(No Model.) 3 Sheets—Sheet 1.

W. T. DAVIS.

GOVERNOR.

No. 570,461. Patented Nov. 3, 1896.

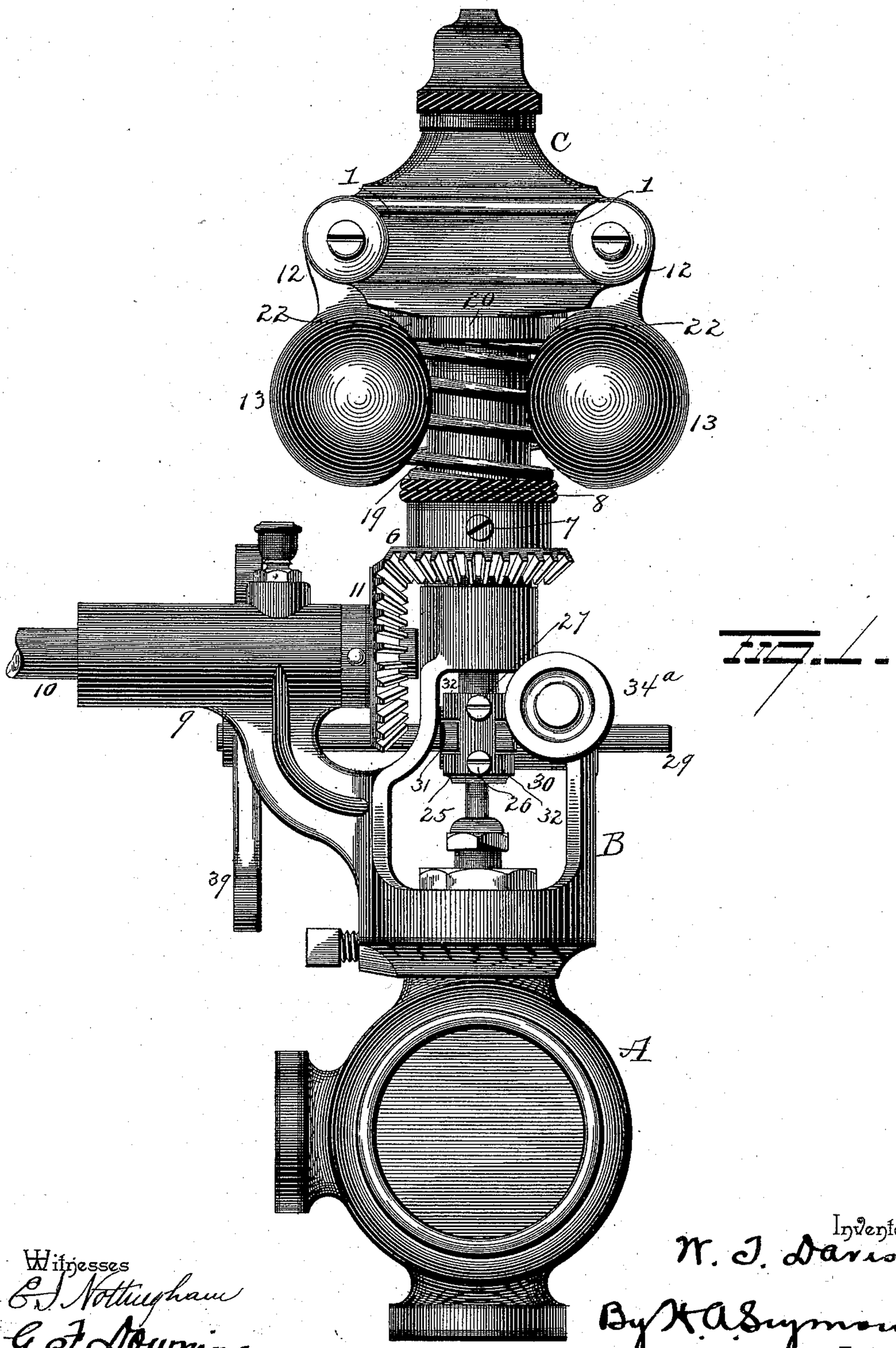

FIG. 1.

