

(No Model.)

2 Sheets—Sheet 1.

J. J. TONKIN.
VALVE MECHANISM.

No. 360,741.

Patented Apr. 5, 1887.

Fig. 1.

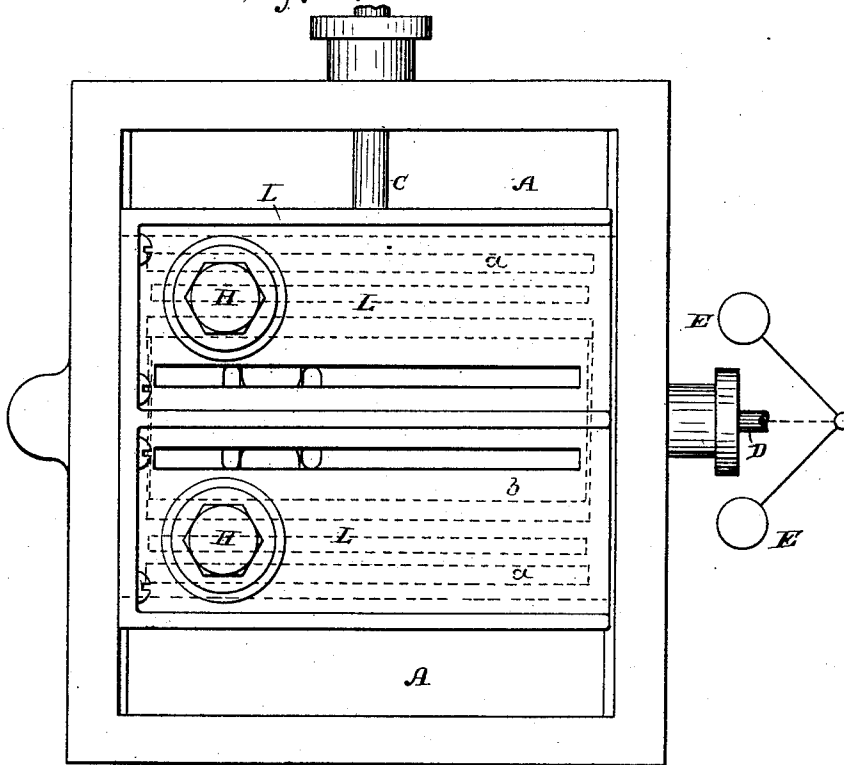
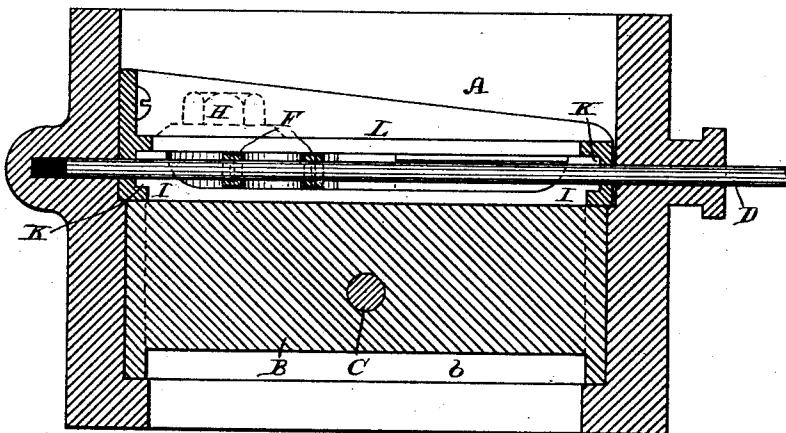


Fig. 2.



WITNESSES

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Fig. 3.

