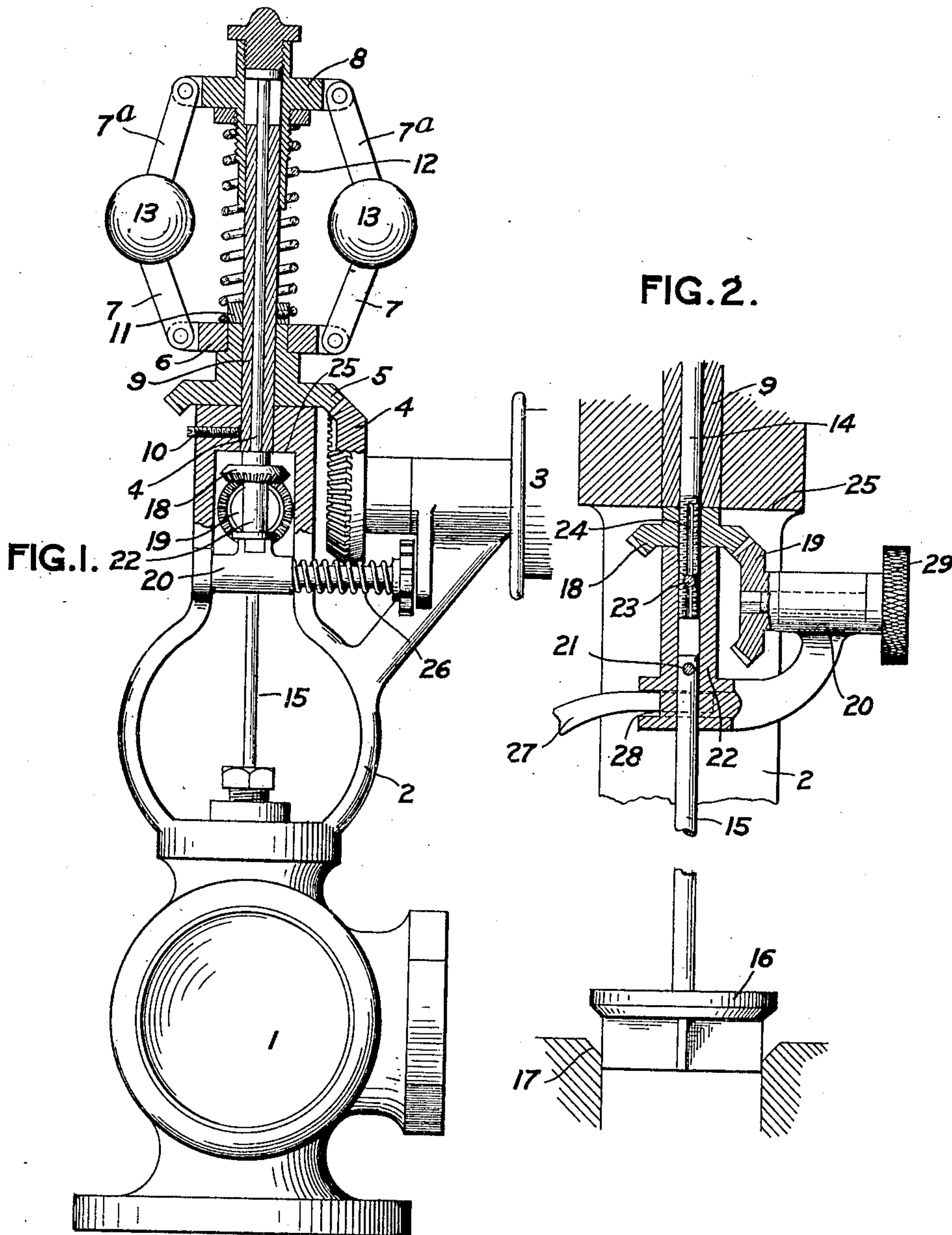


J. E. KIMBLE.
SPEED REGULATING DEVICE FOR ENGINE GOVERNORS.
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912,689.

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WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES E. KIMBLE, OF VICKSBURG, MICHIGAN, ASSIGNOR TO ECLIPSE GOVERNOR COMPANY,
OF VICKSBURG, MICHIGAN, A CORPORATION OF MICHIGAN.

SPEED-REGULATING DEVICE FOR ENGINE-GOVERNORS.

No. 912,689.

Specification of Letters Patent.

Patented Feb. 16, 1909.

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To all whom it may concern:

Be it known that I, JAMES E. KIMBLE, a citizen of the United States, and resident of Vicksburg, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Speed-Regulating Devices for Engine-Governors, of which the following is a specification.

This invention relates to speed-regulating devices for engine governors, and has for its object simplicity in construction and a wide range of speed adjustment.

In the drawings:—Figure 1 is an elevation, partly in section; and Fig. 2 is a sectional elevation, on a larger scale, of the regulating device.

