NEW INVENTIONS.

Improved Rotary Pump.

An improvement on the rotary pump has been lately invented by John Laing, of Brooklyn, N. Y., who has taken measures to secure a patent. In this improved pump the piston is made to work in a recess or slot let into the circular head on the top of the shaft, the circular head being placed eccentric with the bore of the cylinder, which is fashioned of a slightly elliptical form. By this arrangement the length of the piston does not require to be varied, which would be the case if the bore of the cylinder was made circular. In order that the pump may draw as soon as it is worked, a reservoir or water chamber is placed beside it, with which the supply and feed pipes communicate. The piston, as it rotates, forms a vacuum in the lower part of the cylinder when the water rushes in through the supply pipe, which is separated from the discharge pipe by means of the circular head on one side of the cylinder, and the action of the piston bearing against it on the other. The end of the piston, when it passes the orifice of the supply pipe, forces the water around the cylinder into the discharge pipe, and when it has passed this latter, the other end of the piston goes through a similar operation, which is performed alternately by either end as the piston rotates.

Hydraulic Ram.

Joseph C. Strode, of East Bradford, Pa., has taken measures to secure a patent for improvements in the above. The inventor forms the driving pipe of a peculiar shape, as it describes such a course that it enables a greater quantity of water to be raised by a machine of a given size than can be raised with a driving pipe formed in any other manner. It will moreover, cause a greater re-action of the water to take place after the closing of the valves leading to the air-chamber, and thus more perfectly ensure the opening of the discharge valve. Besides this improvement, there is an arrangement for regulating the closing of the discharge valve, so as to prevent the violent shock which it experiences each time it closes. This is remedied by causing the part of the valve below the seat, to enter a recess, and thus make a very narrow space between the valve and recess, a similar space is obtained above the valve, so that the gradually contracted escape of the water is made to break the force of the shock, and provision is also made for retaining a little water above the valve, to prevent a vacuum being maintained between the valve and its seat.

Improved Auger.

Measures to secure a patent for an improvement in augers and bits have been taken by Charles P. Crossman and Levi T. Richardson, of Fitchburg, Mass. The chief difficulty attending the use of the ordinary augers is their liability to choke with shavings as they work out of the spiral recess, and consequently to wedge as the auger is turned between the edges of the spiral thread and the sides of the hole. The above improved tool is completely free from this defect, in addition to its great merit as a cutting instrument as will be perceived by a short description. The cutting parts project at right angles from the center screw and are formed with curved edges, so that the auger cuts rapidly, and yet requires but little power, because the curved form gives it a drawing cut. The shavings are compelled to keep within the spiral recess, as there is a lip projectien at the end of one of the cutting edges.

Connecting Hubs and Axles.

A new method of securing carriage wheels on to their axles has been invented by Guy Davis, of Syracuse, N. Y., who has taken measures to secure a patent. It consists in fitting two springs having catches at their ends around the inner circumference of the rimer end of the axle box, which, where the wheel is placed on, is made tight by means of a dove-tail wedge driven into the hub. The grooves for receiving the springs are made of a suitable depth to allow of their being pressed down, for the purpose of disconnecting the catches from the axle, when the wheels are required to be taken off or put on. By this method of securing the wheels on the axle, no screws are required, so that they can be put on or removed with the utmost dispatch. It is likewise very cheap.

Hearson's Water Gauge for Boilers.

The annexed engravings are views of a Water Gauge for steam boilers, constructed by John Hearson, of New York City, who ha taken measures to secure a patent for his improvement.

Fig. 1.

