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Improved Chronometer Governor and Balanced Throttle.

In this engraving we have a view of a new governor, designed by Mr. John Tremper, of Philadelphia, and intended to economize fuel, keep the engine under perfect control, render any speed attainable at a moment's notice, and thereby improve the value of the steam engine as an economical motor.

It is notorious that of all good servan s steam engines are the hardest used. They are not only badly designed, built, and run, but they are placed in all sorts of exposed situations, and neglected so much, in various ways, that it is no wonder that it takes 12 pounds of coal to produce a horse-power on an average, when one-sixth of that amount ought to suffice.

This mechanism governs the engine by cutting off the steam at the point required to do the work. It admits just as much steam at every stroke of the piston as may be required, and in that way maintains a constant and regular action.

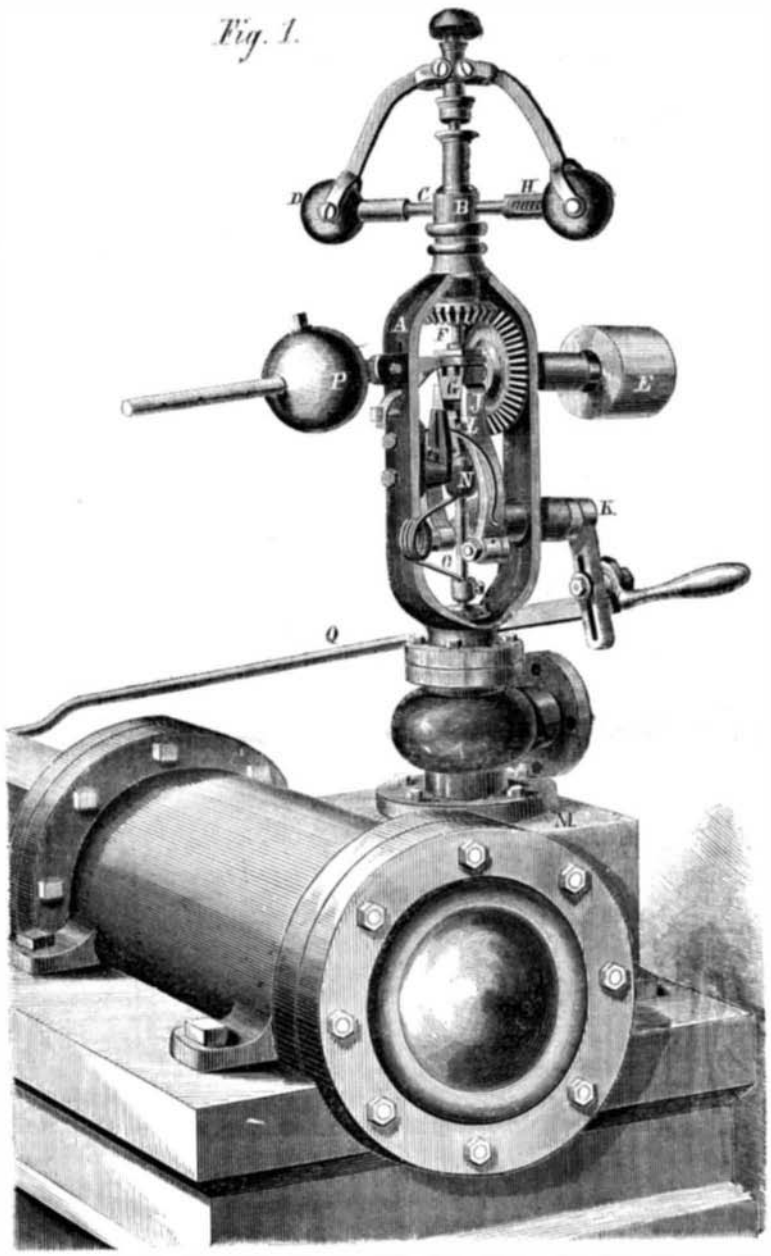
In the engraving, A represents a frame carrying an upright spindle, B, in which the arms of the governor are fixed.

This governor is peculiar in construction, as can be seen at a glance. The balls, D, are fitted to the arms, C, and slide thereon, the arms being revolved by the bevel gears and pulley, E. When revolved, the balls fly out, and in doing so depress the stem, F, which connects to the wedge, G, for a purpose described below. Any fluctuation in the speed of the engine, whether above or below that the governor is set to, is, therefore, instantly corrected by the movement of the balls, they being thrown out by centrifugal force, and returned to their positions by the centripetal action of the springs shown in the broken-out portion of the shank, H.

