

(No Model.)

F. A. & T. SCHEFFLER.

STEAM ENGINE GOVERNOR.

No. 386,036.

Patented July 10, 1888.

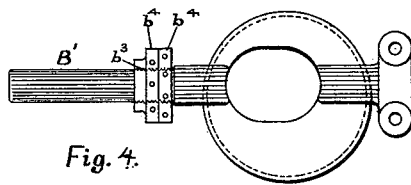


Fig. 4.

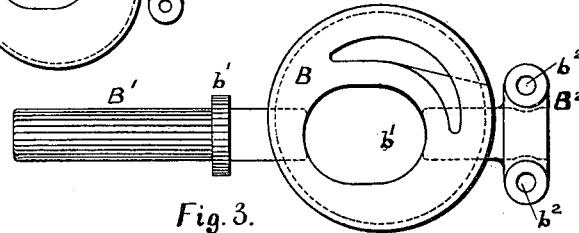


Fig. 3.

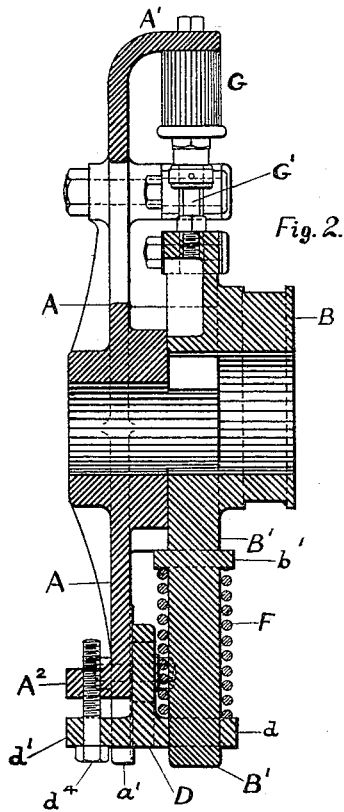


Fig. 2.

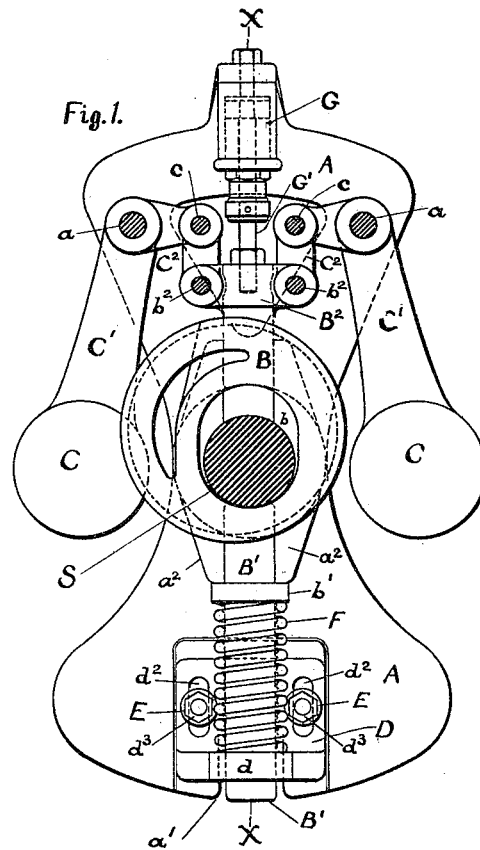


Fig. 1.

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UNITED STATES PATENT OFFICE.

FREDERICK A. SCHEFFLER, OF ERIE, PENNSYLVANIA, AND THEODORE SCHEFFLER, OF PATERSON, NEW JERSEY, ASSIGNORS TO THE ERIE CITY IRON WORKS, OF ERIE, PENNSYLVANIA.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 386,036, dated July 10, 1888.

Application filed December 21, 1887. Serial No. 258,624. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK A. SCHEFFLER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, and THEODORE SCHEFFLER, a citizen of the United States, residing at Paterson, in the county of Passaic, in the State of New Jersey, have invented certain new and useful Improvements in Steam-Engine Governors; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of steam-engine governors which are known as "shifting eccentric" or "wheel" governors; and it consists in certain improvements in the construction of the same, as will be hereinafter fully described, and pointed out in the claims.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 is a side elevation of the governor and the eccentric, with the engine-shaft S in cross-section. Fig. 2 is a vertical section on the line $x x$ in Fig. 1, the shaft S not being shown and the dash-pot G being left in elevation. Fig. 3 is a side view of the eccentric and parts attached thereto. Fig. 4 is a like view of Fig. 3, on a reduced scale, showing the opposite side and an alternative construction, as will be noted herein.

A marks the frame of the governor, which may be a disk on the shaft of the engine, or it may be formed on the fly-wheel of the engine, or it may be a partial disk, as shown in Fig. 1.

B is the eccentric, which has an elongated shaft-opening, b , to permit of its being shifted diametrically across the engine-shaft.

B' is a stem extending from the eccentric, and B^2 is a cross arm on the opposite side of the eccentric from the stem. These extensions extend to the shaft-opening in the form of a raised boss on one side of the eccentric, as seen in Fig. 4, and when the eccentric is in place they fit in between bosses $a^2 a^2$ on the frame A, and thus form a guide for the eccentric.

C C are the centrifugal weights, and $C' C'$ are the weight-arms, which are in the form of

bell-crank levers, pivoted at their angle or elbow to the frame A at a .

$C^2 C^2$ are links which connect the short arms of the levers $C' C'$ to the cross-arm B^2 , there being pivots at the points $c c$ in the levers $C' C'$ and at $b^2 b^2$ in the cross arm B^2 .

