(No Model.)

C. RINDERKNECHT.

GOVERNOR VALVE.

No. 245,662. Patented Aug. 16, 1881.

Fig. 1.

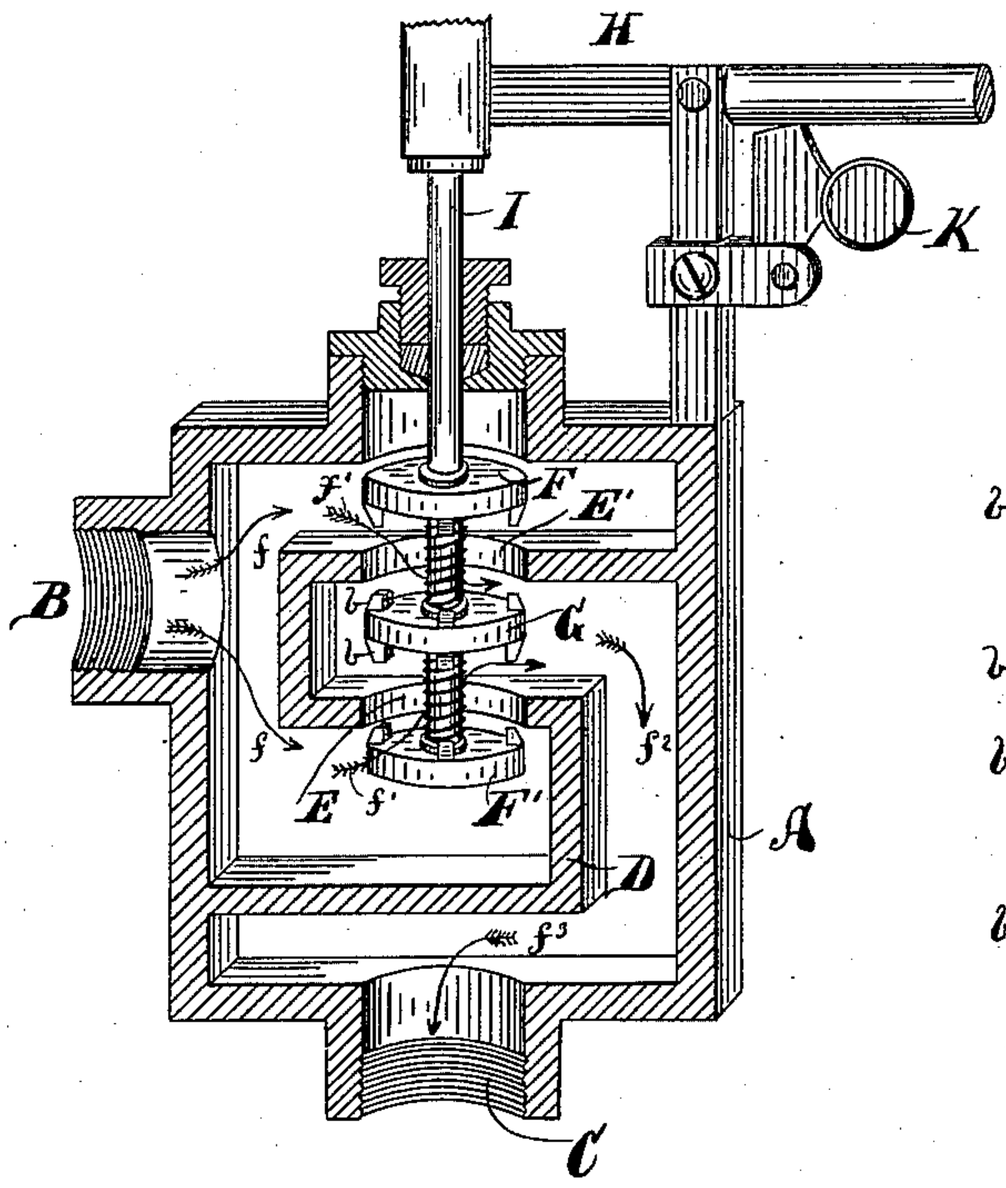
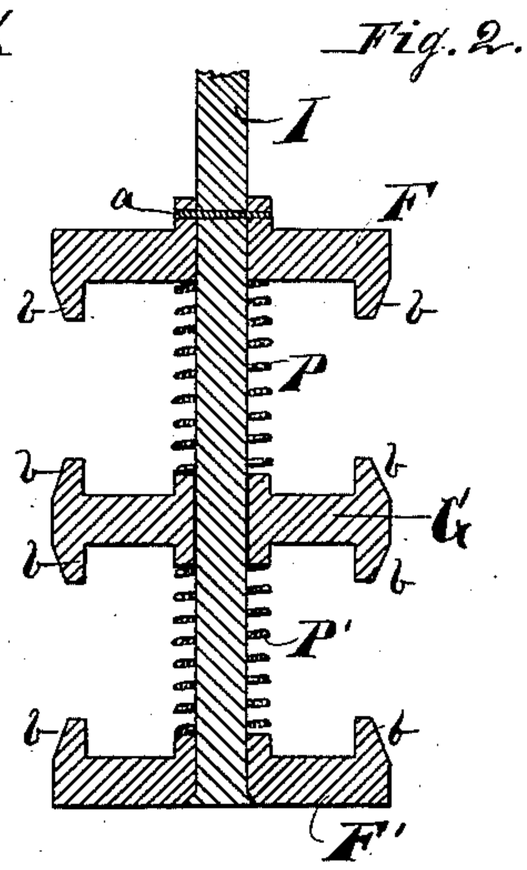


Fig. 2.



