WALSH'S WATER WHEEL GOVERNOR.

We have been very strongly impressed with the efficiency of this ingenious device, not so much from the numerous testimonials which substantiate its merits as from personal examination of a working model, which convinces us that all the elements of a really good water wheel governor are combined in it.

Our engravings (Figs. 1 and 2) represent two different forms of this governor, the principle of construction being the same in each. Figs. 2 and 3 exhibit this principle.

A, Fig. 3, is the vertical shaft, which revolves the balls, driven by a pulley shaft and bevel gearing, shown in Figs. 1 and 2. The balls, as their orbit widens or narrows, move the collar, B, vertically, in the ordinary way. This movement of the collar actuates the bell crank lever, C. To the bell crank lever is pivoted the connecting rod, D, which is also pivoted to the shield, E, Figs. 1 and 3. This shield consists of a disk, as in Figs. 1 and 3, or sector of a disk, as shown in Fig. 2, which has a rim upon its edge turned down at right angles. This rim covers the toothed wheel, F, Figs. 1 and 3, but has a notch cut in its lower part, as shown in Fig. 3. To understand the office of this shield, we must now refer to the eccentric, G, Fig. 3. With each revolution of the ball shaft, this eccentric, through the connecting rod, H, reciprocates a cross head carrying the gravity pawls, I. One or the other of these pawls engages the toothed wheel, F, according as the notch in the rim of the shield permits the engagement. As the collar, B, Fig. 3, moves up and down with variations of speed, the shield is moved by the connecting rod, D, above described, so that the notch in the shield permits the proper pawl to act.

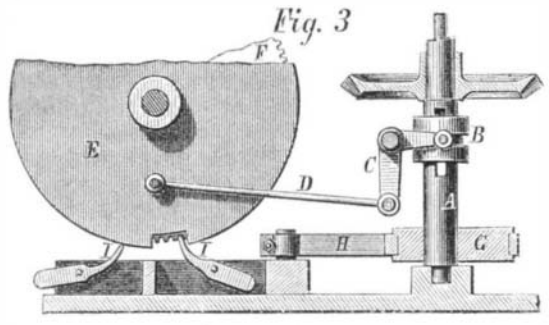


Fig. 3

The toothed wheel, F, Fig. 1, is fixed to the shaft, J, which is connected to the gate shaft by bevel gearing.

It is obvious that when the notch in the shield stands midway between the pawls, I, that neither of the pawls can act. Advantage is taken of this to limit the hight to which the gate can be raised by the governor. A nut and arm, K, run in a thread cut on the shaft, J, Fig. 1. The arm carries a pin, L. By the continued action of the pawl that raises the wheel, the nut, K, is run along the thread on J, till it finally abuts against a shoulder turned on the shaft, and then turns with the shaft. At the same time the pin, L, is brought under a lug, M, formed on the hub of the shield. The shield is thus turned so as to bring the notch to the center, where, as neither of the pawls can act, the gate cannot be further raised. As soon as the speed of the general shafting, to which the governor is belted, increases, the action of the collar, B, and bell crank, C, Fig. 3, moves the notch off the center so that the proper pawl to lower the gate acts as before.

Fig. 2 represents a governor made to act by two eccentrics, two systems of pawls, and two toothed wheels, so as to raise or lower the gate faster than the single system will, this style of governor being designed for certain turbines, the gates of which are operated with screws which require many turns to open or close the gate.

A friction brake, N, Fig. 1, is employed to hold the shaft, J, from turning back, as it will in some cases during the intervals between the impulses imparted by the pawls.

Patented, through the Scientific American Patent Agency, Oct. 6, 1868, and April 19, 1870. For further information, address A. Walsh, Cambridge, N. Y.

