

(No Model.)

4 Sheets—Sheet 1.

J. HEMPHILL & J. FAWELL.
GOVERNOR.

No. 482,449.

Patented Sept. 13, 1892.

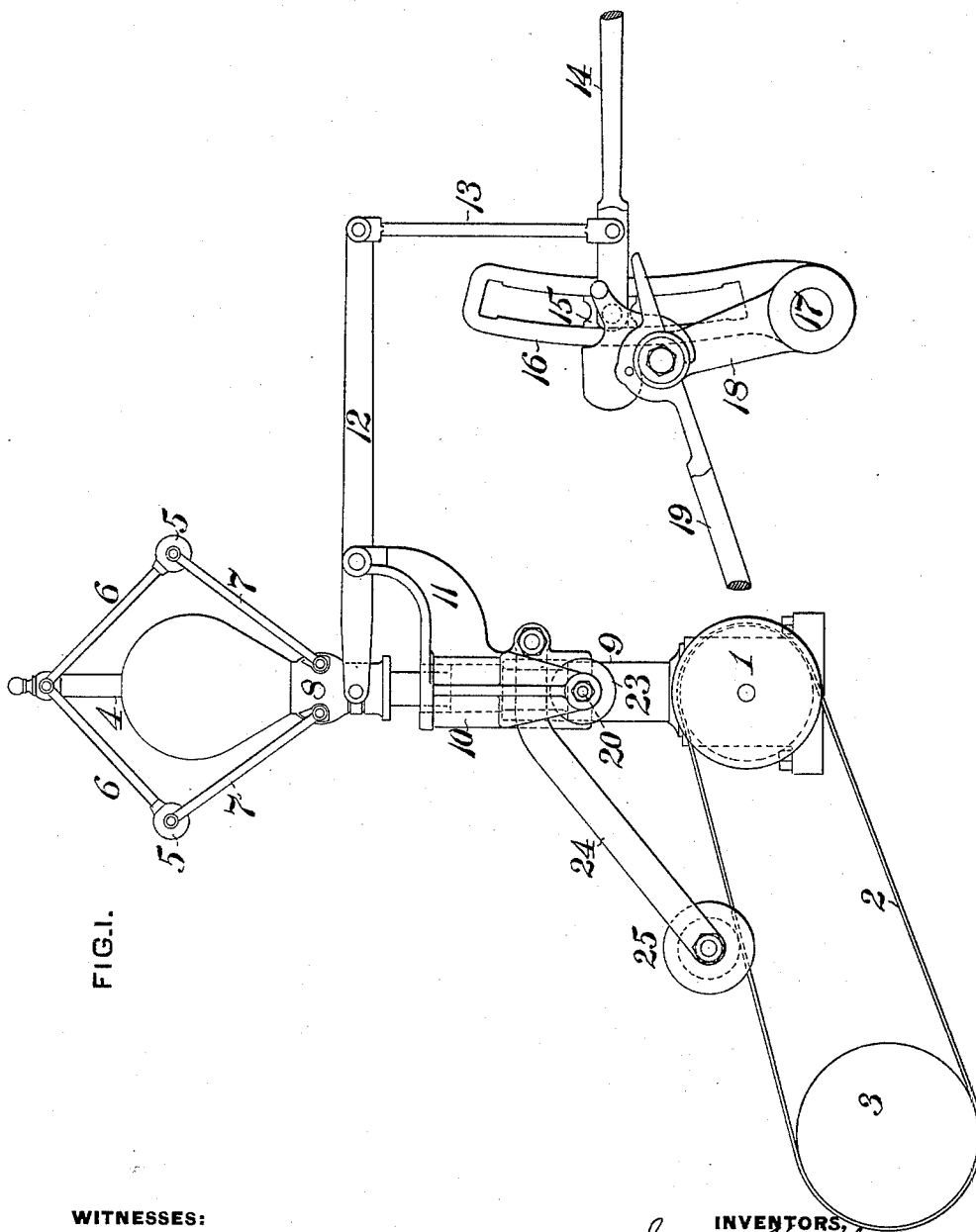


FIG. 1.

