

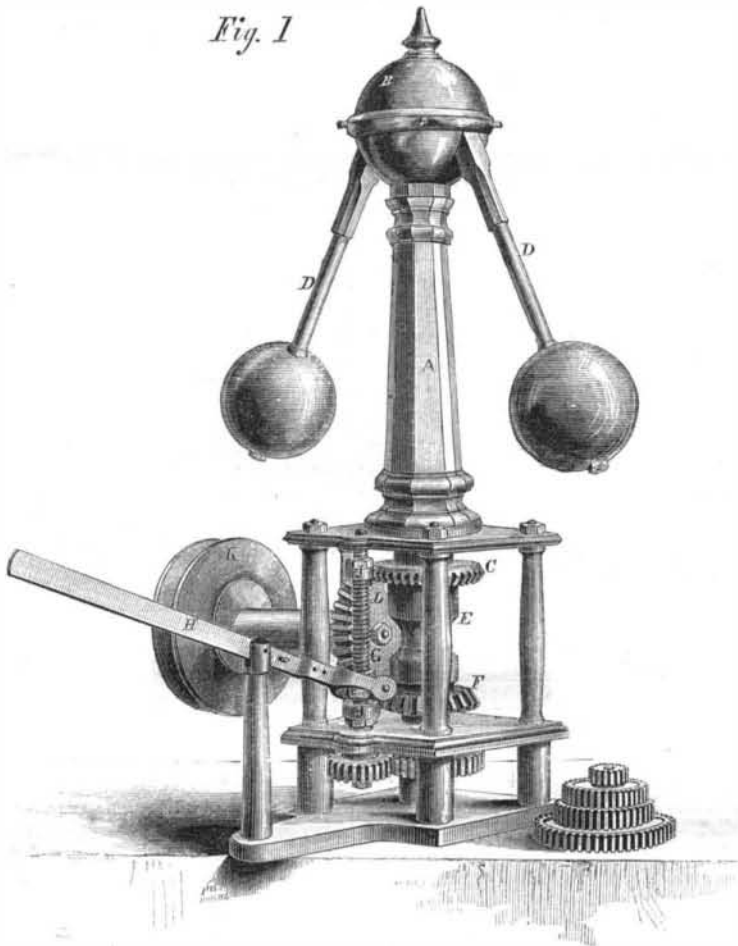
Improved Patent Governor.

All our readers are so familiar with the uses to which the invention herewith illustrated is applied, that we forbear any comments upon this branch of the subject and proceed at once to describe the apparatus, which in its arrangement and design is both novel and praiseworthy. The column, A, has the hollow spherical head, B, attached to a tube running through the center of the column connected at the bottom with the crown gear, C. This case contains a rod which has a shoulder on it in which the ends of the levers, D, work. The clutch, E, is secured to

are two stationary nuts, J, which can be set at any desired point. The pulley, K, transmits power from the engine to the whole apparatus through the bevel gear, L. These are the principal details of the apparatus. The operation of them will be understood by referring to the annexed description:—

When the balls are revolved they maintain a position whose distance from the column is proportioned to the speed at which they travel; as they rise or fall by an increase or decrease in the number of the revolutions, the clutch is thrown into communication with the upper or lower gear and thus rotates the

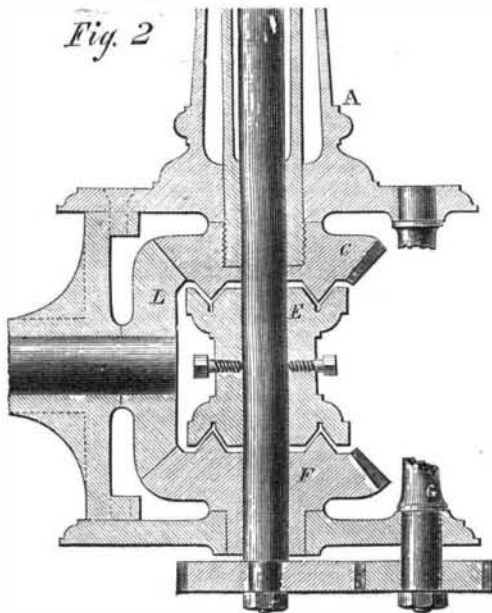
Fig. 1



HOWELL'S PATENT GOVERNOR.

the rod just mentioned by set-screws. In either end of the clutch there is a V-shaped groove which is accurately fitted to corresponding projections on the gear, C and F, (see Fig. 2).

Fig. 2



Below the two standard plates on which the machinery is placed may be seen a spur wheel connecting with a pinion; this wheel is keyed on to the same rod that carries the clutch and operates, through the pinion just mentioned, the screw shaft, G. The lever, H, is jointed to the upright, and the forked end of it connects with a nut working on the screw shaft. At either end of the screw shaft

gear connecting with the screw shaft. As the screw shaft moves in obedience to the machinery, the nut in the lever runs up and depresses the opposite end of the same, which is in connection with the steam or throttle valve. The whole duty of the balls is exerted on the friction clutch; the motion is very slight, as the distance between the clutch and the gears it drives is only one-sixteenth of an inch. The gears placed at the side of the machine are intended to accelerate the speed of the screw shaft as may be desirable. This is a necessary feature and it strikes us that if the screw shaft itself had a quicker pitch on it the apparatus would be still more effectual. As it is, when properly made, it must be a sensitive governor, and we are assured that it gives great satisfaction in the navy yard at Portsmouth, N. H., where it is now used. This governor was patented on Dec. 23, 1862, by John S. Howell, of Portsmouth, N. H., and further information can be had by addressing him at that place.

Electro-metallurgy.

This term is applied to the art of depositing metals upon one another, or upon non-metallic bodies—an important invention, which dates from about the year 1840. At the present time numerous persons are engaged in this business in Sheffield, Birmingham, and London. The simplest mode of operating is to employ in one cell Smee's or Daniel's battery, for the purpose of generating the electric force; then to have a second vessel, of a size sufficient to hold the article to be coated with metal. If it be intended to coat the object with copper, then this vessel must be filled with a saturated solution of sulphate of copper, and a sheet of copper placed into it. This is connected by a wire to the copper of the battery, another wire is made to connect the zinc of the bat-

tery with the object to be coated. The battery being set in action with weak sulphuric acid and water, the deposit of metal takes place without further trouble. If the article is to be coated with silver, then a solution of cyanide of silver is used, and a silver plate, instead of the copper-salt and plate mentioned. Every metal can be thus deposited from its solution when the proper salt of the metal is employed. If the object to be coated is metal, nothing but absolute cleanliness is necessary; but if the object be wax, plaster-cast, wood, &c., then it must be brushed over with fine black lead, in order to make the electric fluid travel, all objects except metals being non-conductors. Beginners should commence with small objects, as a little experience is necessary to lead to satisfactory results.—*Septimus Piessé.*



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