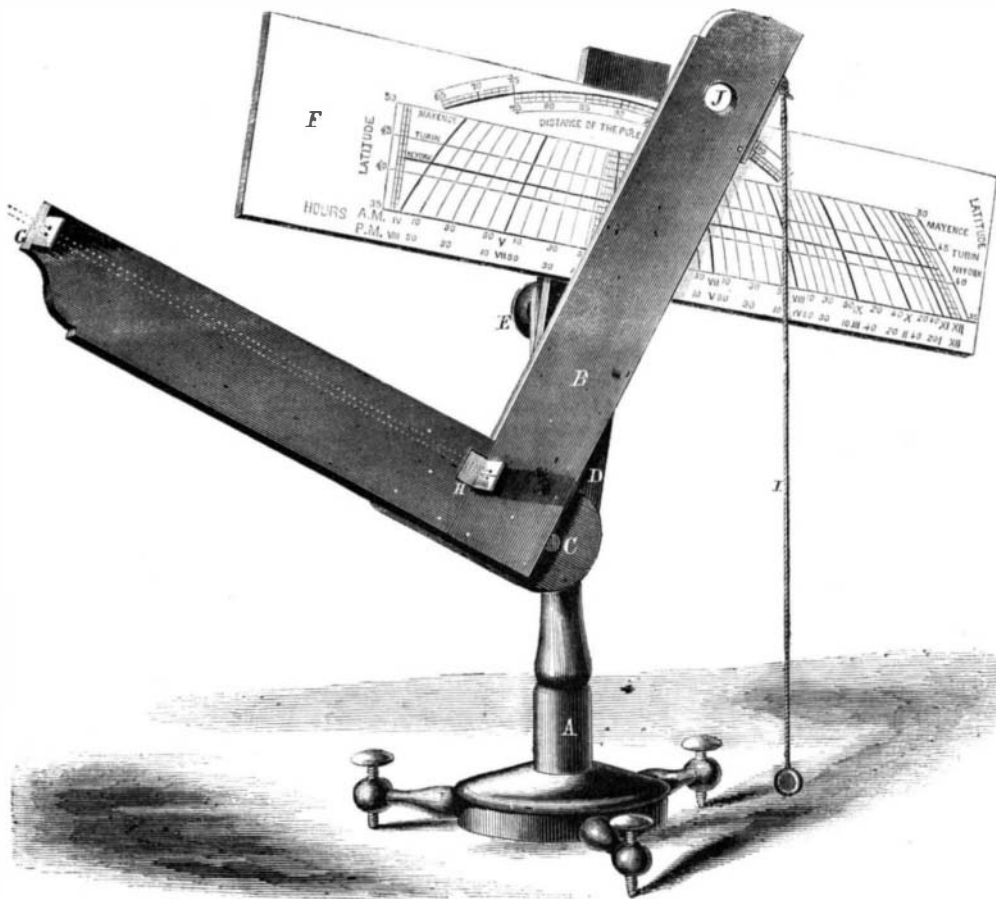
The time is ascertained by this instrument, when the sun shines, in the following manner:—A black line is drawn across the scale of hours to correspond to the latitude of the place where the instrument is to be used, and in taking an observation the instrument is placed upon a bench or other nearly horizontal surface, in such a position that the sun stands at the left, and that the shade of the scale-board appears in a straight line or nearly so. The polar distance of the sun, corresponding to the day on which the observation is made, is then ascertained from the tables sent with each instrument, and that point of the scale of polar distances marked near the upper margin of the scale-board, which corresponds to the polar distance taken from the tables, is brought vertically over the center of the pivot, E, which can be effected by turning the scale-board on its own pivot, and the plumb-line suspended from the arm, can be used to ascertain the desired position. In this position the scale-board is fastened by the jam nut, and the index, B, is turned on its own pivot, until the sun's rays, passing through two little holes in the plate, G, strike the brass plate, H. At the moment when the double image of the sun appearing in the form of two little disks, one standing over the other, is intersected by the black line, the plumb-line shows the hour and minute of true solar time at that point where the thread crosses the black line on the scale of hours.

