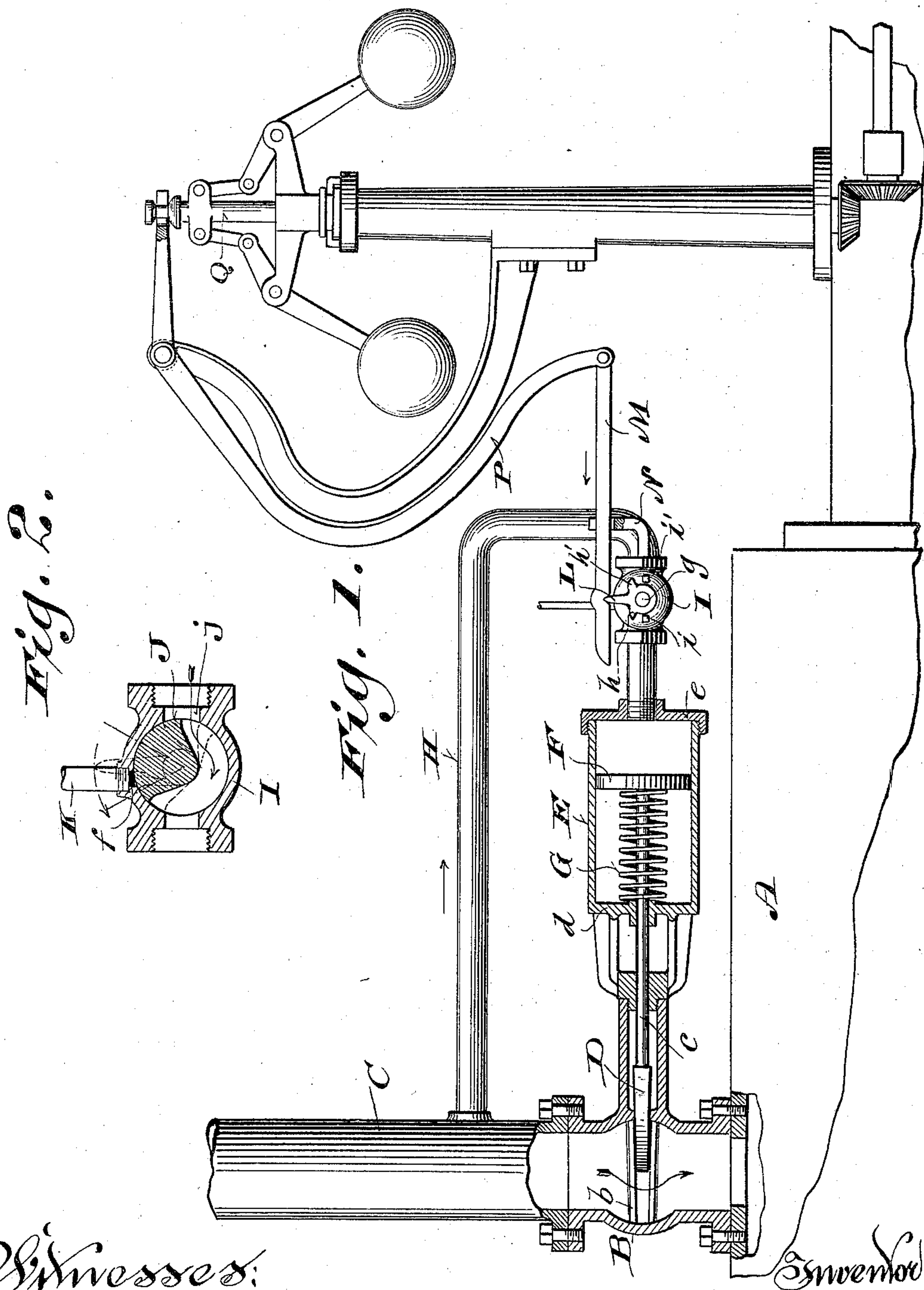


(No Model.)

C. CHRISTENSEN.
STEAM ENGINE GOVERNOR.

No. 542,702.

Patented July 16, 1895.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHRISTIAN CHRISTENSEN, OF RACINE, WISCONSIN.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 542,702, dated July 16, 1895.

