June 26, 1928.

1,674,950

I. M. CRAFTS

GOVERNOR

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Fig. 5.

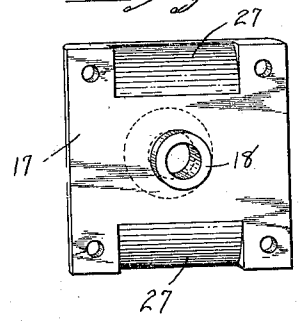


Fig. 1.

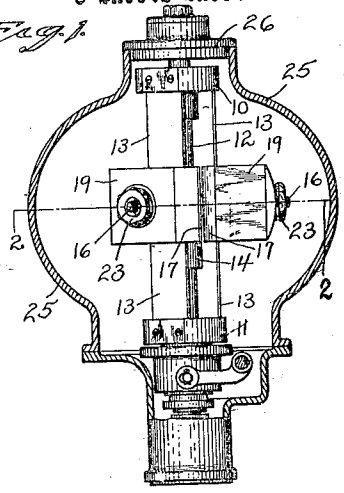


Fig. 6.

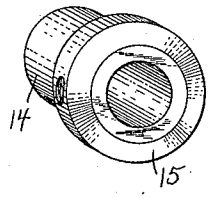
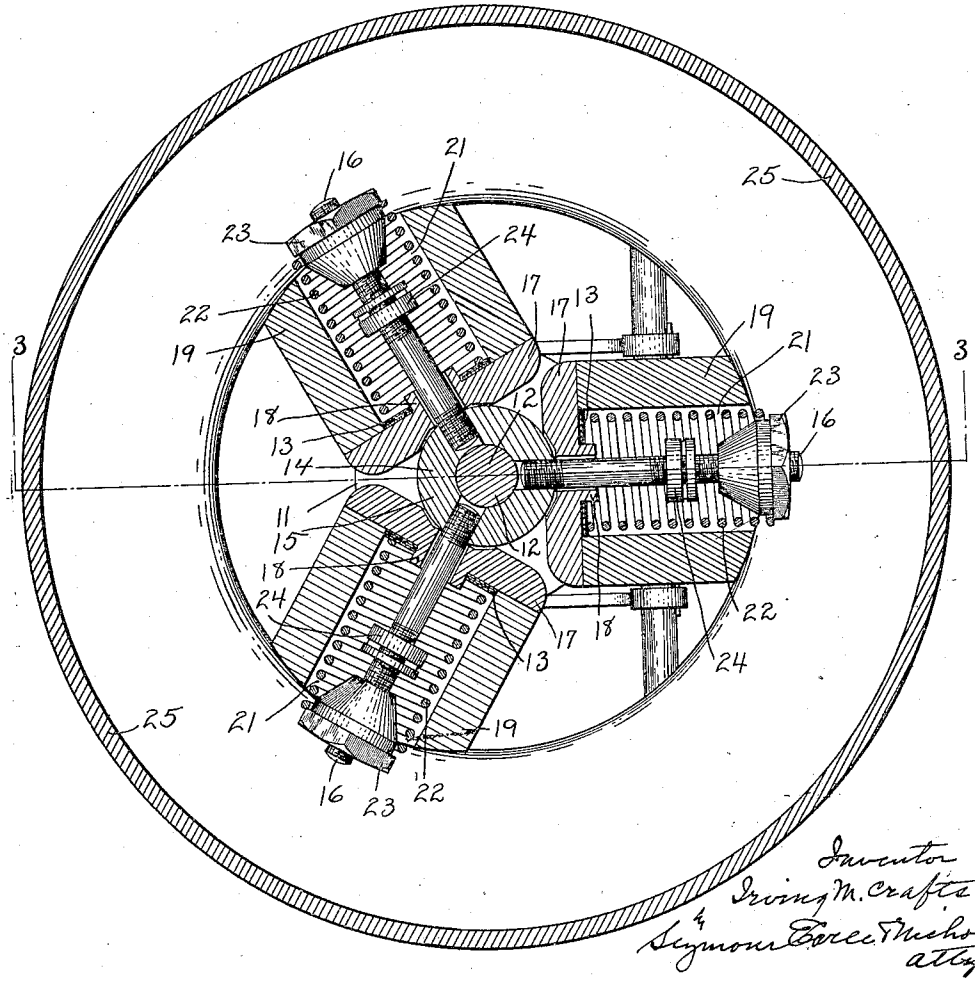


Fig. 2.