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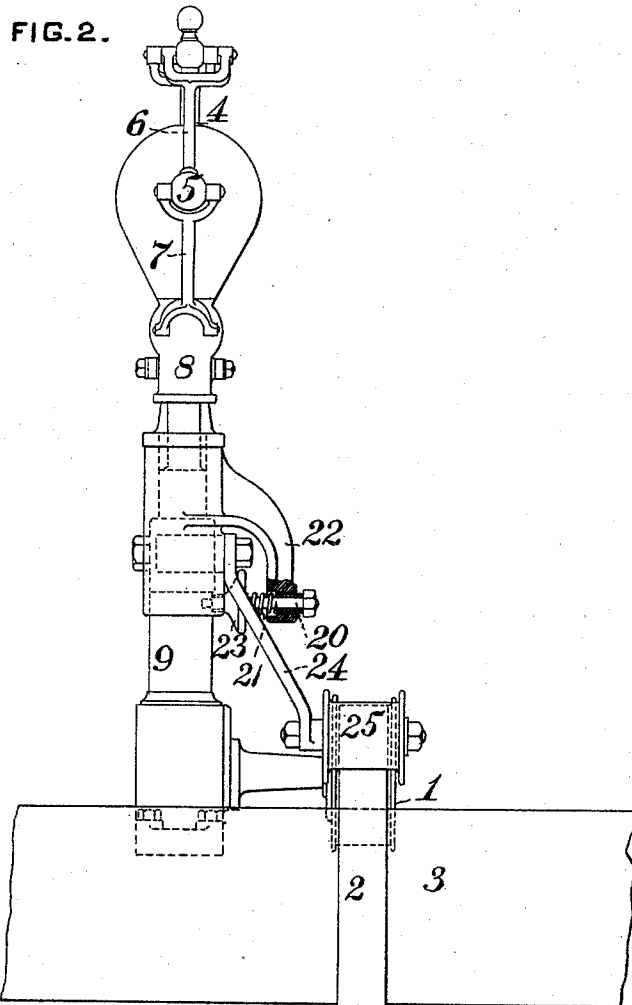
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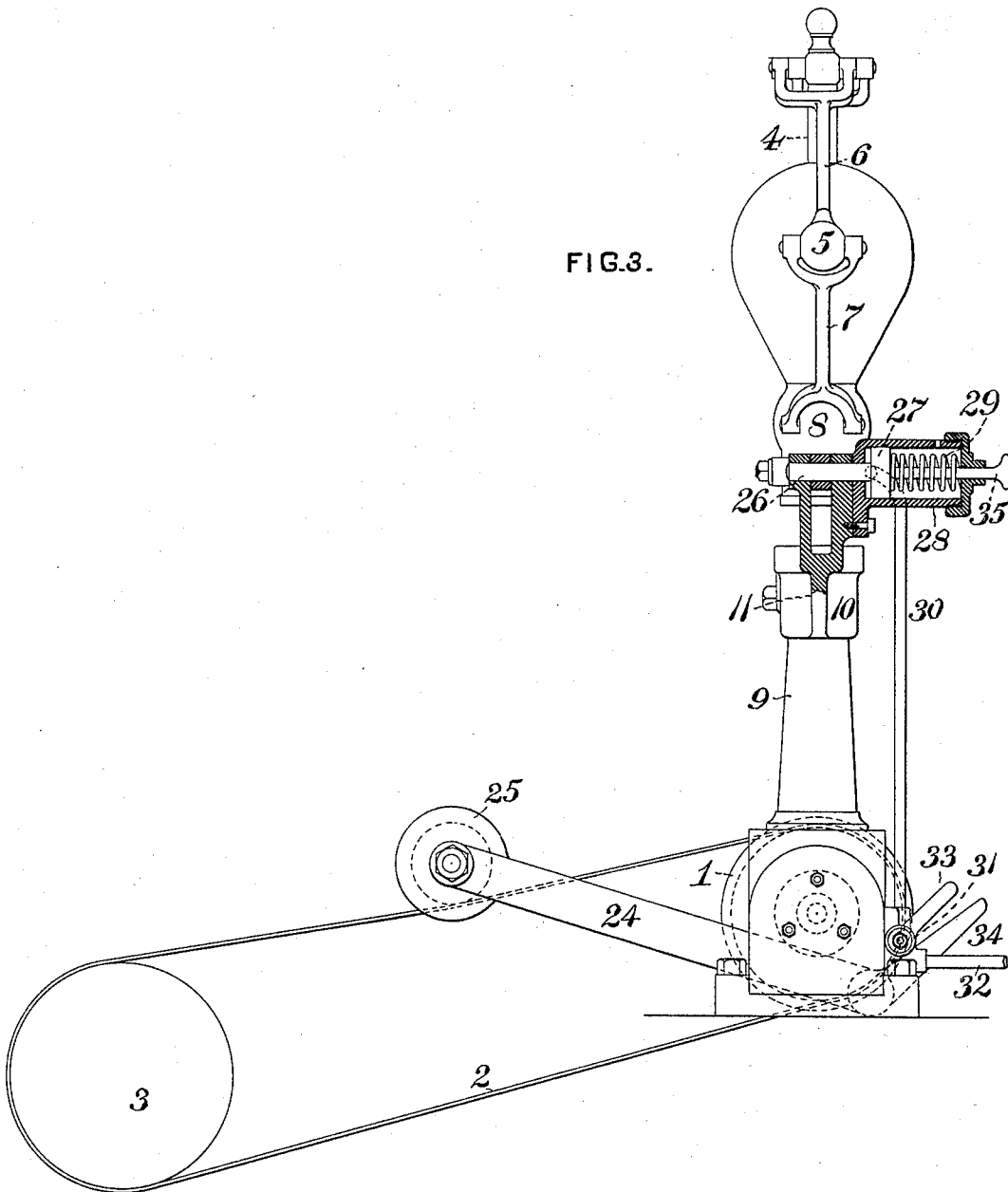
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FIG. 3.



