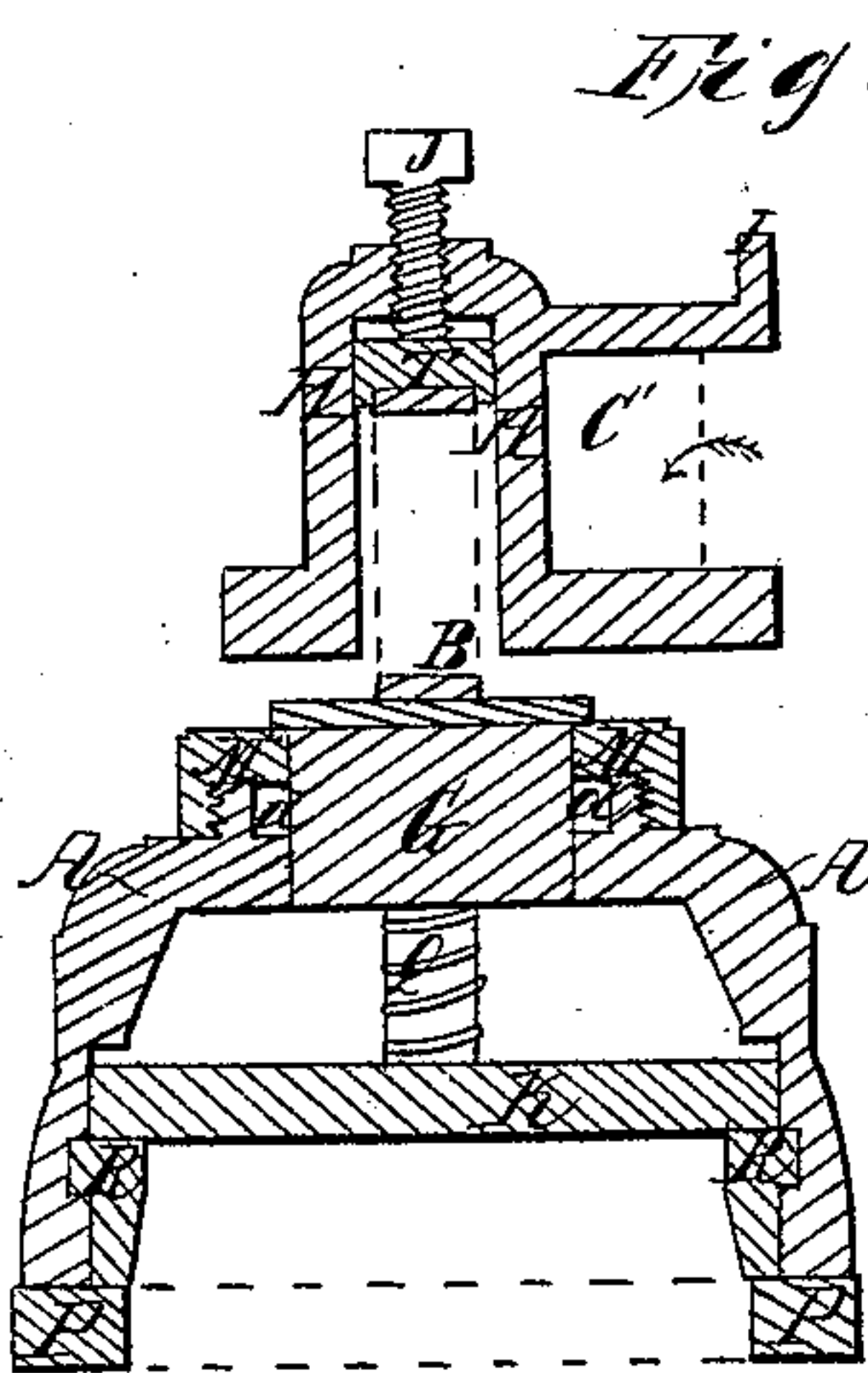