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GOVERNOR

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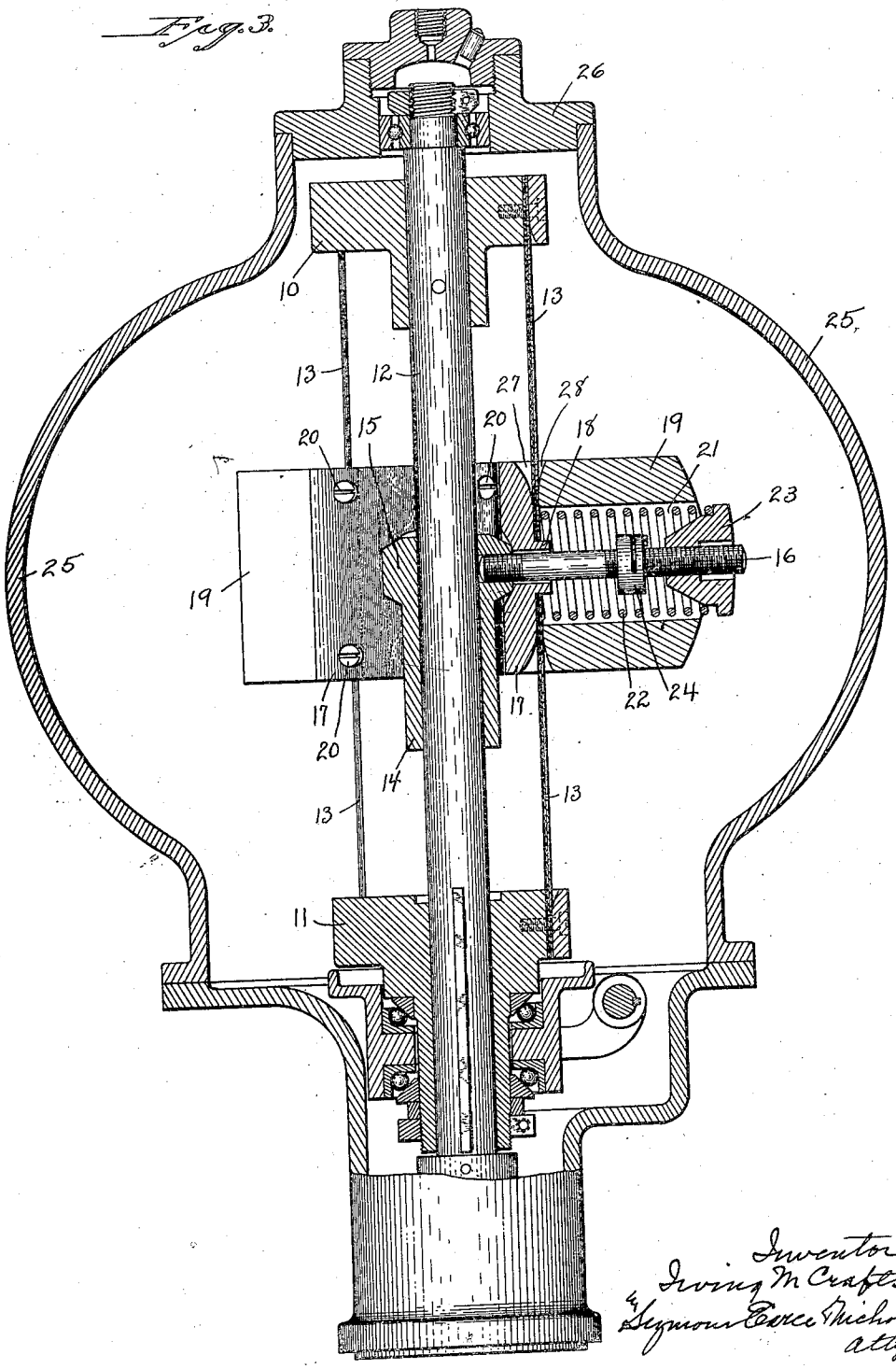
Fig. 3.



