No. 766,076. PATENTED JULY 26, 1904.

C. E. TERRELL.

ENGINE GOVERNOR.

APPLICATION FILED OCT. 14, 1903.

NO MODEL.

Fig. 1.

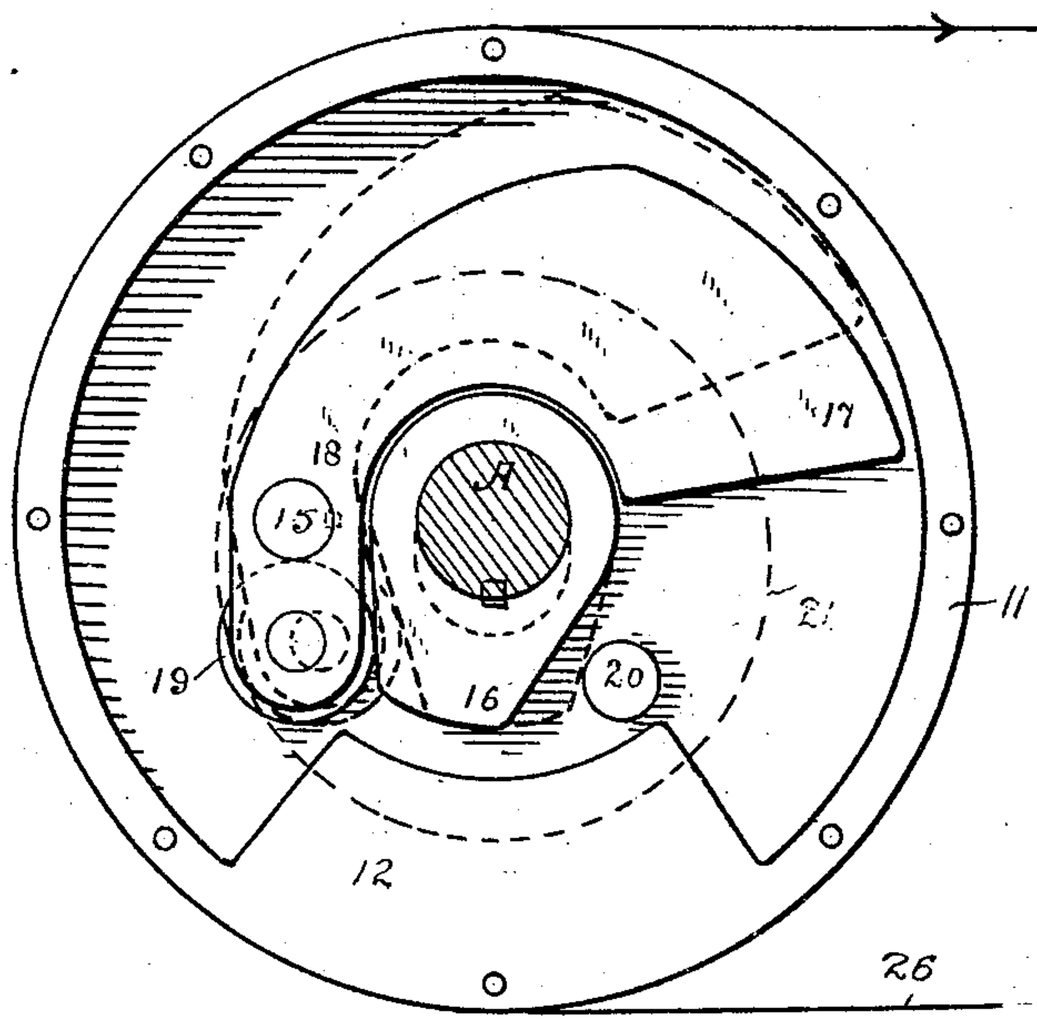


Fig. 2.

