R. K. HUNTOON.

Improvement in Engine-Governors.

No. 114,296. Patented May 2, 1871.

Fig. 3.

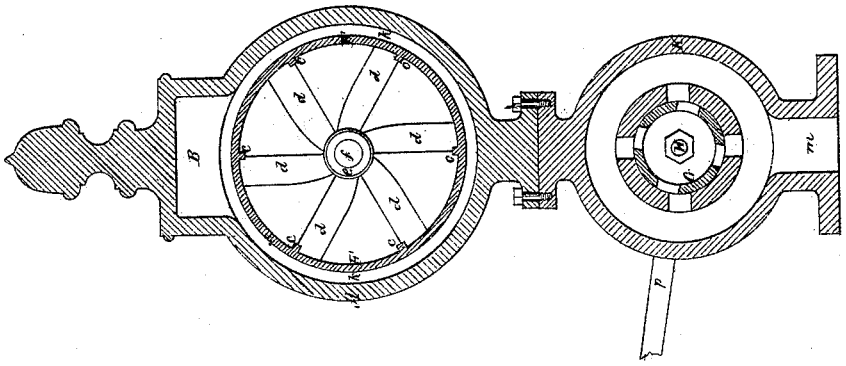


Fig. 2.

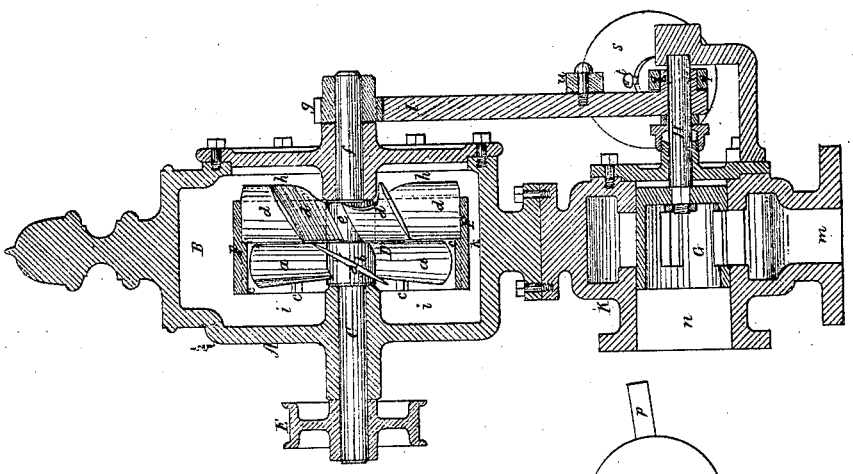
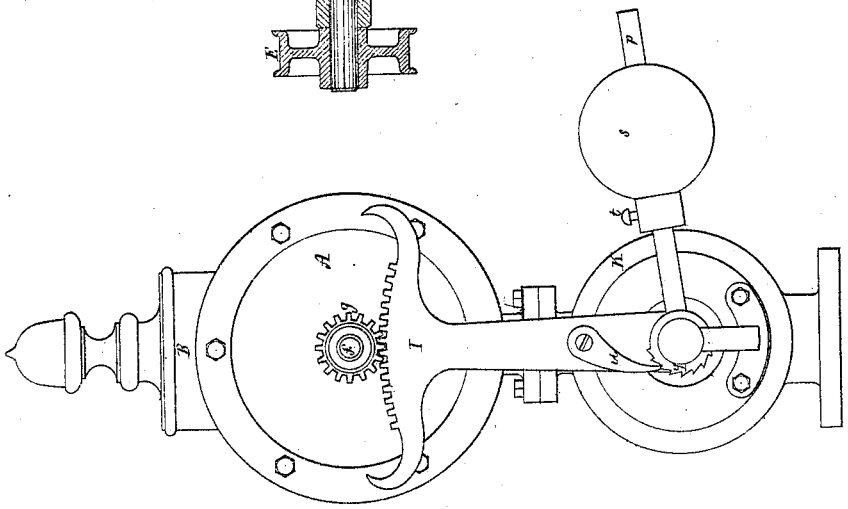


Fig. 1.



Witnesses

S. N. Piper

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UNITED STATES PATENT OFFICE.

REUBEN K. HUNTOON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ENGINE-GOVERNORS.