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(No Model.) 3 Sheets—Sheet 2.

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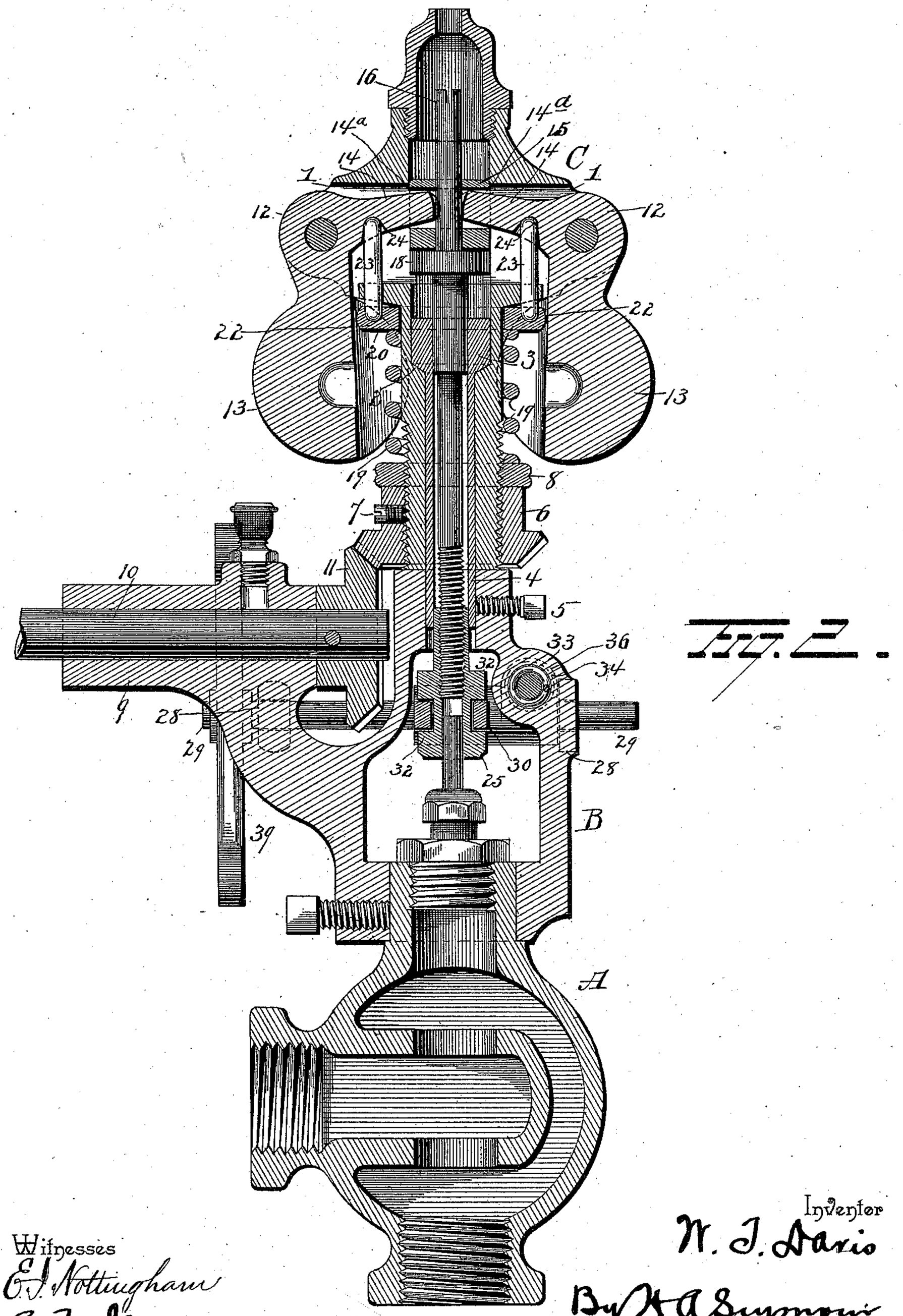

FIG. 2.