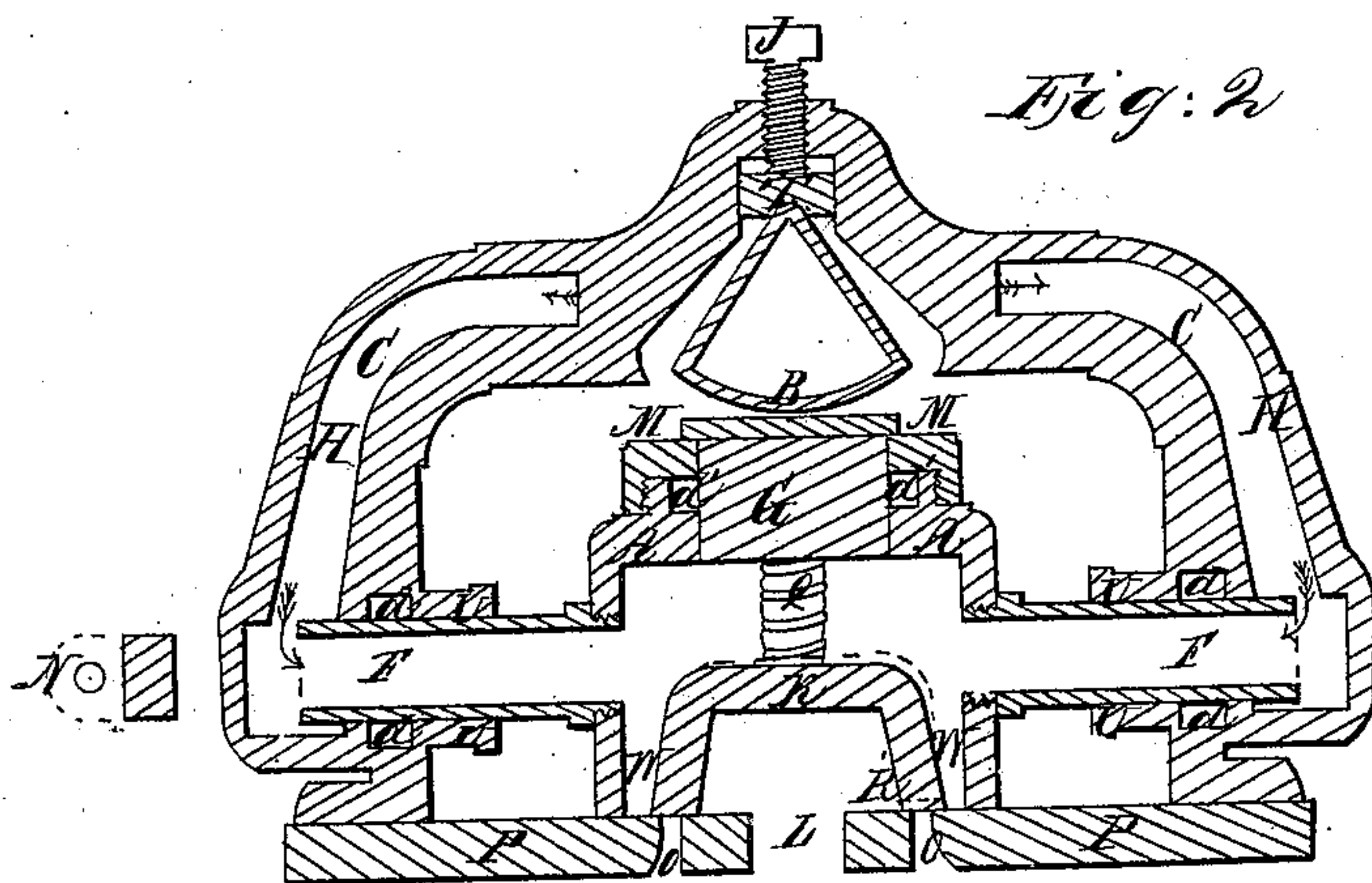