Application filed September 15, 1894. Serial No. 523,067. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN CHRISTENSEN, a citizen of the United States, and a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Steam-Engine Governors; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a simple, economical, sensitive, and efficient governor-controlled mechanism for regulating the feed of live steam to an engine; and it consists in certain peculiarities of construction and combination of parts, hereinafter set forth with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a partly-sectional elevation of the mechanism embodied in my invention, and Fig. 2 a transverse section illustrating a governor-controlled valve and its casing.

Referring by letter to the drawings, A represents the steam-chest of an engine, B a casing open to the chest, and C a main steam-pipe joined to said casing. The casing is provided with guides *b* for a slide-valve D at a right angle to the pipe C, and the stem *c* of the valve extends into a cylinder E, to connect with a piston F, a spiral spring G being arranged to surround the valve-stem intermediate of the piston and head *d* of the cylinder.

An elbow branch pipe H, leading from the main pipe C into the other head *e* of the cylinder E, has a portion thereof in the form of a casing I for a transverse rock-valve J, and the latter valve-casing has an exhaust-port *f*, from which a pipe K may extend to any convenient point of discharge.

The stem *g* of the valve J extends through the casing I and is provided with a wing L, having lugs *h h'* extending in opposite directions therefrom, these lugs being in opposition to stops *i i'* on said casing.

The valve J controls the port *f* and the inlet *j* to the casing I, this inlet being at right angles to the port aforesaid. A horizontal rod M works in a suitable guide N, and is provided upon its under side with a notch for engagement with the wing L on the valve-stem *g*, an elbow-lever P, fulcrumed on a suitable

support, being employed to connect the rod with the shaft Q of a governor.

In practice the movement of the rod M depends on that of the governor-shaft Q, communicated thereto by the lever P, and the engagement of said rod with the wing L results in an operation of the valve J in either direction, accordingly as the engine runs fast or slow.

As herein shown, the wing L is standing vertical and the valve J is operating as a full cut-off for the exhaust-port *f* of its casing and a partial cut-off for the inlet *j*, through which steam from the branch pipe H is admitted to said casing to continue through the same and enter the cylinder E for the purpose of exerting pressure against the piston F sufficient to overcome the power of the spring G and effect a corresponding movement of the slide-valve D in its guides.

Should the speed of the engine accelerate, the lift of the governor-shaft will cause further movement of the rod M in the direction of the arrow, and owing to the engagement of the rod-notch and wing L of the valve J the latter is rocked farther toward a complete opening of the casing-inlet *j*, the slide-valve in the meantime moving farther in its guides to close the main steam-pipe. By the time the inlet *j* is full open the lug *h* of the wing L will have come into contact with the stop *i* to thus permit the rod M to disengage from said wing in case of further movement in the direction of the arrow. The speed of the engine having been decreased there is automatic movement of the rod M in a direction reverse to that above set forth, and consequently the valve J is operated to open the exhaust-port *f* and close the inlet *j*, the full reverse throw of said valve being limited by the stop *i'* on its casing, while at the same time spring G expands to cause a retraction of the main valve.

The dotted lines in Fig. 2 clearly illustrate the working of the valve J, and from the foregoing description it will be understood that the steam-regulating mechanism is very sensitive and efficient.

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

The combination of a steam-chest, a main

steam-pipe communicating with the chest and
provided with guides, a slide valve operative
in the guides at a right angle to the pipe, a
cylinder a piston in the cylinder having a
5 stem connected to the slide-valve, a spring
on the stem intermediate of a piston and a
head of said cylinder, a branch-pipe leading
from the one aforesaid through the other cyl-
inder-head and having a portion thereof in
10 the form of a casing provided with an exhaust-
port, a rock-valve in the casing controlling
the inlet of the same and said port, a wing on
the stem of the rock-valve provided with lat-
eral lugs extending in opposite directions,

stops on said casing in opposition to the wing- 15
lugs, a guide-supported rod provided with a
notch loosely engaging the point of the rock-
valve wing, a governor, and a suitably sup-
ported elbow-lever connecting the rod with
the governor shaft. 20

In testimony that I claim the foregoing I
have hereunto set my hand, at Racine, in the
county of Racine and State of Wisconsin, in
the presence of two witnesses.

CHRISTIAN CHRISTENSEN.

Witnesses:

M. D. MORRIS,
J. E. FRAMZE.