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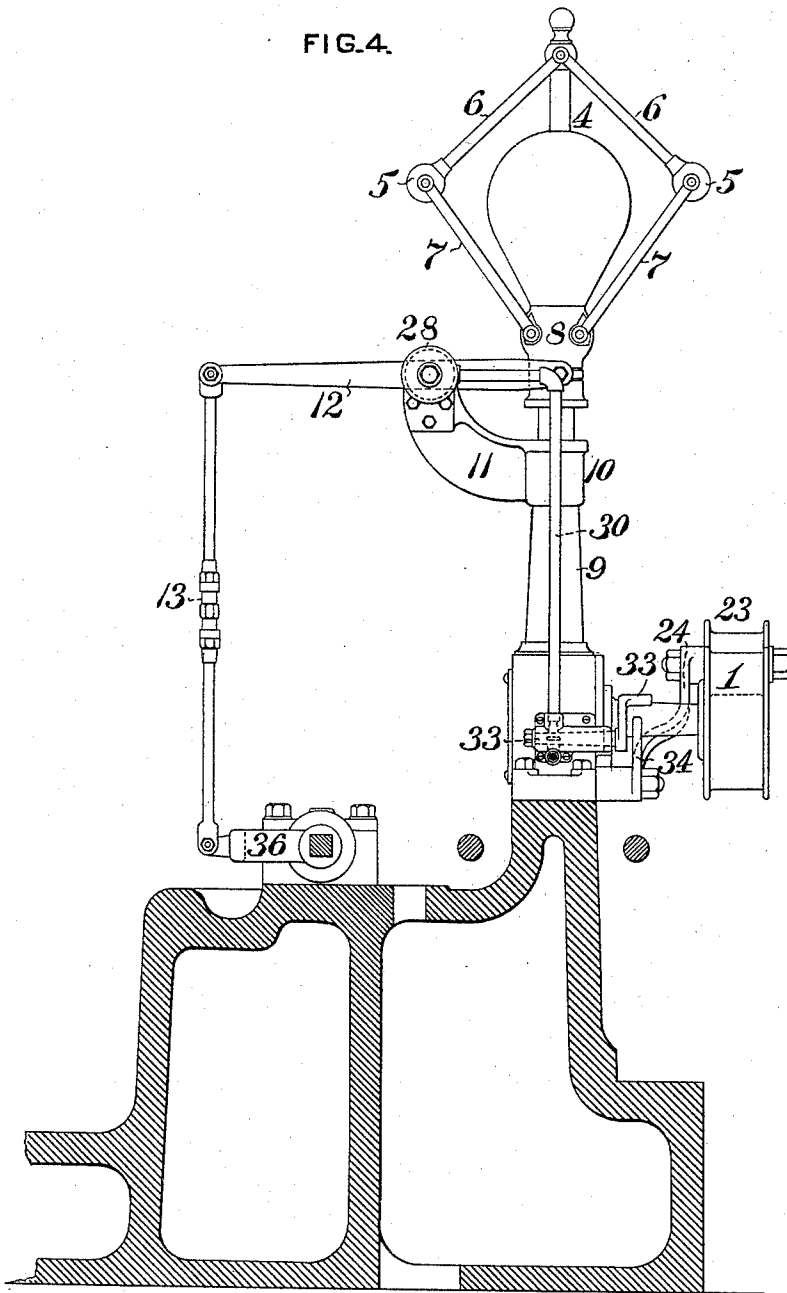
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FIG. 4.