WITNESSES:

Geo. H. Bennett.

John P. Mueller

INVENTOR:

Charles Rinderknecht.

Per E. C. Franck,

his Attorney.

UNITED STATES PATENT OFFICE.

CHARLES RINDERKNECHT, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO SINKER DAVIS & CO., OF SAME PLACE.

GOVERNOR-VALVE.

SPECIFICATION forming part of Letters Patent No. 245,662, dated August 16, 1881.

Application filed May 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES RINDERKNECHT, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Steam-Engine Governor-Valves, of which the following is a specification.

My invention relates to improvements in steam-engine governor-valves in which the valve is provided with an automatically-adjustable central balanced disk-valve, which operates in conjunction with balancing-springs and two disks made fast to the stem and other parts of the cut-off mechanism; and the objects of my invention are, first, to provide a governor with an automatically-adjustable valve, by means of which, when the load of the engine is increased, more steam will be furnished, and when the load is diminished the supply of steam will be cut off correspondingly; secondly, to provide the main valve of the cut-off mechanism with a central valve-disk balanced between two springs and loosely fitted to the stem, by means of which the balanced valve-disk vibrates, more or less, up and down on the valve-stem as changes of load take place before the valve-stem is operated, thus relieving the stem of the sudden jerks and injurious effects incident to a valve made fast on the stem. These objects I accomplish by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a sectional view of the governor-valve case, showing the cut-off mechanism with ports full open. Fig. 2 is an enlarged sectional view of the valve.

Similar letters refer to like parts throughout the several views.

A represents the governor-valve case, with inlet-port B, outlet-port C, and **S**-shaped partition D, with openings E E′ for the valve to operate in, all of which may be of the ordinary construction.

The valve is constructed as follows: The stem I has the valve-disk F made fast thereto by the pin or fastening *a*, and the lower face of the disk at its periphery is provided with a series of guide-lugs, *b b*, having beveled outer edges for guiding the disk into the port E′ as the valve-stem is moved down. On the valve-stem I, immediately below the disk-valve F, is a coil-spring, P, one end of which acts against the lower side of the valve F and the other end operates against the upper face of the balance-valve disk G. Said disk-valve G is fitted snugly to the valve-stem, yet loose enough to move freely up and down on the stem. The stem below the disk-valve G is provided with another coil-spring, P′, which operates on the upper face of the lower valve-disk, F′, as shown. Thus the valve-disk G is balanced midway between the two disks F F′, which are made fast to the stem by the springs P P′. Each valve-disk is provided with guide-lugs *b*, for guiding the valves into their respective seats or ports.

The operation of my improved valve is as follows: Fig. 1 represents the governor with its valve set wide open, ready to receive steam. As the steam is admitted into the case A through the pipe B it passes through the top and bottom ports, E E′, and is conducted to the engine-cylinder through the discharge C. If the speed of the engine is increased sufficient to cause the stem I, by reason of its operating mechanism, to fall to its lowest point, then the disk F and the adjustable disk G close the ports E E′ and shut off the supply of steam. Again, if the speed should decrease sufficient to permit the stem I to rise to its highest point, then the adjustable disk G and stationary disk F′ close the ports E and E′ and the engine stops for want of steam. Again, if the engine is running at its regular speed and the load is suddenly increased the pressure of the steam on the valve G, which is balanced on the stem I, causes it to act quickly, and the port E is kept open, thus supplying steam to meet and overcome the extra load. The movement of the adjustable valve G on the stem is much quicker than could be produced on the stem I and its operating mechanism. Hence, there are no sudden jerks on the stem, but the stem and its operating mechanism are left to recover themselves gradually. When the load is thrown off of the engine the reverse operation occurs

with the valve cutting off the extra supply of steam, and the engine continues to run at a regular speed.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a steam-engine governor, the valve consisting of the two disk-valves F F′, made fast to a stem, and the balanced valve G between them, substantially as shown and described.

2. In a steam-engine governor, the stem I, having two valves, F F′, made fast thereto, combined with the balance-valve G and the springs P P′, substantially as shown and described.

3. The balanced valve G, located on a stem between two valves made fast to said stem, substantially as shown and described.

4. The balanced valve G, having guide-wings *b* above and below, and adapted to slide on the stem I between two valves made fast to said stem, substantially as shown and described.

5. In combination with a valve composed of two disk-valves, F F′, made fast on a stem, and a balanced valve, G, between them, the partition D of the governor-case A, having the openings or ports E E′ for said valve-disks to operate in, substantially as shown and described.

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

CHAS. RINDERKNECHT.

Witnesses:

C. E. DAVIS,

J. H. HOOKER.