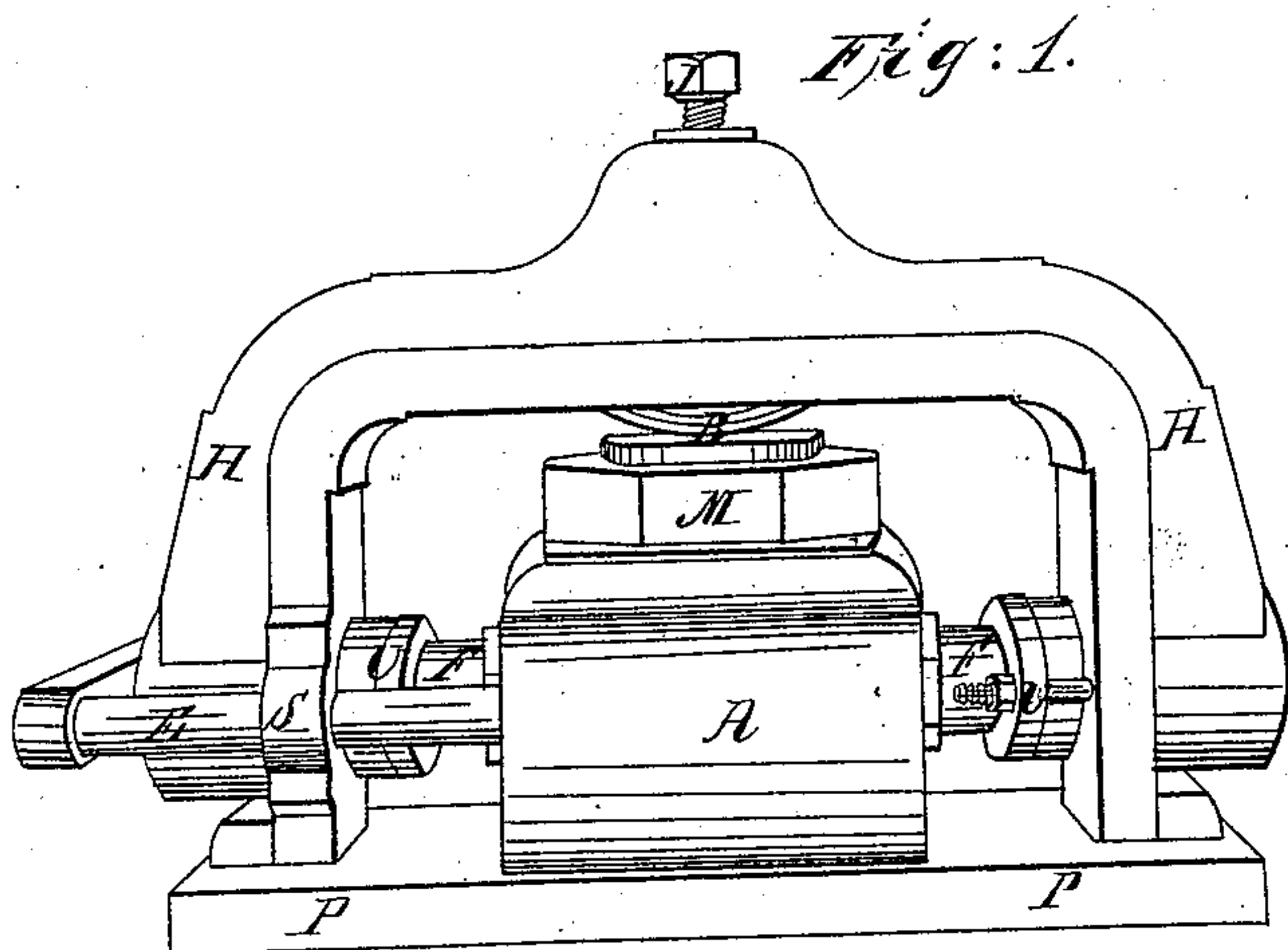


