

**THE GARDNER GOVERNOR.**

The invention illustrated in the annexed engravings is a new steam governor, which combines in its construction several points of advantage and merit. Among these may be noted a stop motion, by which the valve is closed down on its working seat when the governor belt breaks, instead of closing against another seat by the falling of the balls; a valve seat of hardened steel, or other durable metal, secured in a novel manner, and a facing of the valve with the same material, together with its mode of application; and, lastly, a hollow clamping or fastening stem for securing the valve seat, arranged to receive a guide stem for the lower end of the valve.

The illustrations are perspective, Fig. 1, and sectional, Fig. 2, views of the device. A is the hollow balanced valve contained in the chamber as shown. B is the inlet pipe, and C the conduit to the engine; D is the valve rod communicating with the weighted lever, E, Fig. 1, which serves to open the valve. The latter is closed by the rod, F. The fulcrum of the lever, E, consists of a tubular piece, G, fitted on a cylindrical rod secured to the plate, H, so that the tube can fall when required to do so, and will be regulated by the air cushion formed in its interior. In order to hold this fulcrum up in the required working position to cause the balls to regu-

late the valve, the frame is arranged so that it can turn on the plate, H, by a socket in its lower end, I, fitting over a stud on said plate. On the frame is an arm, J, which holds the fulcrum up by pressing under a flange or shoulder formed upon the tubular piece, G, Fig. 1. This arm is constantly borne in the direction to maintain the cylinder in such elevated position by the strain of the belt on the driving wheel, K, the belt being purposely so arranged.

The shoulder on the tube, G, is beveled, and the arm, J, is rounded so that the gravity of the weighted lever will constantly cause the latter to swing back and let the lever fall, closing the valve, when the frame is relieved of the strain of the driving belt by its breaking or running off the pulleys. The arm may be reversed on its application to the stand of the governor frame, so that the belt may be applied from either of two opposite directions.

The valve seat is made of hardened steel or American Sterling metal, in order to resist the cutting and wearing tendency of the steam. It is secured in place without the use of screw threads by seating it in a rabbet in the casting, and clamping it therein by the spider, L, fitted in a reverse rabbet in the steam tube below. A stem passes down through the spider and is fastened by a nut at its lower end. The valve is re-enforced by a ring face of metal similar to the above, held by the clamp shown, which is screwed up by a nut on the stem, M, which is fitted in the hollow stem of the valve seat to guide the lower end of the valve. The ring may be reversed, after being worn out on one side, and a new face presented.

It is claimed that, by having the valve close for stopping the engine on the same seat with which it acts to regulate the quantity of steam, not only is the cost of the extra seat commonly used, saved, but the opening of the valve wider before closing (together with the long movement usually made, causing the racing of the engine before its motion is arrested) is avoided. The trouble and delay due to the balls falling to the stop plane, and thus unnecessarily stopping the engine when a heavy load is thrown on with low steam, are also, it is stated, prevented by raising the valve by the weighted lever.

Patented through the Scientific American Patent Agency, May 20, 1873. For further information address the inventor and manufacturer, Robert W. Gardner, 424 Maine street Quincy, Ill.

**New Ozone Generator.**

Siemens' tube consists of a piece of glass tube, with an annular coating of tinfoil on the exterior; in the interior is a carefully turned brass box, slightly smaller than the glass tube, and tinned to protect it from the action of the ozone. Through this box, a current of ice-cold water can be passed, so as to prevent the heating of the apparatus, the oxygen or air passing through the annular space between the box and the glass tube, which is fitted with caps and tubes for that purpose. The brass box and tinfoil coating are connected with the induction coil in the usual way. This apparatus yields large quantities of ozone with great

ease, and appears to be more powerful than either of the other forms with the same battery power. Paraffin should be used for the joints, because, as pointed out by Sir Benjamin Brodie, that hydrocarbon is unattacked by ozone.

**Nose Bags for Horses.**

In New York city and other busy places, it is common to supply horses with their necessary noon luncheon of oats by means of a canvas bag, made like a bucket and hung, from behind the animal's ears, over the nose. To secure a mouthful, the pony is obliged to give the bag an upward toss, which fills his mouth but, at the same time, throws out and wastes a portion of the feed. The aggregate waste of

the washing vessel, A. The latter is circular at its lower portion, and is provided with a suitable cover. Within it is a loose open cylinder, B, which is formed by connecting two rims with transverse rods, C. B is a corrugated wheel revolved by the crank, E. F is another and similar wheel journaled in the cover, the corrugations of which correspond and engage with those of the wheel, D, from which it receives motion. The cylinder, B, is larger in diameter than the wheel, D, by which, it will be seen, it is revolved, and also broader, so that there is space for the length of the teeth of the wheels between the rims. It is supported on the bottom of the vessel by rollers, to prevent undue friction.