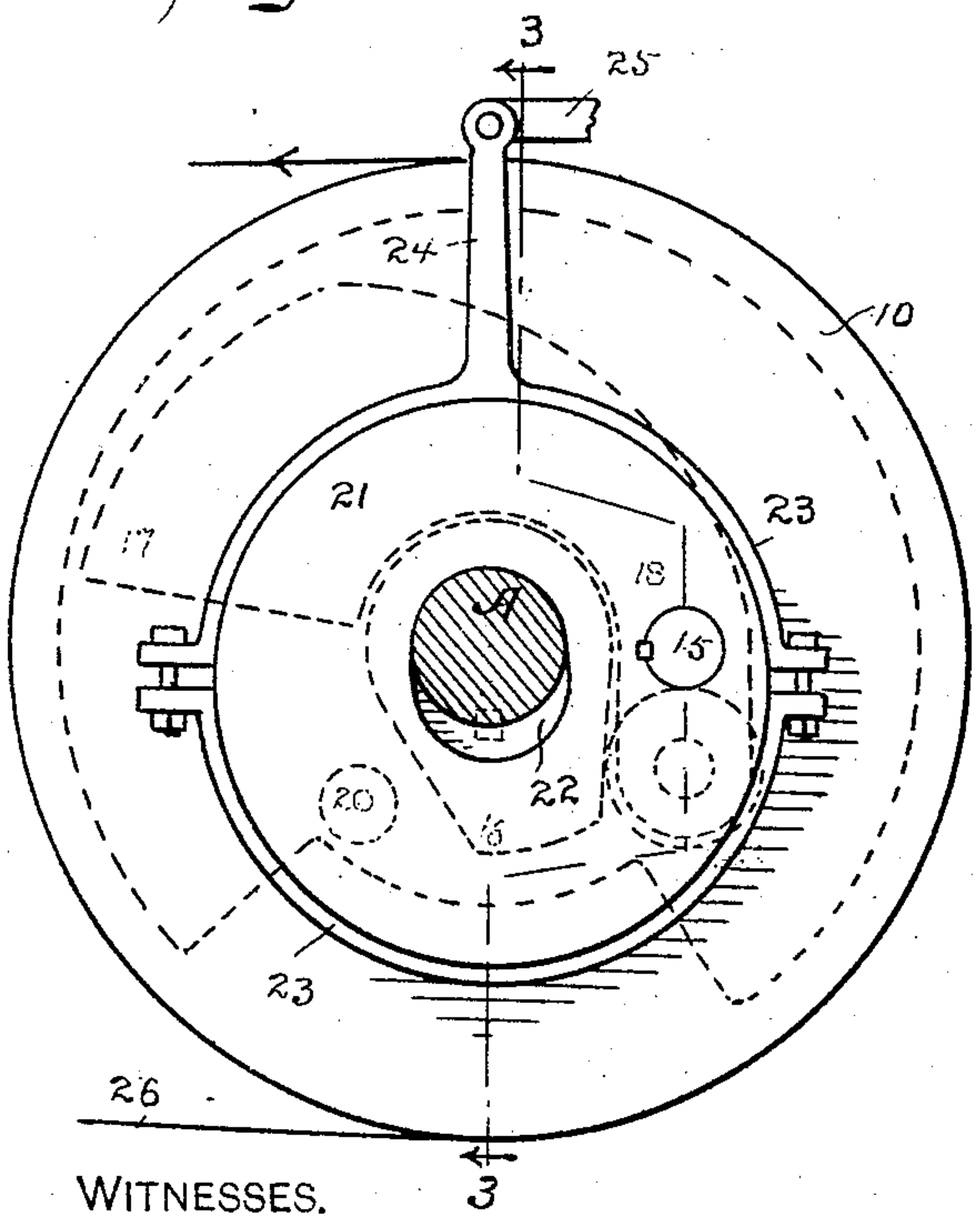
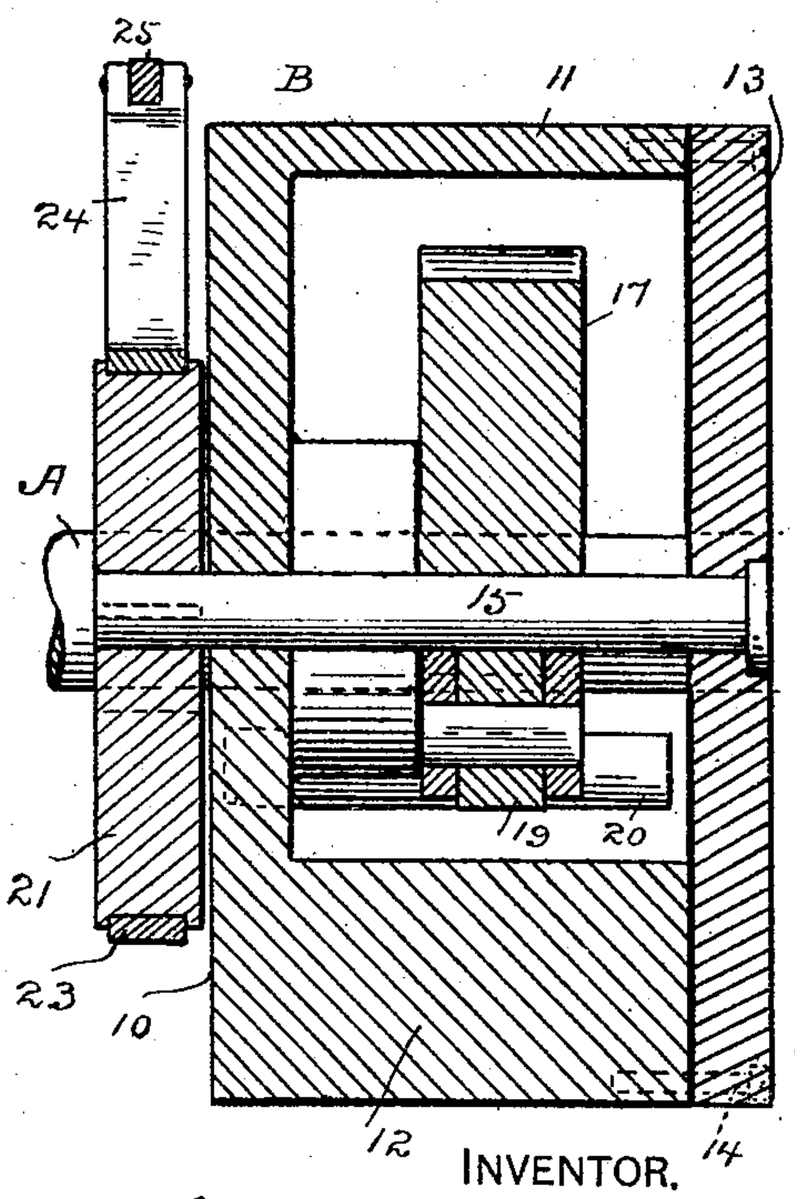