When the wedge before alluded to is depressed it acts on two jaws, J, which are connected to a rock shaft, K. These arms have steel bars, L, let into them which catch on the head of the valve stem and raise it, as clearly shown by the engraving. The arms receive motion from the rock shaft before mentioned, and are, therefore. raised vertically, carrying the valve stem and valve with them, until they strike the wedge, G, up which they continue to rise until the valve below is released from them, when it falls and shuts off the steam in the steam chest, M; from this chest it goes to the cylinder through the valve, as usual.

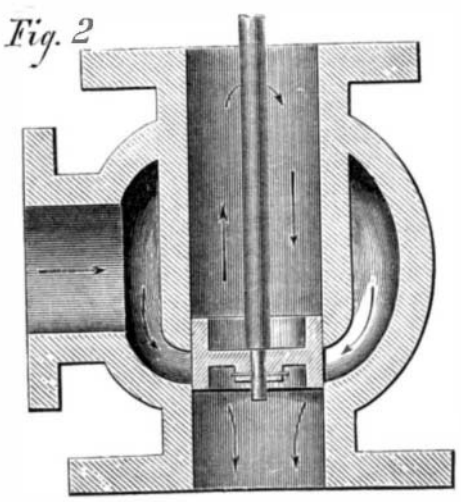
The throttle valve is shown in Fig. 2, and it will be seen that it has no seat, and that consequently there is no jar or concnssion at every stroke, as in some machines. The valve is stopped, so that it shuts at the right place by a bracket, N. The socket on the head of the valve stem brings up on a cork facing in this bracket. The spring, O, is to seat the valve quickly. As it is a balanced valve, it needs some aid of this kind to shut quickly and prevent wiredrawing the steam.

Fig. 1.



TREMPER'S CHRONOMETER GOVERNOR AND BALANCED THROTTLE.

Fig. 2



The speed of the engine is regulated by shifting the ball, P, on the lever. This increases the labor on the balls by adding to the weight to be overcome by the centrifugal force, so that the engine runs faster to make the force greater. The cut-off valve is operated by an eccentric on the shaft, and a rod, Q, as shown.

The governor will act just as well without this weight, and it is only applied where a variable speed is required. At whatever velocity it is set to give, the governor will maintain it regularly for all time. The cut-off jaws, being attached below the center of the rock shaft, have a tendency to fall in toward the valve-stem socket, so that they always hold well without any danger of slipping, and the hard-steel edge in both the jaws and socket enable them to wear a long time. The engine can be stopped from any part of the building, if necessary, and the governor can be applied to any engine, new or old.

It is stated that hundreds are now in use in Philadelphia and vicinity, and giving entire satisfaction. We are of opinion that the governor will effect a saving in fuel on engines without cut-offs, and that it will act properly when well taken care of.

It was patented through the Scientific American Patent Agency by John Tremper, of Philadelphia. Address him at No. 316 North Third street, Philadelphia, or E. Weston, agent, Vulcan Foundery, Buffalo, N. Y.

The Manufacture of Paper.

A substitute for rags in the manufacture of paper has been discovered by M. Caminade, for which he has obtained a patent. According to M. Caminade, the root of the lucern plant when dried and beaten shows thousands of very white fibers, which form an excellent paste for paper makers, and may be substituted with great advantage for rags. The pulp, beside the thread for paper, produces salt of soda and a coloring matter cal'ed by the inventor luzerine. It is calculated that France produces annually 75,000,000 kilogrammes of paper, of which one-seventh is exported, leaving not more than two kilogrammes for each inhabitant. It is consequently inferred that the production of paper would increase considerably were it not for the scarcity of the raw material. M. Gratiot, a good authority on the subject, states that it requires one pound and a quarter of rags to make one pound of paper, and that rags are eagerly sought after by every nation where paper is manufactured. This warm competition makes rags scarce and dear. Those who possess this article store it up in order to obtain a higher price, well aware that the quantity is limited. French economists express their conviction that, according as instruction becomes developed among the mass of the population, the 75,000,000 kilogrammes of paper at present produced will not be sufficient for the home consumption. It consequently becomes a matter of necessity to find a substitute for rags

MEN working at the treadmill perform work equivalent to ascending half a mile per hour.