In this cylinder, the clothes to be washed are placed and secured by the rods, C. Thus contained, the garments are carried around between the corrugated wheels, and at every revolution are dipped into the water in the vessel, A. As they pass between the wheels, any required amount of pressure can be applied by means of the spring, G, attached to the cover. A cord, H, is attached to the end of the spring, and is secured to the ratchet wheel crank shaft, as shown.

The vessel, A, is made of metal, so that, if necessary, the water may be kept at the boiling point and even a pressure of steam may be obtained, thus quickly clean-

sing the clothes. Wringing is effected by turning the crank back and forth so that the articles are squeezed between the wheels and not allowed to dip into the water.

I is a stand attached to the side of the machine, which is provided with a pulley and hooks for raising the wheel and cylinder from the vessel, slots being made in the sides of the latter, which allow the journals of the wheel to be raised clear therefrom, so that the receptacle may be used as an ordinary wash tub or boiler. The faucet shown serves to draw off the water, and the pipe to carry off the smoke.

Patented by Mr. Alfred L. D. Moore, of La Grange, Fayette county, Texas, who may be addressed for further particulars.

**THE TUNNICLIFFE FIRE ALARM.**

One of the simplest and, to all appearances, most effective devices for giving timely alarm, in case of fire breaking out in a building, is the ingenious little invention the name of which forms the heading of this article. It is nothing more than a cylindrical barrel some three inches long by an inch and a half in diameter, which, by a screw attached midway along its length, may be readily secured to the ceiling or any part of the room desired. An engraving of the article may be seen on the back page of this number. It is made of malleable iron, with a smooth bore, and contains, when ready for use, a small charge of powder, to which is attached an inch of fuse. This fuse is formed of a chemical mixture that will ignite whenever the surrounding atmosphere is heated to 200° Fah.; that is to say, it is kindled by merely heated air, and at a temperature less than that of boiling water. In case of fire, the heat, which ascends at once to the ceiling, quickly ignites the fuse, and causes the required explosion to take place before the flames can get beyond a point at which they may be quenched by a pail of water.

The discharge of one of these protective instruments makes a report as loud as that of an army musket loaded with a regulation cartridge, sufficiently loud to be heard all over an ordinary four story building. The alarms can be so arranged as to ring bells in any desired room in the building where placed, and have already been attached to wires connected with burglar alarms in both stores and residences.

We recently took occasion to examine the working of this alarm at the manufacturer's, 697 Broadway, this city, where the alarm may be seen in operation any day; and by testing the degree of heat with a thermometer, we found that the fuse exploded and fired the instrument as soon as the specified limit of temperature was attained. We were assured that neither charge nor priming deteriorates by age, and that the explosion was unattended with either danger or marring of the wall. Many officers of insurance companies have recommended the adoption of the device as a preventive against fire. From an inspection of its operation, we are inclined to consider the invention as of considerable utility and merit. Its employment in the localities where many of the greatest conflagrations have originated would doubtless have been the means of timely warning and thus have prevented the vast losses which ensued.