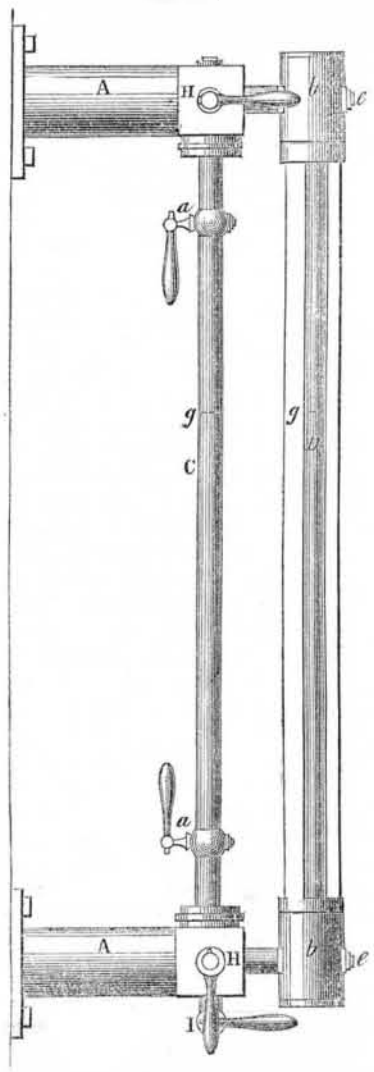
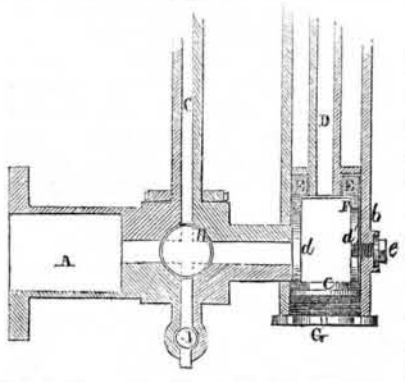


Fig. 1 is a view of the gauge, and fig. 2 is a vertical section of the lower part of it. The same letters of reference indicate like parts, One vertical tube is made of metal, and the other of glass, and they are connected to the boiler by proper pipes. The metal tube has try cocks inserted in it, and the height of the water in the boiler is indicated by the height of the water in the glass tube. The ends of the glass tube are packed in a peculiar manner, by which the escape of water around them is prevented.

A A are the pipes, which are attached to any project horizontally from the boiler. These pipes are connected by the upright tubes, C D. The ends of tube C may be connected to the pipes, A A, in any proper manner. This tube, C, is made of metal, and has two try-cocks, *a a* inserted in it. The tube

Fig. 2.



D, is made of glass, its ends are inserted in sockets, *b b*, at the ends of the pipes, A A. These sockets are somewhat larger in diameter than the glass tube, as seen in fig. 2, to allow the spaces between the outside of the tube and the inside of the sockets to be packed with vulcanized india rubber packing, E E. A hollow cylinder, F, fits within the socket, and may be tightened against the india rubber by means of the nut, G, which screws into the end of the socket, and bears against a head, *c*, in one end of the cylinder. It will readily be seen that, by screwing up the nut, G, it will press upon the india rubber and cause it to expand laterally, and make it fit tightly around the tube, D, and against the inner surface of the socket, *b*. The cylinder, F, has two oblong apertures, *d d'*, through its sides at opposite points. The aperture, *d*, allows the water to pass into it, and then up the glass tube. The aperture, *d'*, receives a nut, *e*, which prevents the cylinder from turning within the socket. The nut, *e*, also serves as a blow-off cock. Both sockets of the glass tubes are alike. H H are stop cocks placed in the pipes, A A, for the purpose of preventing the entrance of water into the tubes when desired; I is a blow-off cock placed in the under side of the lower pipe, A. The dotted line, *g*, indicates the height of the water in the boiler and the tubes. By this gauge, the placing of the try cocks in the boiler is avoided, and by arranging the two tubes as described an accurate water height gauge is obtained. The try cocks and blow-off cocks keep the tubes clear. The arrangement of the tubes, and their combination it is believed, will enable this gauge to exhibit the correct water level in the boiler, and not be affected by foam, &c.

More information may be obtained by letter addressed to Mr. Hearson at No. 13 South William street, this city.

Improved Horse-Power.

Measures to secure a patent for improvements in the above have been taken by P. G, Gardiner, of New York City. By this improvement the horse-power can be readily adjusted to drive any machinery, although it should be fixed in such a position as to render the ordinary arrangements useless. By causing to be adjustable the belt pulley, which transmits the force from the motive power to the machinery, the above-mentioned difficulty is surmounted, for the pulley can be turned and brought in line with the driving pulley of any machine, however inconveniently the latter may be situated. The plan adopted is briefly this, the shaft which carries the adjustable pulley rests in bearings fixed to a collar, which moves loosely around a socket, but can be held fast in any desired position by set screws.

Packing Goods in Boxes.

The great difficulty hitherto attendant on pressing goods in boxes, consists in the parting of the sides and bottom of the box under the pressure of the screw. To obviate this disadvantage, an improved method has been invented by J. E. Earle, Esq., of New York, who has taken measures to secure a patent. For this purpose two clamps are employed, which secure the bottom and likewise the sides of the box from the pressure of the screw-bed and follower. These latter are slotted, so that the clamps can pass through, and in like manner the clamps have apertures for fixing a couple of pins, against which the screw-bed bears when the screw is turned for forcing down the follower.