Specification forming part of Letters Patent No. **114,296**, dated May 2, 1871.

To all persons to whom these presents may come:

Be it known that I, REUBEN K. HUNTOON, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Engine-Governor; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a front elevation, Fig. 2 a longitudinal section, and Fig. 3 a transverse section, of it as applied to the valve of a conduit for supply of steam to a steam-engine.

In such drawing, A denotes the hollow case, cylindrical in form, and surmounted by a dome, B, opening into the case. The purposes of such dome will be hereinafter described. Extending into the case at one end of it, transversely and axially, is a shaft, C, on which there is fixed, inside of the case, a screw-propeller, D, or a series of oblique fan-blades, *a a a a*, projected from a cylindrical hub, *b*. A driving wheel or pulley, E, is fixed on the outer part of the shaft. Encompassing the said propeller is a hollow cylinder, F, which is open at its ends, and furnished on its interior periphery with a series of ribs, *c*, arranged at equal distances asunder. Such cylinder F is supported in position by a series of oblique blades or flat arms, *d d d*, which radiate from a common hub, *e*, arranged as shown, and fixed upon another shaft, *f*. This latter shaft extends through the next adjacent end of the case A, and is provided with a gear, *g*, fixed on that portion of the shaft which projects from the case.

There is a free space, *h*, between the auxiliary propeller or series of blades *d* and the next adjacent side or head of the case A, and there is also a similar space, *i*, between the blades of the main propeller D and that head of the case which is next adjacent to such propeller.

Furthermore, there is an annular space, *k*, surrounding the hollow cylinder F, and freely communicating with the space *h i*, hereinbefore named.

Underneath the case A is the valve-case K, which is provided with induction and eduction openings *m n* and a hollow cylindrical or conical valve, G, all being as represented. The valve is fixed on a shaft, H, that extends through one end of the case K and carries a gear, or, what is better, a toothed sector, I, to engage with the pinion or gear *g*.

An arm, *p*, projecting from a ratchet-wheel, *q*, that turns freely on a journal, *r*, extending from the toothed sector in manner as shown, carries an adjustable weight, *s*, provided with a set-screw, *t*, for fixing such weight to the arm.

A pawl, *u*, pivoted to the sector, engages with the ratchet, all being as represented.

A driving-band or endless belt, proceeding from some pulley of the steam-engine, is to pass around and give motion to the pulley of the main propeller, so as to set the latter in revolution within the case, the said case being filled with a liquid when the governor is in use.

The action of the blades of the main propeller on the liquid will not only force it tangentially against the ribs of the auxiliary propeller, but laterally against its blades, thereby putting the auxiliary propeller in revolution, and creating a circulation of the fluid through both propellers and around the hollow cylinder F, in or about in the plane of its axis, all of which effects a very favorable action on the auxiliary propeller, so as to cause it to operate to advantage its shaft and the valve-actuating mechanism connected therewith.

By producing circulation of the fluid in a plane transverse to the case A, instead of one at right angles with the axis of the case, revolution of the liquid in the direction of rotation of the parts within the case will be more or less checked, and, as a consequence, the power of the main propeller to actuate the auxiliary one and its connections will be enhanced.

By means of the counterbalance-weight *s* and the arm *p* the necessary leverage on the toothed sector to counteract to the requisite degree the power of the main propeller to operate the auxiliary one may be obtained.

The object of the hollow dome of the case A is to enable the case to be kept full of the liquid, and the latter to either expand or contract under changes of temperature or from other causes; also, to operate to prevent the liquid from revolving in the case in a plane at right angles with the axis of such case.

The shafts of the two propellers are to be supported in stuffing-boxes applied to the heads of the case.

The engine-governor constructed as described is very sensitive and efficient in operation.

I claim as my invention—

1. The combination of the main and auxiliary oblique-winged propellers, the ribbed cylinder F, and their separate shafts, with the case A to hold a liquid, as described, all being substantially as set forth.

2. The engine-governor, as composed of the instrumentalities as described, arranged and combined together, and with the valve and its case, as set forth, such consisting of the closed case, the main and auxiliary oblique-winged propellers, the ribbed hollow cylinder F, the separate shafts of the propellers, the pinion, the toothed sector, the arm, and counterbalance-weight, all as explained.

R. K. HUNTOON.

Witnesses:
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S. N. PIPER.