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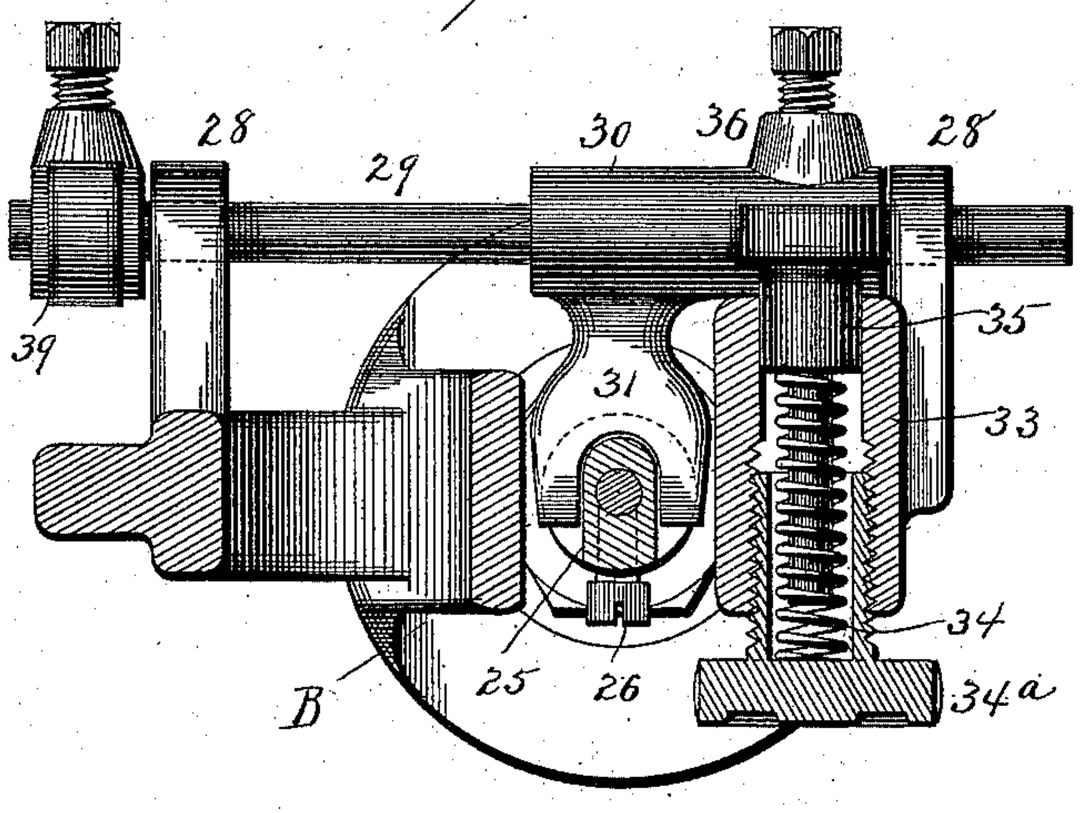
(No Model.) 3 Sheets—Sheet 3.

W. T. DAVIS.
GOVERNOR.

No. 570,461. Patented Nov. 3, 1896.

FIG. 3.