Securing Hubs to Axles.

An improved mode of attaching hubs to axles has been invented by William McBride, of Bristolville, Ohio. The above purpose is effected by using two clamps or jaws, each having a semicircular recess in the middle, which, when closed, form a circular opening, through which the arm of the axle is passed and secured tight in the hub. The clamps or jaws are opened or spread apart, so as to allow the hub to be attached to or detached from the axle by means of an oblong stud fixed to the end of a rod, which passes longitudinally through the hub, and is operated upon at the other end by a key. The stud, when the clamps or jaws are closed, is in a vertical position, and fits between the semicircular recesses already mentioned, so that when the stud is turned around, it forces the clamps apart, and consequently the opening formed by the recesses is made sufficiently large to allow the end of the axle to pass through.

Webster's Unabridged Dictionary.

By Governor Seymour's Message we learn that 8,500 copies of this great Dictionary were purchased last year for the use of School Districts in this State.

The Morse Telegraph---Its Principle.

A correspondent of the "Tribune" states that the operators of the telegraph running between Buffalo and Milwaukee, working under Morse's patent, have for some time past discontinued the practice of recording the signs, and have instead thereof received their messages by sound. This they have done for the last two years, without interruption, having found that they could receive three messages by sound in the same time which would be occupied in receiving two under the other system; and moreover, that in receiving by sound they make fewer mistakes than they were liable to in the use of the dots and dashes, and can also dispense with half the number of operators.

The mode of receiving messages by sound is very simple, and one operator is sufficient instead of two, who are required when the signs are recorded. The operator sits by the table in any part of the room where the message is received, and writes it down as the sounds are produced. The different sounds are made by the striking of the pen lever upon a piece of brass; thus three raps in rapid succession are made for the letter A, two raps, an interval, and then two raps more are made for B, and so forth.

We cannot see how fewer operators are required, or less mistakes made by sounds than by marks, and we question the correctness of the statement. Our object, however, in alluding to this subject at this time, is to point out the real genuine principle of Morse's invention. It consists in employing an *electro-magnet*, to make marks, or by its vibrations in any manner to convey the messages. It makes no matter whether it conveys those messages by sounds or by marks, in any telegraph which uses an *electro-magnet* operated by breaking and closing the circuit, the electro-magnet proclaiming the message by raps as spoken of above, or by making marks, embraces Morse's principle. According to Judge Kane's decision, the recording of the messages was the new art embraced in Morse's patent. The recording and the sounding of messages are only the effects produced by Morse's invention, not the invention itself, We give the principle of the invention its true meaning as explained by Prof. Morse himself, in Alfred Vail's work, entitled "The American Telegraph."

Wire Suspension Bridge.

A report has been recently received by the Corporation of Georgetown, D. C., from the distinguished engineer, Charles Ellet, Jr., Esq., on the much-talked-of scheme of a bridge across the Potomac near that town, at a spot called the Three Sisters, about half a mile west of the aqueduct. The bridge Mr. Ellet proposes is a wire suspension bridge, of such size and weight as to be competent to the uses of railroad as well as ordinary travel. At the preferred point, at the Three Sisters, the river is 1,030 feet wide, which would be the length of a bridge there. This distance Mr. Ellet proposes to span with a single arch, declining to use the granite rocks which lie in the river in the line of the proposed structure.

The cost of this structure he sets down at $297,870, but says that if the bridge be divided into two spans by a pier on the aforesaid rocks, the cost would be only $240,000. He prefers the sigle span, however, on account of its handsomer appearance. This bridge, he states, would be four times heavier and stouter, and therefore four times stronger, than the Wheeling suspension bridge (of which Mr. Ellet was constructor,) and would more than sustain the simultaneous pressure or weight of two locomotive engines with their tenders, forty loaded freight cars, one hundred loaded carts on the carriage-ways, and one hundred horses, enough to occupy the bridge from end to end, and in all amounting to six hundred tons weight.

Iron Furnaces.

The "Baltimore Sun" gives a list of thirty-one blast furnaces, all these are in Maryland of which it says that most of them have been idle during the late depression and excessive importation; but, prices having greatly improved, these works are now about going into blast again. Their aggregate capacity is seventy thousand and five hundred tons.