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1,674,950

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GOVERNOR

Filed Oct. 28, 1927

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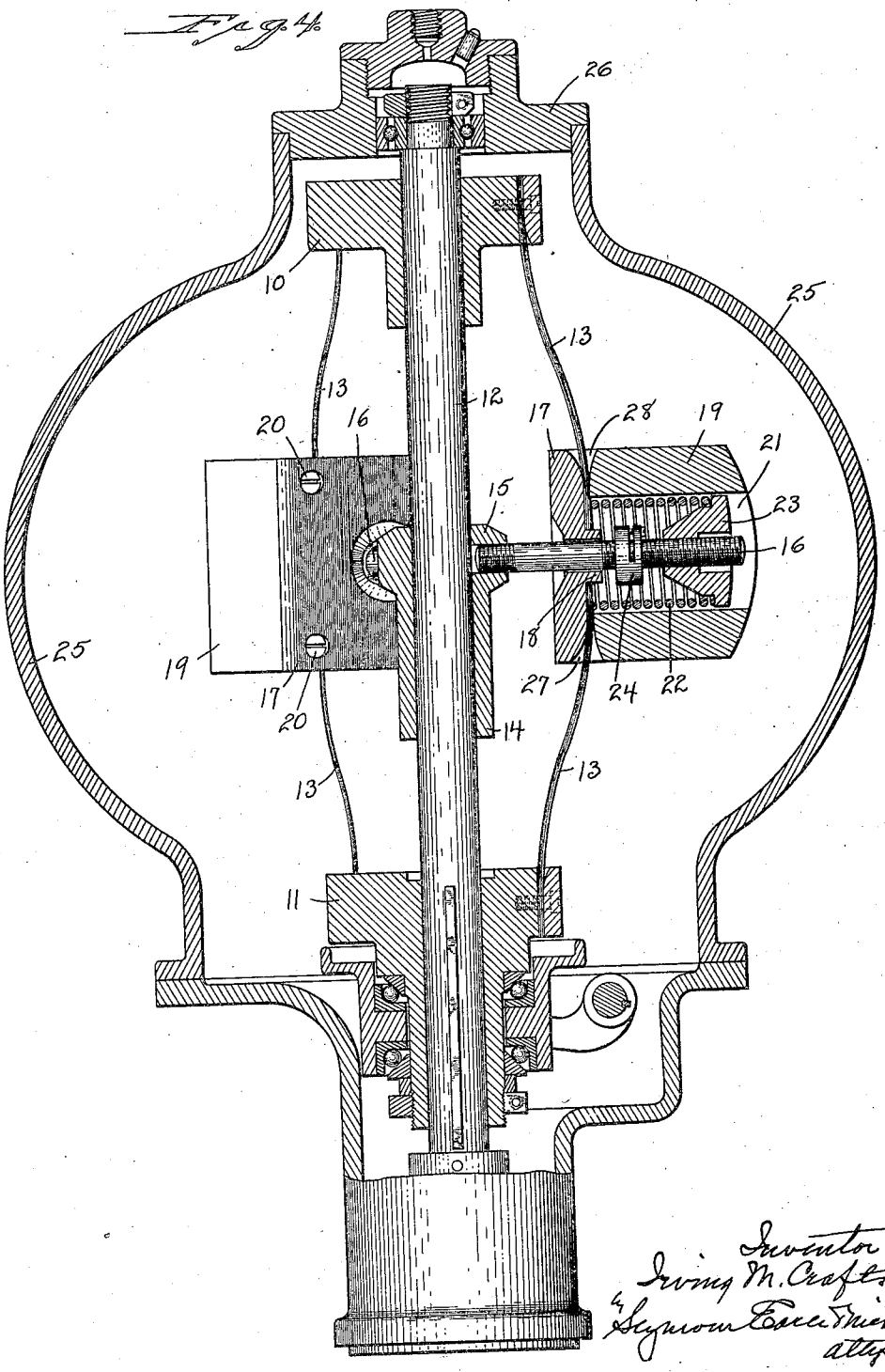
Fig. 4.



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Patented June 26, 1928. 1,674,950

UNITED STATES PATENT OFFICE.

IRVING M. CRAFTS, OF PORTLAND, CONNECTICUT, ASSIGNOR TO THE PICKERING GOVERNOR CO., OF PORTLAND, CONNECTICUT, A CORPORATION.

GOVERNOR.

Application filed October 28, 1927. Serial No. 229,327.

