

J. Fitzgerald,
Balanced Valve.

No. 100,612.

Patented Mar. 2. 1870.

Fig. 1.

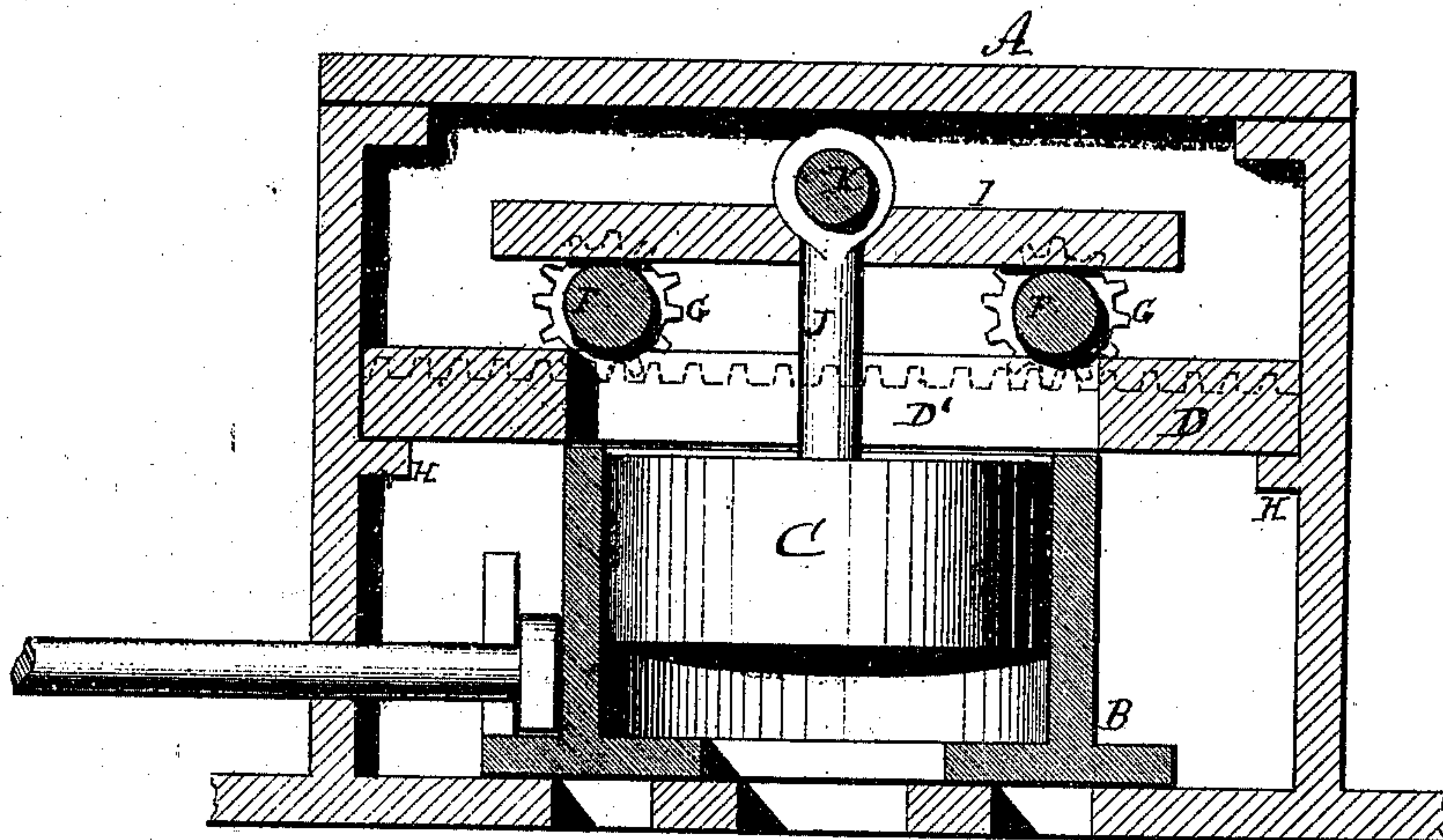
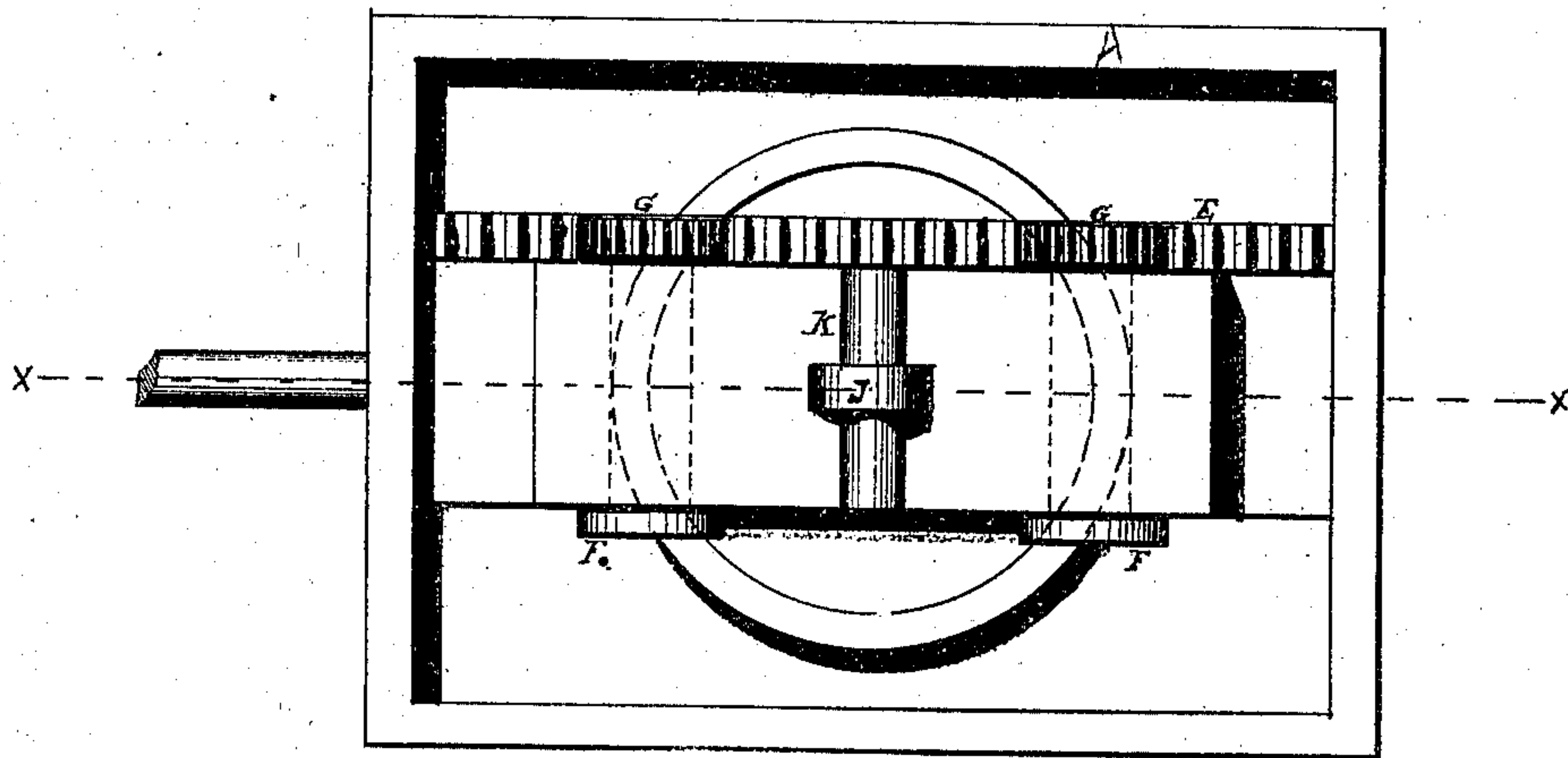


