(No Model.)

B. TOPMILLER.

CUT-OFF VALVE.

No. 305,547. Patented Sept. 23, 1884.

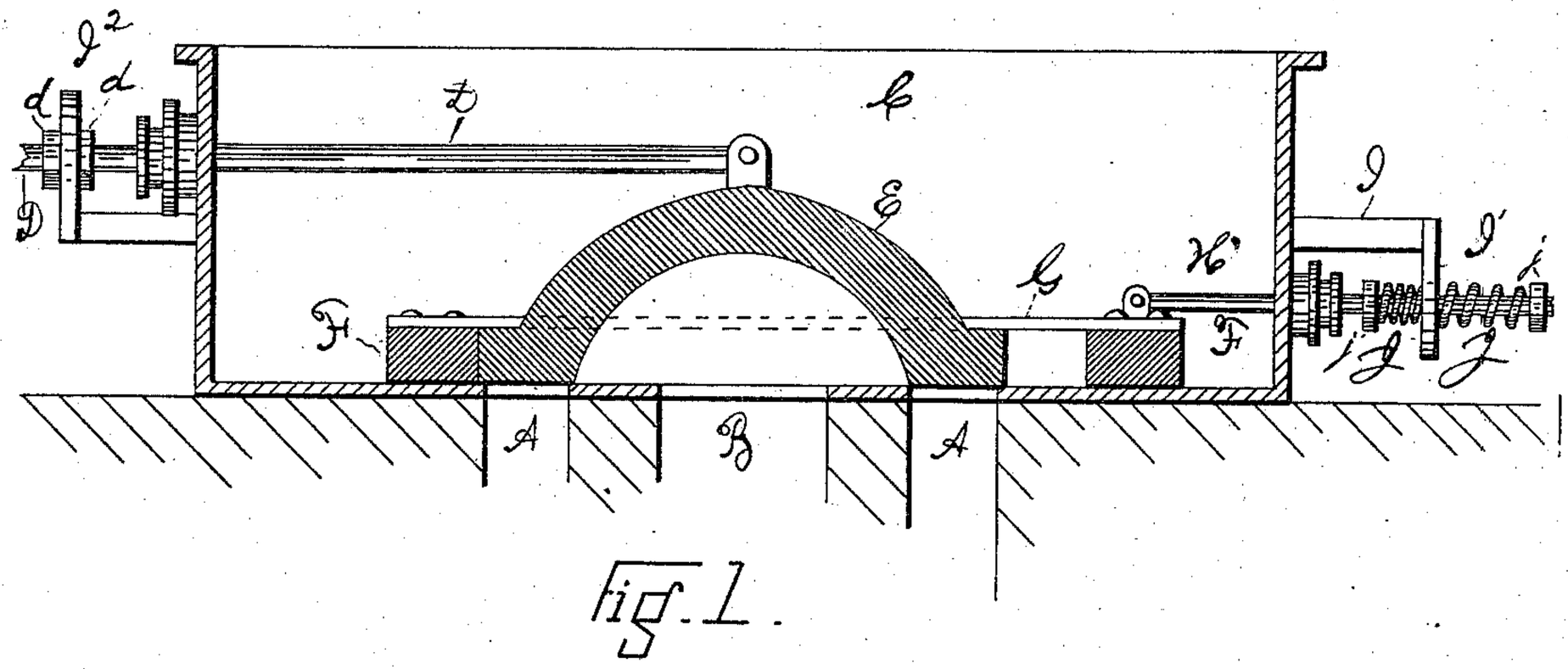

Fig. 1.