Fig. 3.



WITNESSES.

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No. 766,076. Patented July 26, 1904.

UNITED STATES PATENT OFFICE.

CHARLES E. TERRELL, OF BRIDGEPORT, CONNECTICUT.

ENGINE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 766,076, dated July 26, 1904.

Application filed October 14, 1903. Serial No. 176,976. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. TERRELL, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Engine-Governor, of which the following is a specification.

My invention has for its object to provide a governor adapted for use upon the various types of stationary engines—as, for example, steam, gasolene, or kerosene engines—the action of which shall be to maintain the speed without variation under the constant variations in load of an engine in use. With this and other objects in view I have devised an engine-governor in which centrifugal force acting upon a weight is utilized to move an eccentric toward the center, thereby decreasing the movement of power-controlling mechanism as the load decreases, increase of load acting against centrifugal force to move the eccentric from the center, thereby increasing the movement of the power-controlling mechanism without change of speed.

In the accompanying drawings, forming part of this specification, in which similar reference characters indicate the same parts, Figure 1 is an elevation of the pulley as seen from the right in Fig. 3 with the face-plate removed, showing in full lines the position of the weight in carrying a full load and in dotted lines the position the weight would assume with a very light load; Fig. 2, an elevation as seen from the left in Fig. 3, showing the eccentric in a position corresponding with the full-line position of the weight in Fig. 1; and Fig. 3 is a section on the line 3 3 in Fig. 2.

The novelty of the invention consists in providing within a driving-pulley a weight connected to an eccentric and so pivoted that increase of load will overcome centrifugal force and move the eccentric away from the center, thereby increasing the movement of power-controlling mechanism—as, for example, the pump of a kerosene-engine, the pump of certain types of naphtha-engines and the valve mechanism of other types of naphtha-engines, and the valve mechanism of steam-engines.