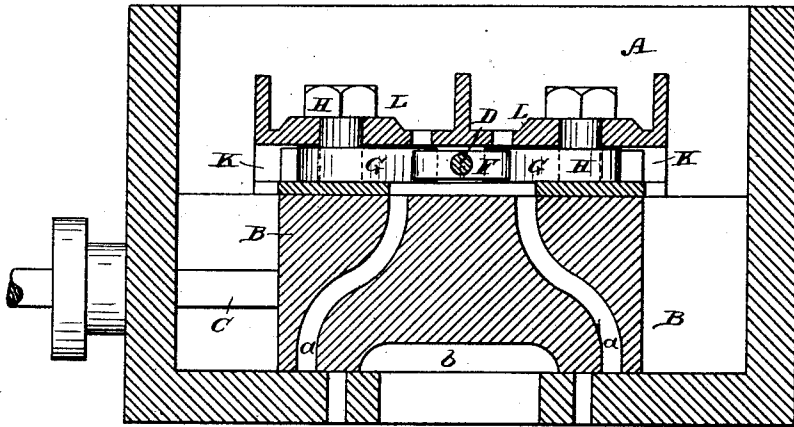
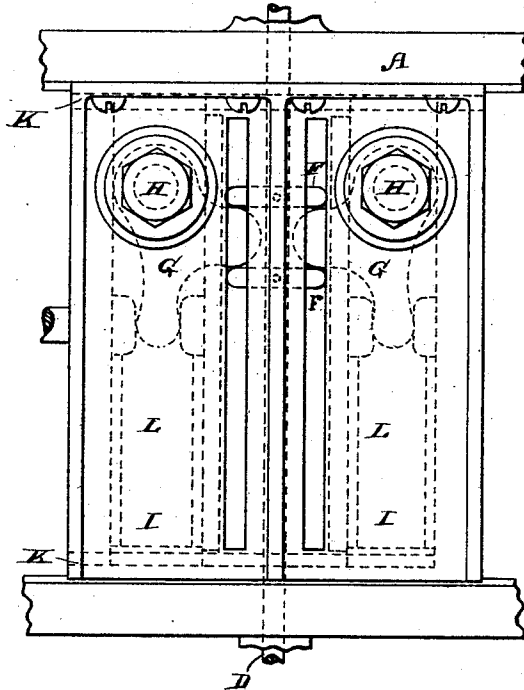


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN J. TONKIN, OF OSWEGO, NEW YORK, ASSIGNOR TO THOMSON KINGSFORD, OF SAME PLACE.

VALVE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 360,741, dated April 5, 1887.

Application filed December 27, 1886. Serial No. 222,624. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. TONKIN, of Oswego, in the county of Oswego and State of New York, have invented certain new and useful Improvements in Valve Mechanisms, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view; Fig. 2, a central section; Fig. 3, a section at right angles with Fig. 2; Fig. 4, another plan with different details indicated in dotted lines.

The object of my improvements is to provide for use, in connection with a main slide-valve of ordinary character, a removable automatic cut-off-valve mechanism which may be operated by a governor to open the ports when the engine has a heavy load and to close them when it has a light load, thereby automatically regulating the cut-off to correspond with the varying work to be done by the engine. I provide such a cut-off valve so constructed and arranged that it may be removed at will from the steam-chest, leaving the ordinary slide-valve to work alone, whereby repairs can be made to the slide-valve without in the meantime discontinuing the use of the engine.

Referring to the letters upon the drawings, A indicates the steam-chest; B, the main slide-valve; C, the main-slide-valve stem, the usual steam-ports, *a a*, and exhaust-port, *b*, being provided.

D indicates a governor-stem, operated by any ordinary governor, E, and provided with collars F F for the purpose of operating levers G G, pivoted at H H. These levers engage, by a ball-and-socket joint, with the cut-off valves I I, which slide in ways K and on the upper surface of the main slide-valve.

L indicates a frame for supporting the levers and the automatic cut-off-valve stem.

This frame, of which the guideways form a part, as illustrated, can be screwed to the side wall of the steam-chest, as shown, so that by withdrawing the screws the frame and automatic cut-off valve and stem can be removed

from the steam-chest at will, leaving the main slide-valve to operate alone.

The operation of the automatic cut-off valve is as follows: Oscillating motion is communicated to the pivoted levers by means of the vertical reciprocating movements of the governor-stem, and the levers in turn slide the cut-off valves over the steam-ports, or away from over them, according to the variations of the speed of the engine which may be caused by the varying load of the engine. For example, suppose the main cut-off valve, which is always set to cut off at some definite part of the stroke, be set so as to cut off the steam at a three-quarter stroke. When the engine has a heavy load, the automatic valves will open the port so as to let on a full head of steam for three-fourths of the stroke; but when there is a lighter load, not requiring steam for so much of the stroke, the slide-valves will close, so as to cut off the steam at less than a three-quarter stroke, according to the needs of the engine for the work to be done. Besides the advantage of providing for taking out the automatic cut-off and its supporting-frame bodily, the construction and arrangement of the parts for operating the automatic cut-off valves is of great simplicity.

Having described my improvement, what I claim to be new, and desire to secure by Letters Patent of the United States, is—

The combination, with the steam-chest and a main slide-valve, of the automatic cut-off valves, the pivoted levers G G, oscillated by the governor-stem D and governor E to operate the cut-off valves, and the removable cut-off-valve frame L, whereby the cut-off-valve mechanism can be removed bodily and the work of the engine continued without it, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

JOHN J. TONKIN.

Witnesses:

MARCUS S. HOPKINS,
C. P. ELWELL.