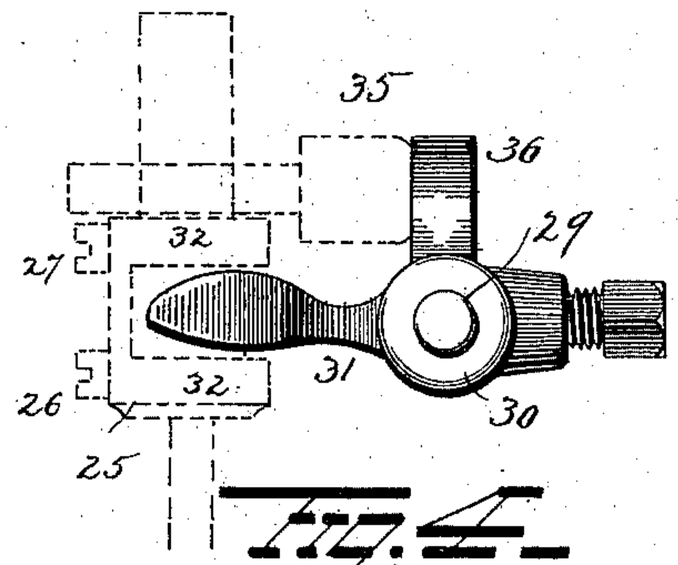


FIG. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM T. DAVIS, OF BATTLE CREEK, MICHIGAN.

GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 570,461, dated November 3, 1896.

Application filed January 16, 1896. Serial No. 575,721. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. DAVIS, a resident of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Governors; and I 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.

My invention relates to an improvement in engine-governors, and more particularly to high-speed centrifugal governors in which springs are employed to furnish the main centrifugal force, the object of the invention being to provide simple and efficient means of furnishing the centripetal force and also devices whereby to adjust the various parts of the governor.

A further object is to provide a steam-engine governor which shall be simple in construction and effectual in all respects in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a steam-engine governor embodying my invention. Fig. 2 is a sectional view. Fig. 3 is a horizontal section. Fig. 4 is a detail.

A represents a steam-engine throttle-valve, B the governor-frame located thereon, and C the revoluble head, which latter is made tubular in form and provided at its upper end with laterally-projecting bifurcated arms 1 1. The lower end of the revoluble head has a bearing on the upper end of the frame B, and the lower portion of the bore of the revoluble head is contracted in size to form a shoulder 2 for the reception of a head 3 at the upper end of a pintle or journal 4, which projects through an opening in the top of the frame B, said journal or pintle being held in position by means of a set-screw 5. The lower portion of the revoluble head is screw-threaded externally for the reception of a pinion 6, which latter will be prevented from turning on the revoluble head by means of a set-screw 7 and also by means of a collar or nut 8, also screwed on said revoluble head. The frame B is made with an arm 9, adapted to form a journal-bearing for a lateral shaft 10, to which motion can be imparted from the engine in any suitable manner. To the inner end of this shaft a pinion 11 is keyed and adapted to mesh with the pinion 6. By attaching the pinion 6 to the revoluble head in the manner above explained it can be readily adjusted with respect to the pinion 11.

In the bifurcated arms 1 1 of the revoluble head C, L-shaped arms 12 are pivoted, one member of each L-shaped arm being provided with a ball 13 and the member 14 of each of said arms being made to project into the head C. The inwardly-projecting arms or members 14 are preferably made of a length approximating the distance from the fulcrums of the L-shaped levers to the centers of the balls 13.

The inwardly-projecting members 14 of the L-shaped arms 12 are made to enter recesses 14^a in a collar or sleeve 15, disposed within the head C and mounted loosely on the valve-stem 16, extending through the revoluble head and the frame B, said sleeve 15 normally resting on a collar 18, secured to said valve-stem. Thus it will be seen that when the head C revolves the sleeve 15 will revolve with it, and when the balls 13 are thrown out by centrifugal force the L-shaped arms 12 will turn on their fulcrums and cause the valve-stem to be moved downwardly to close the throttle more or less. By making the arms or members 14 of the L-shaped arms 12 of a length approximating the distance from the fulcrums of said levers to the centers of the balls 13 the valve-stem will be caused to move farther with the same movement of the balls than if said arms 14 were made shorter, thereby regulating the position with less change in the speed or number of revolutions of the governor-head.