A denotes a driven shaft, and B a driving-pulley loose thereon. This pulley is made hollow, one wall, which for convenience I will term the "outer" wall and indicate by 10, the periphery, (indicated by 11,) and an interior counterweight, (indicated by 12,) being shown as cast in a single piece and the other wall, which for convenience I term the "inner" wall and indicate by 13, being shown as secured to the periphery by screws 14. (See dotted lines, Fig. 3.) In practice I make a tight joint between the inner wall and the periphery, so that the interior of the pulley in addition to carrying the weight may also serve as an oil-reservoir.

15 denotes a rock-shaft mounted to oscillate in the outer and inner walls of the pulley at one side of the center.

16 denotes a carrier keyed to the shaft within the pulley, by means of which the rotary motion of the shaft is communicated to the pulley.

17 denotes a weight, which may be so shaped as to partly inclose the carrier, as shown in the drawings. This weight is provided with a shank 18, which is keyed to the rock-shaft and the end of which is adapted to be engaged by the carrier, as clearly shown in Fig. 1, to impart movement to the pulley. I have shown the end of the shank opposite to the weight as provided with a roller 19, which is engaged by the carrier. Said roller is, however, not an essential feature of construction.

20 denotes a stop-pin which limits the movement of the carrier in the opposite direction, as will be more fully explained.

21 denotes the eccentric, which is, in fact, a disk with an eccentric opening 22 at its center, through which the shaft passes. Rock-shaft 15 passes through wall 10 of the pulley, and the eccentric is keyed thereto, as clearly shown in Fig. 2.

23 denotes the eccentric-strap, 24 an arm extending therefrom, and 25 a rod extending from the arm to any power-controlling device—as, for example, valve mechanism or a naphtha or oil pump, (not shown in the drawings,) as the special power-controlling mechanism used forms no portion of my pres-

ent invention, the power-controlling rod being adapted to act upon one type of power-controlling device as well as another.

The operation is as follows: Centrifugal force acts normally to throw the weight outward and to swing the shank from the position shown in full lines in Fig. 1 toward the right, moving the carrier, as shown in dotted lines in said figure, stop-pin 20 being provided simply to limit the movement of the carrier when the load is extremely light. As the weight moves outward and the shank moves toward the right, as indicated by dotted lines in Fig. 1, the effect is through the oscillation of the rock-shaft to move the eccentric toward the center until at the extreme of the movement of the shank toward the right the corresponding oscillation of the rock-shaft would have moved the eccentric to a position nearly or quite concentric with the shaft, so that the throw of the eccentric-strap, arm, and power-controlling rod would be greatly reduced, or, if required, stopped entirely. When the load increases, however, there is of course a drag upon the belt which I have indicated by 26. The effect of this drag is to hold the pulley back, and consequently to increase the pressure of the carrier against the shank of the weight. As this pressure increases the tendency is to move the weight from the position shown in dotted lines in Fig. 1 toward the position shown in full lines in said figure, and the effect of the corresponding oscillation of the rock-shaft is to throw the eccentric away from the center, thereby increasing the throw of the power-controlling rod, Fig. 2 showing the position of the eccentric when thrown farthest from the center—that is, when the engine is carrying a full load. The instant the load is released, however, centrifugal force will act to throw the weight outward again toward the position shown in dotted lines in Fig. 1, which will move the shank and the carrier toward the right, as seen in said figure, and the corresponding oscillation of the rock-shaft will move the eccentric toward the center, thereby reducing the throw of the power-controlling rod.

Having thus described my invention, I claim—

The combination with a shaft having a carrier rigidly fixed thereto and a pulley loose thereon, said carrier being located within the pulley, of a rock-shaft journaled in the pulley and carrying a weight having a shank directly engaged by the carrier and an eccentric having an opening through which the shaft passes, centrifugal force acting normally to throw the weight outward and move the eccentric toward the center, and increase of load acting, through the engagement of the carrier with the shank of the weight, to move the latter inward and the eccentric away from the center.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. TERRELL.

Witnesses:

A. M. WOOSTER,

S. W. ATHERTON.