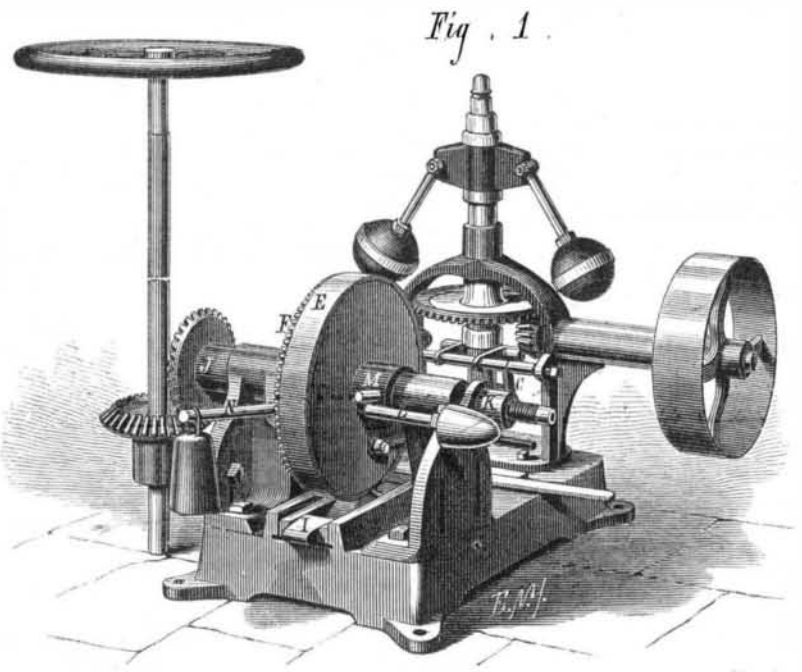


Fig. 1.

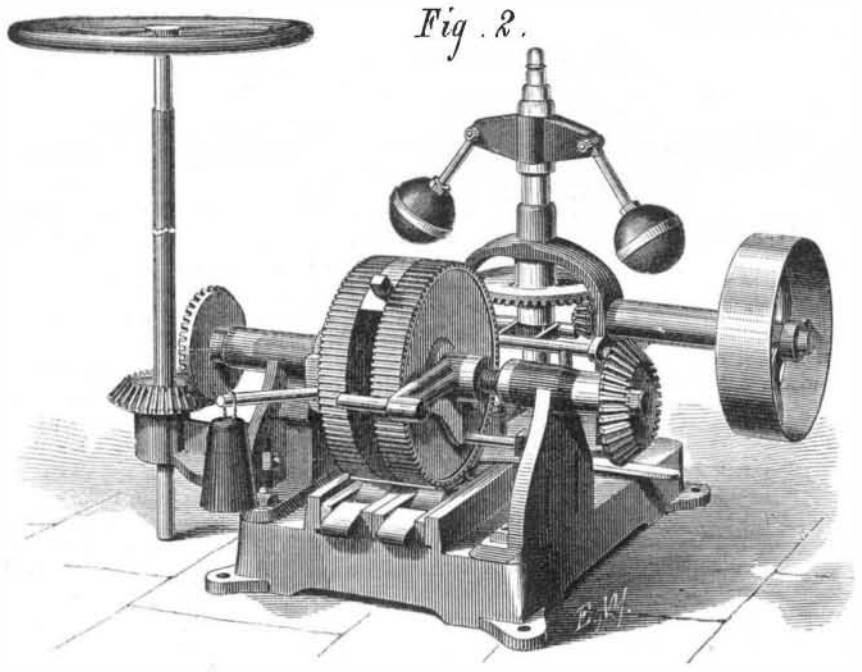


Fig. 2.

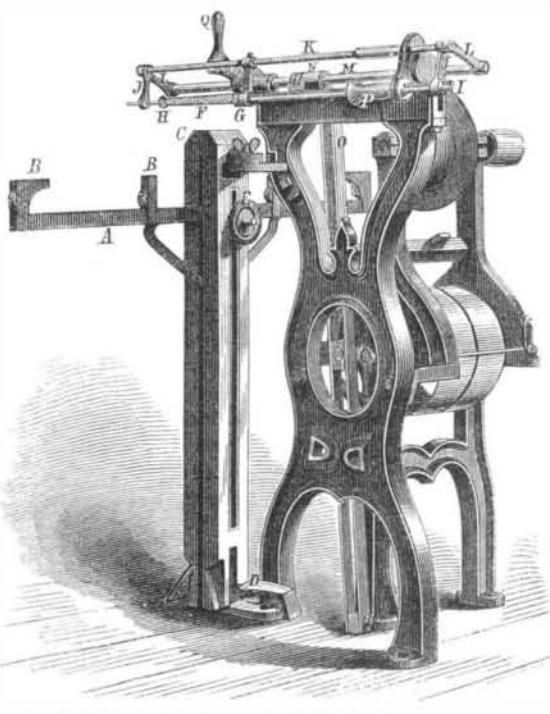
WALSH'S WATER WHEEL GOVERNOR.

Professor Treadwell.

Professor Daniel Treadwell died recently at Cambridge, Mass., aged 87 years. He was born at Ipswich, Mass., in 1791, was a man of great inventive genius, and to his labors and research the world is indebted for many valuable and useful discoveries in practical science. At an early age, he invented a machine for making screws. In 1818 he produced a printing press of a new construction, and in 1819 visited England, where he conceived the construction of a power press which, upon his return to this country, he completed, and which was the first upon this continent upon which a sheet was printed by other than human power. In 1822, in connection with Dr. John Ware, he established and conducted "The Boston Journal of Philosophy and Arts." In 1825, he was employed by the city of Boston to make a survey for the introduction of water and in 1829 completed a machine for spinning hemp for cordage, which was the first ever successfully used for the purpose and is still in use at all the navy yards in the United States. In 1832, he became Rumford Professor of Technology at Harvard College, which position he held until 1845. Shortly after becoming a professor he invented a cannon, which eighteen years ago was adopted and patented in England by Sir William Armstrong, and is now known to the world as the "Armstrong gun."