By observing the parts just described, as seen in Fig. 1, it will be seen that an outward movement of the weights C C will cause a downward movement of the eccentric.

The eccentric B in its shifting movement is guided by the stem B' , which slides in an opening in the extension d of the plate D at the lower end of the frame A. On the stem B' there is a collar, b' , and a coiled spring, F, which surrounds the stem, has its seat at one end on this collar and at the other end on the said extension D. The office of the spring F is to resist the outward movement of the weights C C, and it will be observed that an outward movement of the weights will compress the spring F.

The plate D is provided with slots $d^2 d^2$, through which pass binding-screws $d^3 d^3$. The plate D has a rearward extension, d' , which passes through a slot, a' , in the frame A, and above it is a rearward extension or lug, A^2 , on the frame A. An adjusting-screw, d^4 , is tapped into the lug A^2 and passes through the extension d' . When the jam-nuts d^3 are loosened, the plate D may be raised or lowered by turning the adjusting-screw d^4 , and as the extension d of the plate D is the lower seat of the spring F an adjustment of the plate D, as described, will adjust or regulate the tension of the spring F. If desired, the extension d may be cast solid with the frame and the adjustable frame-plate D be dispensed with by making the collar b' on the stem B' movable. This is shown in Fig. 4. When a screw-thread, b^3 , is cut on them, stem B' and jam-nuts $b^4 b^4$ serve the office of the collar b' .

In Fig. 1 the parts of the governor are shown in their normal positions. It will be noted that the weights C are extended beyond a vertical line passing through the fulcrums of their levers—that is to say, the weights are held beyond their line of gravity. The result of this arrangement is that the weights when the gov-

error is in the position shown in Fig. 1 exert a gravity force upon the eccentric sufficient to counteract the gravity of the eccentric. We have found that without provision for thus counterbalancing the eccentric it will drop when in the position shown in Fig. 1, which position we call the "normal" position.

At the upper end of the frame is placed a dash-pot, G, the piston-stem G' of which is attached to the cross-arm B², which is connected with the eccentric. The object of this dash-pot is to hold the eccentric against sudden thrust from the reciprocating parts, and thus prevent a fluctuating or vibratory action of the weights. Dash-pots have been used in governors of this class for the same purpose, and governors of this class have been made with weight-arms in the form of elbow-levers, which are connected with the eccentric by links—as, for example, in Patent No. 191,084, dated May 22, 1877, issued to H. Tabor—and therefore the following claims must be interpreted as not claiming these features broadly.

The advantages of our construction over similar constructions heretofore made are numerous, among which are the following: The eccentric is guided by the stem B' in the opening in the extension d and the plane groove formed by the bosses a² a², and is a much cheaper construction than where special overlapping guides are formed on the eccentric and frame. The spring is a compression-spring, while heretofore extension-springs have been used, and a dash-pot is applied to prevent fluctuations of the weights, and it also serves in guiding the eccentric.

What we claim as new is as follows:

1. In a steam-engine governor of the class herein named, the combination of the eccentric B, having an elongated shaft-opening, b, and a stem, B', extending therefrom in a plane passing through the greatest diameter of said opening b, the spring F, coiled on said stem and seated at one end on a collar on said stem and at the other on an extension on the frame, in which said stem is guided, the bell-crank weight-levers C', weights C on the long arms of said levers, and links C², connecting the short arms of said levers with the said eccentric on the opposite side from said stem.

2. In a steam-engine governor of the class herein named, the combination of the eccentric B, having an elongated shaft-opening, b, and a stem, B', extending therefrom in a plane passing through the greatest diameter of the said shaft opening, the spring F, coiled on said stem and seated at one end on a collar on said stem and at the other on an adjustable seat, d, in which said stem is guided, the bell-

crank weight-levers C', weights C on the long arm of said levers, and links C², connecting the short arms of said levers with the said eccentric on the opposite side from said stem.

3. In a steam-engine governor of the class herein named, the combination of the eccentric B, having an elongated shaft-opening, b, and a stem, B', extending therefrom in a plane which passes through the greatest diameter of said shaft-opening, the spring F, coiled on said stem and having a seat at one end on said stem and at the other end on the extension d, in which said stem is guided, one of which seats is adjustable, a cross-arm, B², extending from said eccentric on the side thereof opposite the said stem, links C², pivoted to said cross-arm and to the short arms of the weight-levers C', the said weight-levers C', and the weights C on said levers.

4. In a steam-engine governor of the class herein named, the combination, substantially as set forth, of the eccentric B, having an elongated shaft-opening, b, a stem, B', and cross-arm B², extending therefrom in opposite directions and in a line passing through the greatest diameter of said shaft-opening, a dash-pot piston-stem extending from said cross-arm B² in the said diametrical line, a dash-pot attached to the frame A to receive said piston-stem, an extension, d, connected with the frame of the governor, which receives and guides said stem B', a collar, b', on said stem, a coiled spring on said stem B' between said collar and said extension d, weights C, bell-crank weight-levers C', and links C², connecting the short arms of said levers with said cross-arm B².

5. In a steam-engine governor of the class herein named, the combination, with an eccentric adapted, substantially as shown, to be shifted diametrically on the engine-shaft, of centrifugal weights for moving said eccentric, which are on the long arms of bell-crank levers, which have their short arms connected with the eccentric by links of such length, as shown, that said weights are held beyond their line of gravity when they are in their normal position, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

FREDK. A. SCHEFFLER.
THEO. SCHEFFLER.

Witnesses as to F. A. Scheffler:

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