This invention relates to an improvement in governors, and particularly to governors of the "Pickering" type, that is, governors comprising two flanges connected together by springs, with weights secured to the springs, so that under the action of centrifugal force the weights, moving outward, will bow the springs and move one of the flanges to control the mechanism for which the governor is intended. In some uses of governors, as, for instance, in Diesel engines, the control valve mechanism is of such a nature that power, greatly in excess of that required for an ordinary throttling valve, is necessary. It has been found that the ordinary type of governor designed for steam-engine use is not sufficiently powerful, with small variations in speed, to control an engine of the Diesel type.

The object of this invention is to provide a governor which will answer the peculiar requirements of engines of the Diesel type and in other cases where power is required with small variations in speed, and the invention consists in a governor having certain details of construction as will be hereinafter recited in the claims.

In the accompanying drawings:

Fig. 1 is a side view of a governor constructed in accordance with my invention, the casing being partly in vertical section to illustrate the governor mechanism;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 enlarged;

Fig. 3 is a vertical central section of the governor on the line 3—3 of Fig. 2, with the parts in the position of rest;

Fig. 4 is a similar view with the springs flexed as under pressure;

Fig. 5 is a perspective view of one of the weight-plates detached; and

Fig. 6 is a perspective view of the spindle-sleeve detached.

In carrying out my invention, I employ a governor similar in type to the "Pickering" governor in that it includes an upper flange 10 and lower flange 11, one of the flanges herein illustrated as 10 being pinned to the spindle 12, the other flange being loosely mounted thereon for reciprocation, and these two flanges are connected together by springs 13. Upon the spindle is a sleeve 14 formed with a head 15 in which is mounted three equally-spaced radially-arranged screw-threaded pins 16. Setting over the pins 16, inside the springs 13, are plates 17 preferably formed with bosses 18 for the purpose as hereinafter described. Secured to the springs are weights 19, and these are secured in place by screws 20 extending through the plates and into the weights. These weights have large central chambers 21 in which helical springs 22 are placed, these springs bearing against the outer faces of the springs 13 and against an adjusting-nut 23 turned onto the outer ends of the pins 16. Upon the pins, between the nut and spring, are adjustable stops 24. As herein shown, the weights and springs are enclosed within a casing 25, the top 26 of which forms a bearing for one end of the spindle. When the spindle is revolved, centrifugal force will move the weights outward. The springs 13, which ordinarily entirely control the weights in this case, are used to support the weights and to transmit the radial motion of weights to a reciprocating motion at the loose flange. Their outward movement under centrifugal force is now controlled by the springs 22, the tension of which is readily adjusted for any particular purpose. As the weights move outward, one of the flanges moves toward the other, and the sleeve 14 rides upon the spindle in the same direction. Preferably and as herein shown, the adjacent faces of the plates and weights will be formed with beveled surfaces 27 and 28, to avoid sharp bending of the springs. In case a spring 22 should break, the outward movement of that weight will be limited by the engagement of the boss 18 with the stop 24.

I thus produce, in a very simple manner, a governor extremely sensitive and powerful with small variations in speed.

I claim:

1. A governor, comprising a spindle, flanges mounted thereon and connected together by springs, a sleeve on said spindle, radially-arranged pins mounted in said sleeve, weights secured to the springs and including plates inside the springs, means for clamping the weights to the spring, said weights formed with axial chambers through which the pins extend, springs in said chambers, and a nut mounted on the outer end of the pins and adapted to adjust the tension of the said springs.

2. A governor, comprising a spindle, flanges mounted thereon and connected together by springs, a sleeve on said spindle,

radially-arranged pins mounted in said sleeve, weights secured to the springs and including plates inside the springs, said plates formed with centrally-arranged bosses, means for clamping the weights to the spring, said weights formed with axial chambers through which the pins extend, springs in said chambers, and a nut mounted on the outer end of the pins and adapted to adjust the tension of the said springs.

3. A governor, comprising a spindle, flanges mounted thereon and connected together by springs, a sleeve on said spindle, radially-arranged pins mounted in said sleeve, weights secured to the springs and including plates inside the springs, said plates formed with centrally-arranged bosses, means for clamping the weights to the spring, said weights formed with axial chambers through which the pins extend, springs in said chambers, a nut mounted on the outer end of the pins and adapted to adjust the tension of the said springs, and a stop mounted on said pins.

In testimony whereof, I have signed this specification.

IRVING M. CRAFTS.