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UNITED STATES PATENT OFFICE.

JAMES HEMPHILL AND JOSEPH FAWELL, OF PITTSBURG, PENNSYLVANIA.

GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 482,449, dated September 13, 1892.

Application filed February 15, 1892. Serial No. 421,641. (No model.)

To all whom it may concern:

Be it known that we, JAMES HEMPHILL and JOSEPH FAWELL, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Governors, of which the following is a specification.

The invention described herein relates to certain improvements in the governor mechanism of steam-engines, and has for its object a construction whereby in case of the breakage or slipping off of the governor-driving belt the valve of the engine may be so shifted as to close the inlet-ports to the cylinder until the several parts of the governing mechanism have been restored to normal position.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view in side elevation of a governor and its connections to the stem of the valve controlling the flow of the steam to the cylinder of the engine having our improvements applied thereto. Fig. 2 is an end elevation of the same. Fig. 3 is a view similar to Fig. 1 of a modification of our invention, and Fig. 4 is an end elevation of the construction shown in Fig. 3.

In the practice of our invention the pulley 1 of the governor is driven, as is customary, by a belt 2 from a pulley 3 on the main shaft of the engine, and the vertical shaft 4 of the governor is driven by the shaft of the pulley 1 through suitable interposed gearing, as is customary. The balls 5 are connected in the usual manner by arms 6 and 7 to the head of the vertical shaft 4 and to the sleeve 8, sliding thereon as the balls move in and out.

On the hollow standard 9, through which the shaft 4 passes, is placed the sleeve 10, provided with an arm or bracket 11, on which is pivoted the lever 12. One end of this lever is pivotally connected with the sliding sleeve 8, and the opposite end thereof is connected by a rod 13 to the pitman 14, which is adapted to be connected in the usual manner to the valve of the engine and to the block 15 in the link 16. This link is secured to the shaft 17,

to which is also attached the rock-arm 18, said arm, with the shaft 17 and link 16, being oscillated by the eccentric on the shaft of the engine, operating through the medium of the eccentric-rod 19. It will be evident that in such a construction the block 15 will be shifted up and down in the link in accordance with any change in the position of the balls as effected by the speed of the engine. As clearly shown in Fig. 2, the sleeve 10 is held in normal position on the standard 9 by a pin 20, passing through the sleeve 10 and entering a properly-located hole in the standard. The pin is held in engagement with the hole in the standard by a spring 21, interposed between a bracket 22, forming the outer support for the pin, and a disk 23 on the pin.