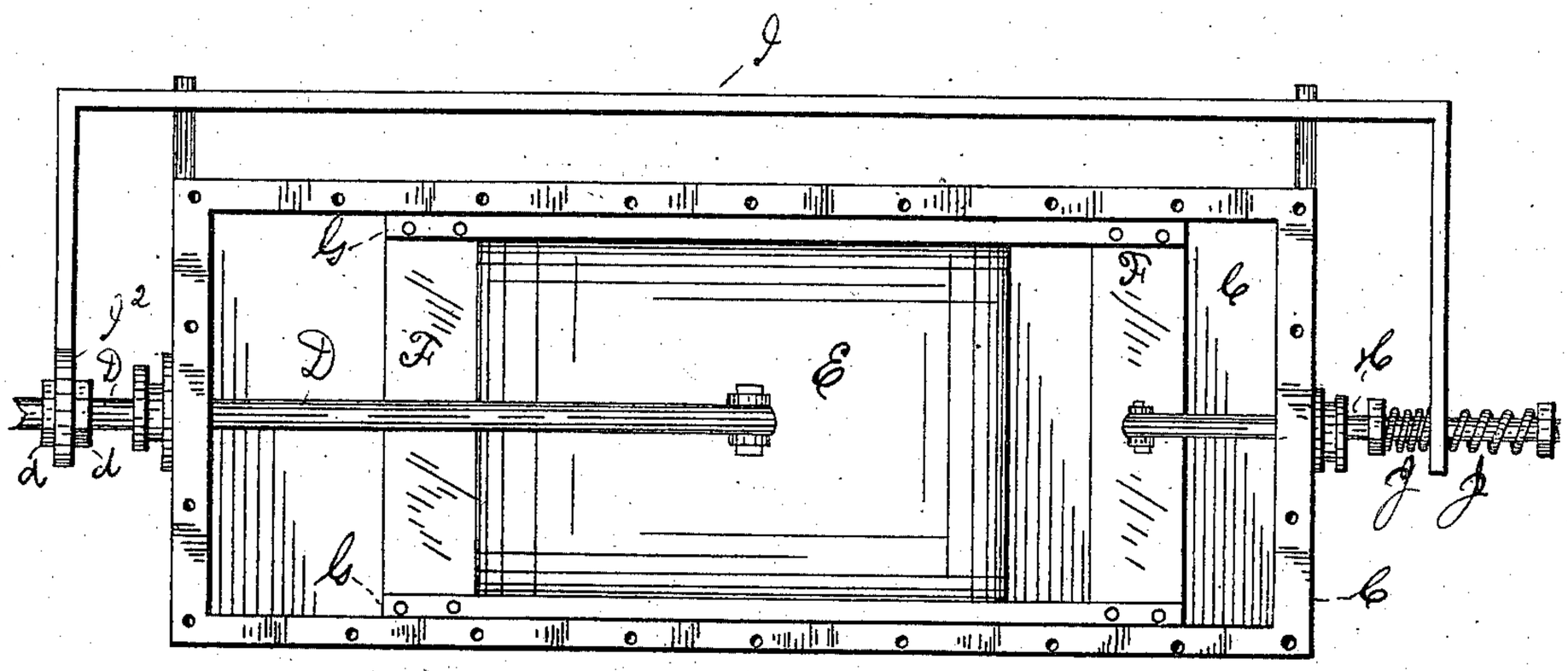

Fig. 2.

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By Geo. T. Murray Jr. Atty

UNITED STATES PATENT OFFICE.

BENNARD TOPMILLER, OF CINCINNATI, OHIO, ASSIGNOR OF TWO-THIRDS TO SIMON OBERMAYER AND JACOB A. HEINSHEIMER, BOTH OF SAME PLACE.

CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 305,547, dated September 23, 1884.

Application filed January 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, BENNARD TOPMILLER, a citizen of the United States, risiding at Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Cut-Off Valves for Steam-Engines, of which the following is a specification.

This invention is an additional improvement upon the devices shown in my application filed August 14, 1883. I have found that in some cases the independently-movable laps would travel too rapidly after the main valve had passed the center of its stroke, and bring the following lap against the main valve so suddenly as to cause a jar, and in some cases cutting off too rapidly.

The object of this invention is to provide a means to cushion the independent laps, so as to prevent them from closing too rapidly and striking with force against the main valve. I accomplish this object by providing cushions to resist the steam-pressure as the laps close up in either direction. These cushions are adjustable, so that they may be regulated according to the pressure they may be called upon to resist.

In the accompanying drawings, in which like parts are represented by similar reference-letters in both views, Figure 1 is a longitudinal vertical section of a valve-box provided with my improvements. Fig. 2 is a top plan view of the same. In both views the top of the steam-box is shown removed.

The cylinder, with its steam-ports A and exhaust-port B, the steam-box C, and eccentric-rod D, are of the usual construction. The valve E differs from the usual slide-valve in having its laps removed and in place thereof the independently-moving laps F F supplied. These laps are yoked together by bars G, which pass over each side of the main valve E. Upon one of the laps are lugs, in which is joined a rod, H, which passes through a stuffing-box in the end of the steam-box C. The end of the rod H, outside of the steam-chest, passes through a downwardly-projecting lug, I′, from a sliding yoke, I, which moves in stationary guides *i*, which guides project from the steam-box. Upon each side of the lug I′, and coiled around the rod H, are two springs, J, which are compressed between lug I′ and two nuts, *j*, which are screwed upon rod H. The tension of these springs is regulated by screwing or unscrewing these nuts. The yoke or rectangular sliding frame I has also an upwardly-projecting extension, I^2, through which the rod D passes, the frame I I′ I^2 and rod D being united by the nuts *d*, which traverse a thread upon the rod D.

The purpose of cushioning the slides by springs resting or bearing against a base movable with the main valve is to enable me to use shorter springs; but it is evident the springs may be made to bear against a stationary support secured upon the steam-chest or other stationary part of the engine, and this is true whether the laps are united, as shown, inside of the steam-chest, or outside of it, as shown in my former application.

The main valve is here shown at its half-stroke moving to the left. As its movement continues, the exhaust-port and steam-port on the right are opened. The following lap F then has a tendency to close up rapidly against the main valve on account of the pressure of the steam between the lap and valve being relieved by the opening of the steam-port. The outer spring now comes into play to prevent it from closing too rapidly and striking with force against the end of the main valve. On the return-stroke the steam-pressure holds the lap F against the now leading end of the valve E until the steam-port on the left is opened, when the lap F′ begins to move rapidly up to the main valve E, its too rapid movement being restrained by the spring nearest the steam-chest.

I do not wish to be limited to any particular form of spring cushioning device for my valve laps, as it is evident that the form of the spring or the material of which it is constructed may be varied without departing from the principle of my invention.

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

1. In a cut-off for engines, the combination of the main valve, the independent laps at the opposite ends of said valve, yoked together,

as shown, and arranged to be moved during part of the stroke independent of the main valve, with a rod attached to the lap, and spring-cushions acting upon the rod to resist the steam-pressure and prevent the laps closing too rapidly.

2. The combination, substantially as specified, of valve E, laps F F′ upon each end of said valve, and yoked together, as shown, with crank-rod D and lap-rod H, the frame or yoke I I′ I², and springs J, to cushion the laps.

BENNARD TOPMILLER.

Witnesses:
J. A. HEINSHEIMER,
GEO. J. MURRAY.