Fig. 2.



Witnesses:

A. Penneventhof.
Alex F. Roberts

Inventor:

J. Fitzgerald
PER *Wm. C.*
Attorneys.

United States Patent Office.

JAMES FITZGERALD, OF BROOKLYN, NEW YORK.

Letters Patent No. 100,612, dated March 8, 1870.

BALANCE SLIDE-VALVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES FITZGERALD, of Brooklyn, in the county of Kings, and State of New York, have invented a new and useful Improvement in Balanced Slide-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to a new and useful improvement in mode of operating the slide-valves of steam-engines, whereby the same are balanced or nearly balanced; and

It consists in the construction and arrangement hereinafter described.

In the accompanying drawing—

Figure 1 represents a vertical section of the arrangement through the line *x x* of fig. 2.

Figure 2 is a top or plan view.

Similar letters of reference indicate corresponding parts.

A is the steam-chest.

B is the slide-valve.

C is a piston in the back of the slide-valve.

D represents a rail, on one edge of which there is a cogged rack, E.

F F represent rolls, upon one end of which are pinions G G, which engage with the rack E, as seen in the drawing. The other ends of the rolls are flanged and serve to guide the rolls on the rail.

The rail D rests on the lugs H H.

I is a plate which rests on the rolls.

J is the piston-rod, which passes up through the

rail D, which rail is slotted, as seen at D', so that the rod may move back and forth with the valve.

The rod passes up through the plate I and the piston is suspended therefrom by means of the pin K, which passes through a hole in the top of the rod.

The pressure of the steam upon the slide-valves is diminished in proportion to the area of the piston. The pressure on the piston is supported by the rollers which traverse freely back and forth on the bearing-rail D. The rack and pinions serve to maintain the rollers in proper position.

It will be seen that the slide-valve is left entirely free, with sufficient pressure upon it to keep it fairly on its seat.

The piston is designed to work steam tight in the valve, the lower side of it receiving the pressure of the exhaust at every stroke of the engine. The movement of the piston in the valve is of course very slight, it being only sufficient to compensate for the slight wear of the valve and of the rollers.

Having thus described my invention,

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

In combination with a slide-valve, the piston C, rail D, rollers F F, with the rack E, pinions G, and plate I, arranged to operate substantially as and for the purposes herein shown and described.

The above specification of my invention signed by me this 12th day of November, 1869.

JAMES FITZGERALD.

Witnesses:

GEO. W. MABEE,

ALEX. F. ROBERTS.