This invention was patented through the Scientific American Patent Agency, by Michael Eblé, of the kingdom of Wirtemberg, on the 8th of Sept., 1863. For further information address Alphons Armbruster, Springfield, Ill.

A Costly Sword.

One of the most exciting features connected with the recent Sanitary Fair, in this city, was the spirited competition carried on in the Trophy Room, in connection with a beautiful sword presented to the Fair

by Messrs. Tiffany & Co., of this city. Books were opened and subscriptions were received from one dollar upwards for favorite generals of the army, each subscriber registering his name for whomsoever he or she might prefer. The contest was carried on between the respective friends of Lieut-General Grant and Major-General McClellan. 44,963 votes were cast, representing so many dollars. Of the whole

**EBLÉ'S HOROSCOPE.**

number General Grant received 30,291, and General McClellan received 14,509—giving to the former a majority of 15,782, and 163 votes were cast for various other officers. One check for \$10,000 was sent in from "The Loyal Men of New York." One "Loyal New Englander" sent in a check for \$3,000. Thus ended the sword controversy.

RICHARDS' TRY-SQUARE.

The instrument represented herewith is one that will be highly appreciated by all mechanics who have



occasion to use a square. In most cases where one of these tools are employed, the workman has either to stoop and look under the blade or else bring his

work up to the level of his eyes. This square renders such movements unnecessary, as may be seen by a glance at the engraving. The back, A, of the square has a pointer, B, forged with it, so that it is solid and immovable; in connection with this there is an arm, C, jointed by a rivet and washers to the back; this arm forms the blade of the square. The pointer, D, is attached to this blade, and the whole is so arranged that when the square is true, the two pointers, B and D, exactly coincide, thus showing at a glance whether the work is true or not. There is a small spring, E, set in the inside of the back which is connected to the working arm, or blade, C, in such a manner that it throws the pointers open so that when the square is applied to the work and taken from it again, the pointers will spring apart in order to register the next application of the tool to the work. This is a very useful square, as it saves a great deal of stooping and lending, and materially expedites the work. It was patented Jan. 26, 1864, through the Scientific American Patent Agency, by John Richards; for further information address the inventor, at the Ohio Tool Company's Works, Columbus, Ohio.

A UNIVERSAL TIME-PIECE.—We recently had the pleasure of examining a time-piece which was exhibited to us by the inventor, A. W. Hall, of this

city. This time-piece is intended to show the correct hour on any locality of the globe, and it is of particular convenience for travelers, and at railroad stations, on vessels, &c. It is provided with two dials containing the names of the most important places on the globe, arranged in such relative position toward each other that, by the motion of said disks on the dial of the clock or watch, the correct local time of all the places marked thereon can be ascertained at any moment without calculation. The specimen time-piece exhibited to us by Mr. Hall is a watch, very neatly finished, and notwithstanding the limited space in which the disks had to be confined, the names of all the places marked thereon were easily distinguished.

Report of the Commissioner of Patents.

The introductory report of the Commissioner of Patents (Hon. D. P. Holloway), for 1863, is just issued; but it did not reach us in time to enable us to publish anything more than the statistics showing the operations of the Patent Office, which are as follows:—

Number of applications made during the year 1863.	6,014
Number of patents granted, including re-issues and designs.	4,170
Number of caveats filed during the year.	787
Number of applications for extension of patents.	40
Number of patents extended.	48
Number of patents expired Dec. 31st, 1863.	968

Of the patents granted there were to—

Citizens of the United States.	4,048
Subjects of Great Britain.	58
Subjects of French Empire.	37
Subjects of other foreign governments.	27
	—4,170

The following is a statement of the Patent Fund:—

Amount to the credit of the Patent Fund January 1, 1863.	\$ 38,361 15
Amount paid in during the year.	195,593 29
Total.	\$233,954 44
Deduct amount of expenditures during the year.	189,414 14

Leaving to the credit of the Patent Fund January 1, 1864, the sum of \$44,540 30

In our next number we shall present some interesting extracts from the Report.