The regulator is shown in connection with a governor of the fly-ball type.

1 is the valve-case.

2 is a frame that supports the horizontal driving shaft for the pulley 3, which carries the bevel gear 4, which meshes with the gear 5. A collar 6 is rigidly fixed to the gear 5, and to this are pivoted the lower ends of the ball levers 7, 7, the upper levers 7^a, 7^a being pivoted to the head 8. The head is, as usual, revoluble, and at the same time vertically movable. A stationary sleeve 9, suitably fixed in the top of the frame 2, as by the set screw 10, enters the head 8, and also has attached to it, above the gear 5, a collar 11 that holds said gear and its collar 6 against vertical movement. A coiled spring 12 between the collar 6 and the head 8 supports the latter, and yieldingly resists the centrifugal action of the balls 13.

When the head is pulled down by the centrifugal action of the balls, it presses upon the upper section 14 of the valve-stem. The device for regulating the speed of the engine governor is interposed between said upper section 14 of the valve-stem and its lower section 15, the latter being attached to the valve 16, which is shown in connection with its seat 17 in Fig. 2. The said speed regulating device comprises a bevel pinion 18 that is screw-threaded upon the lower end of section 14 of the valve-stem, and a similar meshing pinion 19 that is rev-
olubly supported in a bracket 20, into which the lower section 15 of the valve-stem extends, and to which it is attached by a pin 21. The lower section 15 of the valve-stem, and the bracket to which it is attached, are en-

abled to move vertically with reference to its upper section 14, by a pin and slot connection between said bracket and said upper section 14. This is effected through a collar 22 on the bracket that receives the upper section 14 of the stem, and a pin 23 therein that enters a vertical slot 24 in the said section 14 of said stem, the bore of said sleeve 22 being sufficiently large to permit the upper section 14 of the stem to slide freely within it. The valve-stem, with its speed regulating device, is supported and yieldingly held up against the screw-threaded pinion 18, which lies below the face 25 of the frame 2, by a coiled spring 26, and this is accomplished by the torsional action of the spring upon a yoke 27 that enters the slot 28 in the bracket 20.

In operation the tension of the spring 26 is overcome, and the valve closed wholly or partially, as the case may be, under the centrifugal action of the governor balls, which force the head 8 down upon the valve stem. The tension of the spring is always sufficient to keep the gears 18 and 19 in mesh.

A thumb nut 29 is fixed to the shaft of the pinion 19, whereby the latter is rotated, in order to shorten or extend the compound valve-stem, and so to set the valve more or less sensitively according to requirements. The combination of the screw-thread connection with the pinions 18 and 19 makes it possible to adjust the valve to exactly the required number of revolutions per minute.

When the thumb nut 29 is turned to lengthen the valve stem, the pinion 18 moves down upon the upper section 14 of the stem, from the position shown in the drawings, and forces down with it the bracket 20, the lower section 15 of the stem, by contact with the sleeve 22, and against the resistance of the spring 26. On the other hand, when the pinion is screwed upwardly again upon the upper section 14 of the stem, the spring 26 raises with it the bracket and the lower section 15 of the stem, keeping the sleeve 22 always in contact with the pinion 18. In the drawings, the pinion 18 is shown in its extreme uppermost position, in which the pinion lies against the face 25 of the frame, in which case the stem is as short as it can be made by the adjustment.

What I claim is:—

1. In a speed regulating device for engine

governors, the combination with a governor of a valve having a stem divided into two parts; a collar adjustable on the lower end of the upper valve stem section; a bracket
5 carrying the lower stem section movable vertically and having a part adapted to engage with said collar; means carried by said bracket, for adjusting said collar on the upper section of the stem; and a yielding support adapted to hold said bracket in contact
10 with said collar; substantially as shown and described.

2. In a speed regulating device for engine governors, the combination with the governor of a valve having a stem divided into
15 two parts; a pinion having a screw thread connection with the lower end of the upper valve stem section; means for holding the upper valve section against rotation; a bracket carrying the lower stem section; a
20 pinion carried by said bracket and adapted to mesh with the said pinion upon the upper stem section; means for rotating the pinion carried by said bracket; and yielding means

for holding said pinions in mesh; substantially as shown and described. 25

3. In a speed regulating device for engine governors, the combination with a governor of a valve having a stem divided into two parts; a pinion having a screw thread connection with the lower end of the upper
30 valve stem section; a bracket nonrotatably attached to the lower stem section and having a sleeve adapted to receive the upper stem section; a pin and slot connection between said sleeve and said upper stem section; a pinion rotatably supported by said
35 bracket and adapted to mesh with said pinion upon the said upper stem section; means for rotating said pinion supported by said bracket; and an elastic support for said bracket; substantially as shown and described. 40

JAMES E. KIMBLE.

Witnesses:

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