Y. D. Green,

Steam Balanced Valve.

N^o 52,286.

Patented Jan. 30, 1866.



Witnesses:
Chas. B. Skinner
Chas. B. Wilber

Inventor:
Virgil D. Green

UNITED STATES PATENT OFFICE.

VIRGIL D. GREEN, OF WATERTOWN, WISCONSIN.

IMPROVEMENT IN BALANCED SLIDE-VALVES.

Specification forming part of Letters Patent No. 52,286, dated January 30, 1866.

To all whom it may concern:

Be it known that I, VIRGIL D. GREEN, of Watertown, in the county of Jefferson and State of Wisconsin, have invented a certain new and useful Improvement on Valves for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters and marks thereon.

As is shown by the drawings forming part of this specification, my improvement relates to the balanced **D**-valve, said drawings representing my invention, Figure 1 being a perspective view thereof, Fig. 2 being a longitudinal, and Fig. 3 a transverse sectional, view of the same, in each of the figures like marks and letters being used to indicate like parts when shown.

A indicates a hollow valve with eduction-ports **W W**, and **F F** steam-pipes working through stuffing-boxes **d d** and glands **U U**, the pipes being for the purpose of conveying the steam to the valves.

G is a balance-plug passing through the top of the valve, and made steam-tight by means of stuffing-boxes **d' d'** and cap or gland **M M**, and held in place by set-screw **J**, or its equivalent, through the medium of sector **B**. The area of the steam-plug **G** is in excess of the area of the steam-ports **W W** sufficient to balance the pressure of steam from the cylinder and to hold the valve to its seat and prevent its lifting.

K is a bridge to the valve, which may be attached or detached as the different engines may require.

R R are brackets locked and bolted to the inside of the valve, as shown in Fig. 3 of the drawings, for bridge **K** to rest on when the valve is used for reversing engines—for instance, in locomotives, when it is necessary to reverse the engine under a high rate of speed. The dotted line in Fig. 2 above the bridge represents the bridge raised off the bracket **R** at one end, which will relieve the steam in the cylinder. The dotted line **R'** in Fig. 2 indicates a side view of the bracket, being shorter at the top for allowing the bridge to rise without binding.

Q is a spring between bridge **K** and balance-plug **G**, to keep the balance-plug against

sector **B** when the steam is shut off and the engine is yet in motion.

P P indicate valve-seat; **o o**, steam-ports; **L**, the exhaust-port. The valve is represented as standing on the center with the ports closed.

H H is a steam-yoke bolted to valve-seat or cylinder. **C C** are steam-passages through the steam-yoke to steam-pipes **F F**, as indicated by arrows. **O'** in Fig. 3 represents the junction of the steam-passages through the yoke.

I is a flange for the attachment of the steam-pipe.

N is a knuckle-joint for the valve-rod connection; **E**, valve-stems working through boxes **S**, as shown in Fig. 1.

T is a box for the sector to work in, the bearing in the box being elongated, as shown by the dotted lines in Fig. 2, there being no sliding surface to need lubricating, as the sector rolls at the top and on the balance-plug **G**.

Instead of the pipes **F F** being used as recited and shown by the drawings, they may be attached to the yoke and work through stuffing-boxes in the valve, or be attached to the steam-plug by making the plug hollow.

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

1. The hollow **D**-valve provided with ports for conveying steam to the cylinder, and having steam-pipes **F F** attached to it, substantially as set forth.

2. The balance-plug **G**, in connection with the valve **D**, for the purpose of balancing the valve, as herein described.

3. The valve or balance-plug **G**, in combination with the set-screw **J**, sector **B**, and spring **Q**, or their equivalents, for adjusting the plug, as herein set forth.

4. The arrangement of the brackets **R R** and bridge **K**, detached from the valve, for the purpose of adapting the valve to and relieving the steam in the cylinder in reversing engines, and allowing the use of the valve in non-reversing engines.

5. The steam-pipes **F F**, arranged and operated substantially as set forth.

This specification signed this 15th day of September, 1865.

VIRGIL D. GREEN.

Witnesses:

J. A. HALL,
CHAS. H. WILBER.