CHAPMAN'S IMPROVED SAW FILING MACHINE.

The original filing machine, manufactured by the inventor of the improved machine herewith illustrated, has been before the public for twenty years, and is familiar to the majority of American lumber manufacturers. The improved machine, which forms the subject of the accompanying engraving, is the result of practical knowledge gained during the period named, the improvements being numerous and important. The machine, as it is represented in our engraving, still retains the best points of the old machine, although the changes are so great that the machine may be said to be entirely remodeled.



The present machine is made wholly of iron, and is much more compact than the old one. The clamps are peculiarly formed, being adjustable and adapted to filing all styles and sizes of saws in common use. By means of the swinging frame described below, all kinds of files may be used, and can be easily and quickly exchanged. Both ends of the file are held, and thus the file is guided evenly and straight across the saw tooth, so that any person, however unacquainted with saw filing, may manage this machine. A peculiar arrangement of the connecting rod causes the file to traverse much more rapidly on its return stroke than in making its forward stroke, the motion thus produced simulating, in this respect, that of the file in filing saws by hand.

A simple and cheap appurtenance, consisting of an emery wheel and proper supporting devices, may be attached at the option of the purchaser, and answers the purpose secured by the more costly ones now in use.

It is claimed that, with this machine, one man can do three times the work that can be done by hand, doing it better, and with a less number of files, than would be consumed in doing the same work by manual labor.

Referring now to the engraving, A is a bar which supports the back of the saw. This bar is provided with guides, B, at the bottom of each of which is a roller. The bar, A, is supported, as shown, between the two parts of the clamping vise, C. The inner part of this vise rests upon a pivot at the bottom. It is pivoted at the top, a small graduated arc and pointer enabling the entire clamping device to be set at any required angle, to give the proper bevel to the saw teeth; when thus adjusted, it is held by a set screw. It is instantly clamped by the foot lever, D.

The hight of the guide bar, A, is regulated by the set screw, E, which is adjustable in the longitudinal slots of the two parts of the clamping vise. The file, F, has its shank inserted at G, and its point is held at H. It is held by adjustable devices, so that different sizes of files may be used; and being placed as shown, is reciprocated through the rod, I, the arms, J being connected with the rod, K, which is pivoted to the arms L, the latter being fastened to the rod, M. The rod, M, is reciprocated by the collar, N, the latter being actuated by the oscillating bar, O. The bar, O, is oscillated by a crank pin taking its motion from the pulley shaft, and impelling a sliding block in a longitudinal slot formed in the bar, O. It is by the latter means that the quick backward motion, as compared with the forward motion of the file, is secured. It will also be seen that the rods, I, K, M, reciprocate together. But the rod, I, has V shaped grooves, in which slide suitable ways formed in the handle, P. This handle does not reciprocate, being held by a device for that purpose. It may, however, be rotated, and when so rotated by the hand of the operator, it holds the file in the proper position to act properly upon the saw tooth.

The handle, Q, does not reciprocate, but through suitable devices it is used to rotate the rod, M, on its longitudinal axis; and in so doing, it will raise the file clear of the teeth during the advance of the saw, and, by reversing the motion, lower the file to its proper position for filing again. Both this movement and the one previously described may be made without stopping the reciprocation of the file, and thus the work can proceed rapidly and be performed with superior accuracy.

The machine is, as will be seen, very compact and substantial. The attachment of the emery wheel is shown in the engraving, and needs no particular comment, except that as we have remarked above, it saves the increased expense of a costlier device.

The improvements described were patented through the Scientific American Patent Agency, January 30, 1872, by T. M. Chapman, whom address for further information at Old Town, Maine.

WE have received from Washington the advertising circular of Joel Floyd & Co., under the free frank of Hon. R. R. Butler, member of Congress. We have occasion to send off large numbers of business circulars, but have heretofore been compelled to pay full postage on them. We would like to inquire of the Hon. Mr. Butler if he is open to an engagement to frank letters to other parties, and what his charges are to Floyd & Co. for attending to their postal business.

PROFESSOR SHEPARD, of Amherst College, Mass., has one of the largest collections of meteorites in the world. It embraces 146 different meteoric stones and 93 meteoric irons. The heaviest specimen of the irons is one from Aeirotopas, weighing 438 pounds, and the largest of the stones is that from New Concord, weighing 52 pounds.