A spring 19 for resisting the centrifugal force of the balls encircles the revoluble head C and bears at its lower end on the collar or nut 8. The upper end of the spring 19 bears against a collar 20, disposed loosely in the head C and bearing against a shoulder 21 thereon. The collar 20 is provided at diametrically opposite points with recessed lugs 22, in which the lower ends of pins 23 are seated,

said pins passing loosely through holes in the arms 1 1 and bearing at their upper ends in recesses or sockets 24 in the members 14 of the L-shaped arms 12. Thus it will be seen that the outward movement of the governor-balls will be resisted by the spring 19.

The valve-stem above referred to is made in two parts connected together by means of a coupling 25. The lower end of the upper portion of the valve-stem is screw-threaded and adapted to screw into the coupling 25. Thus the valve-stem can readily be adjusted in length. The parts of the valve-stem are prevented from turning in the coupling by means of set-screws 26 27.

The frame of the governor is made with perforated lugs 28, in which a shaft 29 is mounted, and to said shaft a sleeve 30 is secured by means of a set-screw. An arm 31 projects from said sleeve, said arm being bifurcated at its free end and adapted to engage the coupling 25 between shoulders 32 thereon. The frame of the governor is also made with a transverse perforated boss 33, in which a spring 34 is located. One end of said spring bears against an adjusting-screw 34ª, which enters one end of said boss, and at the other end said spring bears against a head 35, the latter bearing against a lug 36, projecting upwardly from the sleeve 30.

From this construction and arrangement of parts it will be seen that the tension of the spring 34 is brought to bear on the valve-stem so as to resist its downward movement. The tension of the spring and the consequent amount of resistance to be offered to the downward movement of the valve-stem can be readily adjusted by means of the screw 34ª.

The shaft 29 is preferably provided with a cross-head 37, to which devices may be attached whereby to operate the valve manually.

My improvements are simple in construction and effectual in all respects in the performance of their functions.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a governor, the combination with a revoluble head and a valve-stem, of angular arms pivotally connected to the revoluble head, a ball at the end of one member of each angular arm, the other member of each angular arm being made to project into the revoluble head and connected with the valve-stem, a spring encircling the revoluble head, a collar against which the upper end of said spring bears, and pins disposed between said collar and the inwardly-projecting members of the angular arms, substantially as set forth.

2. In a governor, the combination with a revoluble head, and a valve-stem, of a pair of balls, arms thereon hinged to the head and engaging the stem, a spring surrounding the revoluble head, and pins held between the spring and the arms at a point between their hinged points and the point where they engage the valve-stem, substantially as set forth.

3. In a governor, the combination with a revoluble head, a valve-stem, and weights hinged to the head and having arms which engage the valve-stem, of pins extending loosely through holes in the head and engaging the arms at one end, and spring which operates against the other ends of the pins, substantially as set forth.

4. The combination with the frame of a governor, a rock-shaft supported therein, a sleeve on the shaft, means for setting it in place thereon, said sleeve having an integral arm projecting in one direction and an integral lug projecting in another direction, of valve-stem, shoulders thereon between which the free end of the arm extends, a perforated boss formed in the frame, a spring in the boss, a head in the boss adapted to bear on the lug and against which the spring bears, and means for regulating the tension of the spring, substantially as set forth.

5. In a governor, the combination with a frame and a revoluble head, of L-shaped arms pivoted to the revoluble head, one member of each L-shaped arm being weighted and the other member projecting into the head, a valve-stem to which said inwardly-projecting members of the L-shaped arms are connected, a pinion secured to the revoluble head, a collar bearing against said pinion, a spring encircling the revoluble head and bearing against said collar, a collar near the upper end of the revoluble head, against which said spring also bears, and pins between the last-mentioned collar and the inwardly-projecting members of the L-shaped arms, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM T. DAVIS.

Witnesses:
CORA VAN VALKENBURG,
GEO. W. MECHEM.