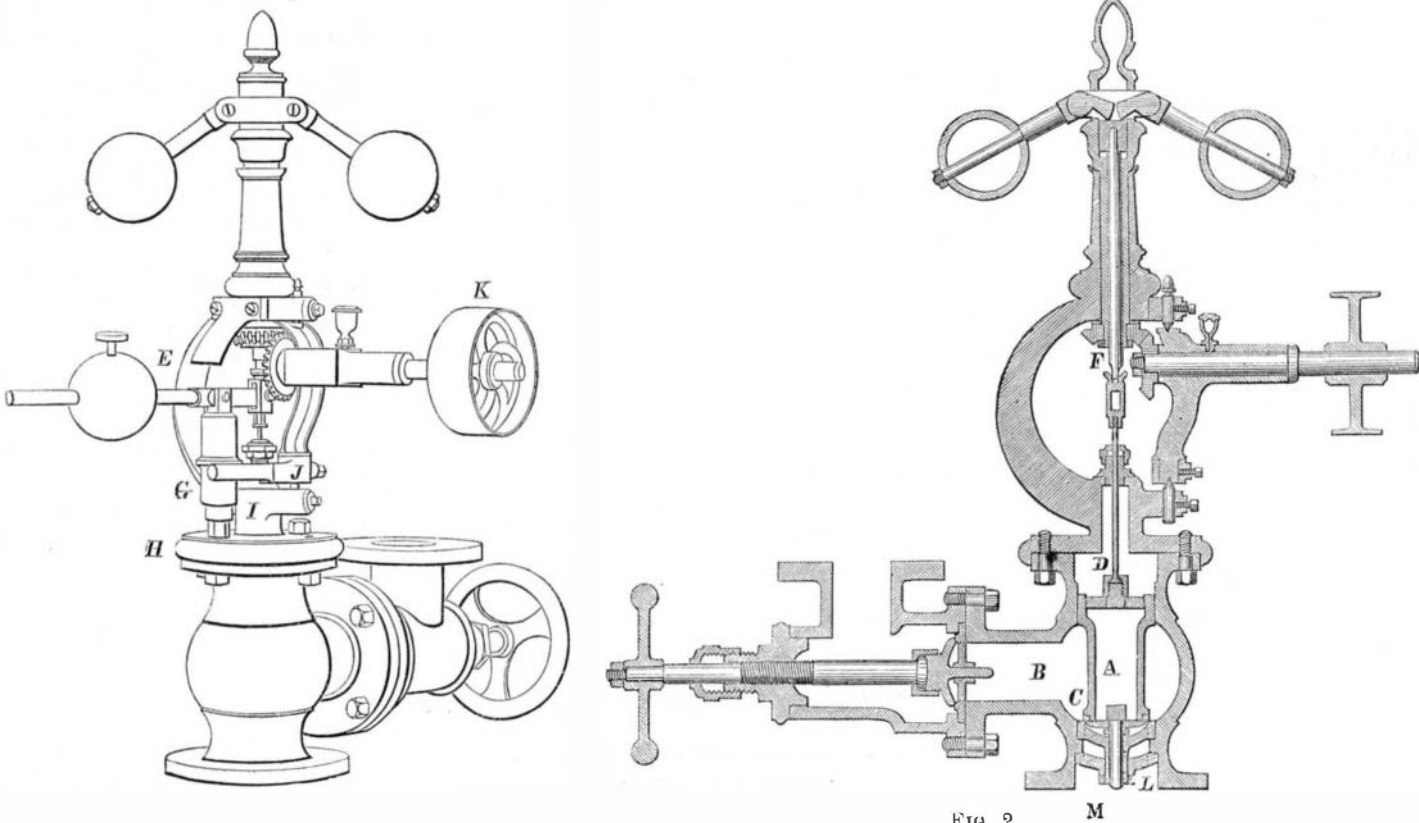


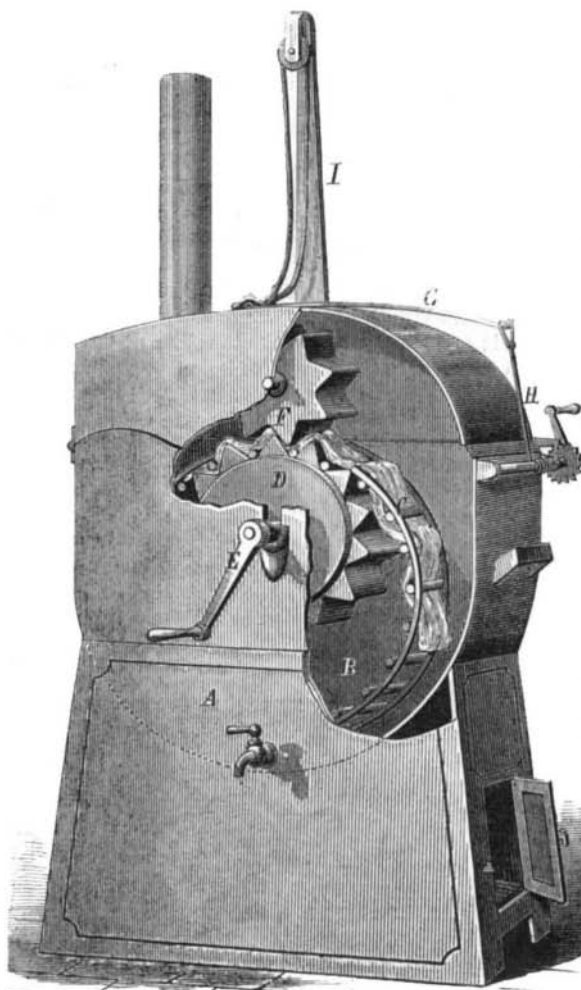
FIG. 2.

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oats in this city alone, from the common nose bags, is estimated at fifty thousand dollars a year. A variety of devices have been invented to prevent this loss, one of the latest being that by H. D. McGovern, of Brooklyn, N. Y., who puts an additional bottom, within the bag, on which the oats are placed. Under this bottom is a spiral spring. The weight of the oats compresses the spring, which expands as fast as the oats are eaten, thus keeping the supply always at the same level within the bags. The principle is the same as the spring candle holders for coaches and cars.

**IMPROVED WASHING MACHINE.**

This invention is another recently patented apparatus for washing clothes, which may be used either with or without



A furnace for heating the water. The clothes may be boiled, washed, and afterwards wrung out in the same receptacle. The furnace or fire box is shown in our illustration under