On the sleeve 10 is pivoted an arm 24, carrying a flanged wheel or pulley 25 at its outer end, said pulley normally resting upon the belt 2. This arm 24 is so shaped and arranged that when the pulley is supported by the belt it will be out of contact with the disk 23, but when the pulley and arm drop by reason of a rupture of the belt or its slipping off of the pulleys 1 and 3 the arm will come in contact with the inner beveled face of the disk, forcing it outwardly and pulling the pin out of engagement with the hole in the standard 9, thereby permitting the sleeve to slide down the standard. This lowering of the pivotal support and the outer end of the lever 12 will shift the block 15 to the lower or inner end of the link. When the block is in this position, the valve of the engine will cover both inlet-ports of the cylinder, and the motion of the link will not impart sufficient movement to the block as to shift the valve from over the ports.

In lieu of lowering the lever by dropping its supporting-sleeve in the manner described the desired dropping of the outer end of the lever 12 may be effected by removing its pivotal pin, as shown in Figs. 3 and 4. In this construction the pivot-pin 26 of the lever 12 is formed by the stem of the piston 27 of the fluid-pressure cylinder 28, which is secured to or formed on the bracket 11. The pin is held in normal position by the spring 29, as shown in Fig. 3, and a pipe 30 is connected to the

cylinder at a point between the inner end of the cylinder and the normal position of the piston. The opposite end of the pipe is connected to a valve mechanism 31, which is also
 5 connected by a pipe 32 to a suitable source of fluid-pressure supply.

The valve of the mechanism is provided with a handle 33, which is so arranged as to be struck and shifted by a projection 34 on
 10 the arm 24 when said arm drops in case of the rupture of the belt, thereby opening the valve and permitting fluid-pressure to enter the cylinder 28 and so shift the piston against the pressure of the spring 29 as to withdraw
 15 the pivot-pin 26. This removal of the pivot-pin permits the outer end of the lever to drop, as hereinbefore described.

In order to facilitate the readjustment of the lever 12, the piston is provided with a stem
 20 35, extending through the outer end of the cylinder and serving as a handle whereby the piston and pivot-pin may be drawn out against the tension of the spring, which would cause the piston and pivot-pin to move into normal
 25 position as soon as the valve is closed.

In Figs. 3 and 4 the outer end of the lever 12 is shown as connected with an arm 36 on the stem of an oscillating and reciprocating cut-off valve, such as is shown and described
 30 in an application, No. 414,245, filed by us December 7, 1891. As the outer end of the lever drops, the stem is so rotated that the cut-off valve will close the inlet-ports.

Reference is made to the above application
 35 for the purpose of illustrating the applicability of our invention to any form of valve, whether main or cut-off valve, whether reciprocating or oscillating, or both.

It will be readily understood by those

skilled in the art that other constructions of 40 governors than that shown may be employed.

We claim herein as our invention—

1. The combination of a governor, a lever having its inner end connected to the governor and its outer end to the stem of a valve 45 controlling the flow of steam to the cylinder of an engine through suitable interposed mechanism, and means for so shifting the pivotal support of the lever and thereby lower the outer end of the lever as to shift the valve 50 over the inlet-ports of the cylinder in case of a rupture of the governor-driving belt, substantially as set forth.

2. The combination of a governor, a lever having its inner end connected to the governor and its outer end connected by suitable 55 interposed mechanism to the stem of a valve controlling the flow of steam to the cylinder of an engine, and means for lowering the pivotal support of the lever in case of a rupture 60 of the governor-driving belt, substantially as set forth.

3. The combination of a governor, a lever operated by the governor for regulating the 65 movements of the valve controlling the flow of steam to the cylinder, a sliding sleeve forming the pivotal support for the lever and supported in normal position by a pin, and means for removing said pin in case of rupture 70 of the governor-driving belt, substantially as set forth.

In testimony whereof we have hereunto set our hands.

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 JOSEPH FAWELL.

Witnesses:

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