

C. PRÖTT.
Valve-Gear.

No. 205,208.

Patented June 25, 1878.

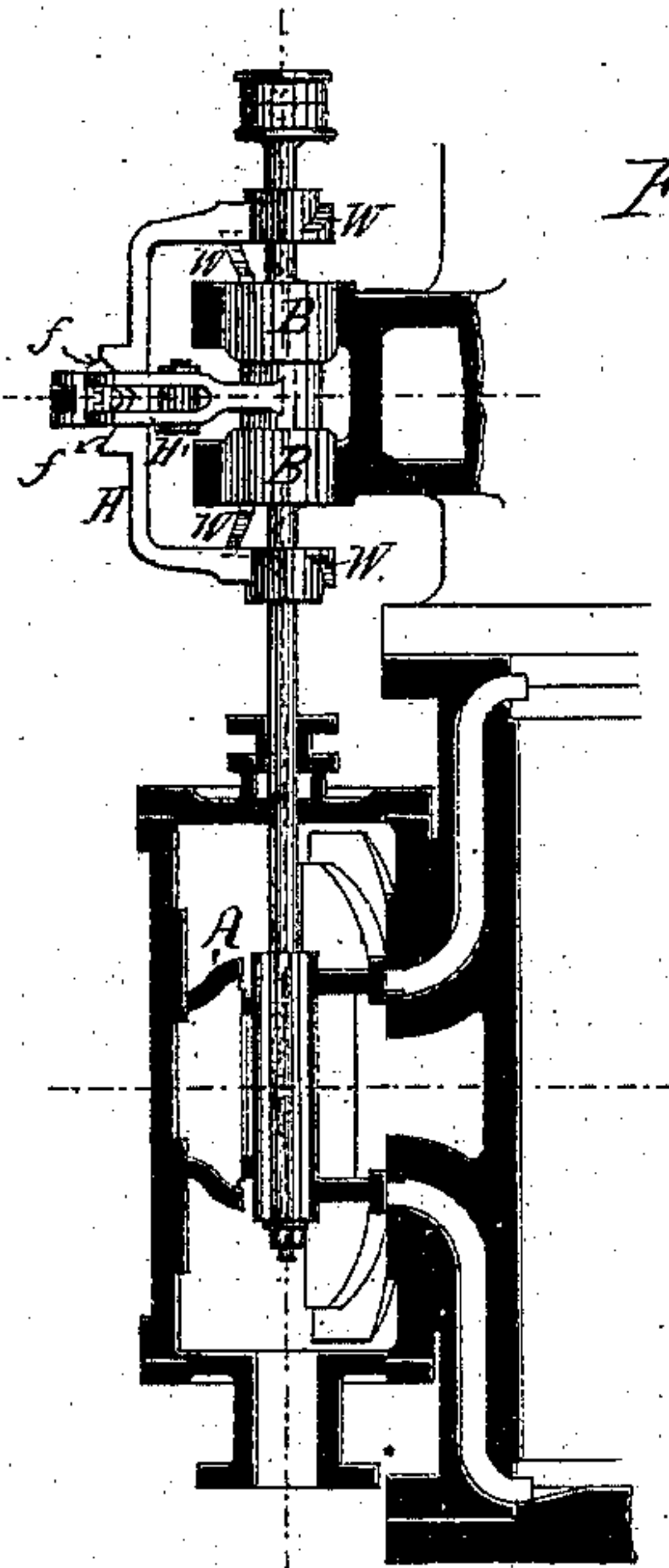


Fig. 2.

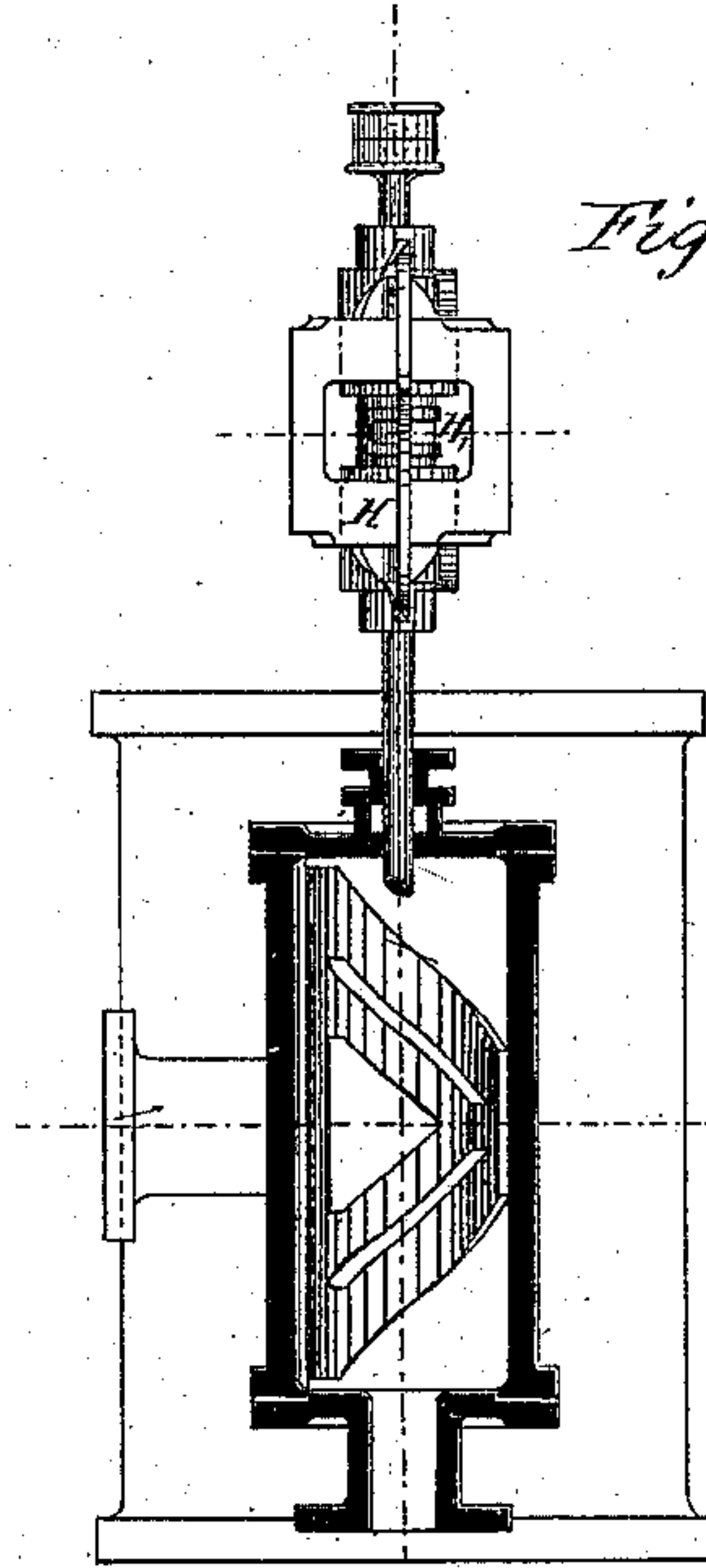


Fig. 1.

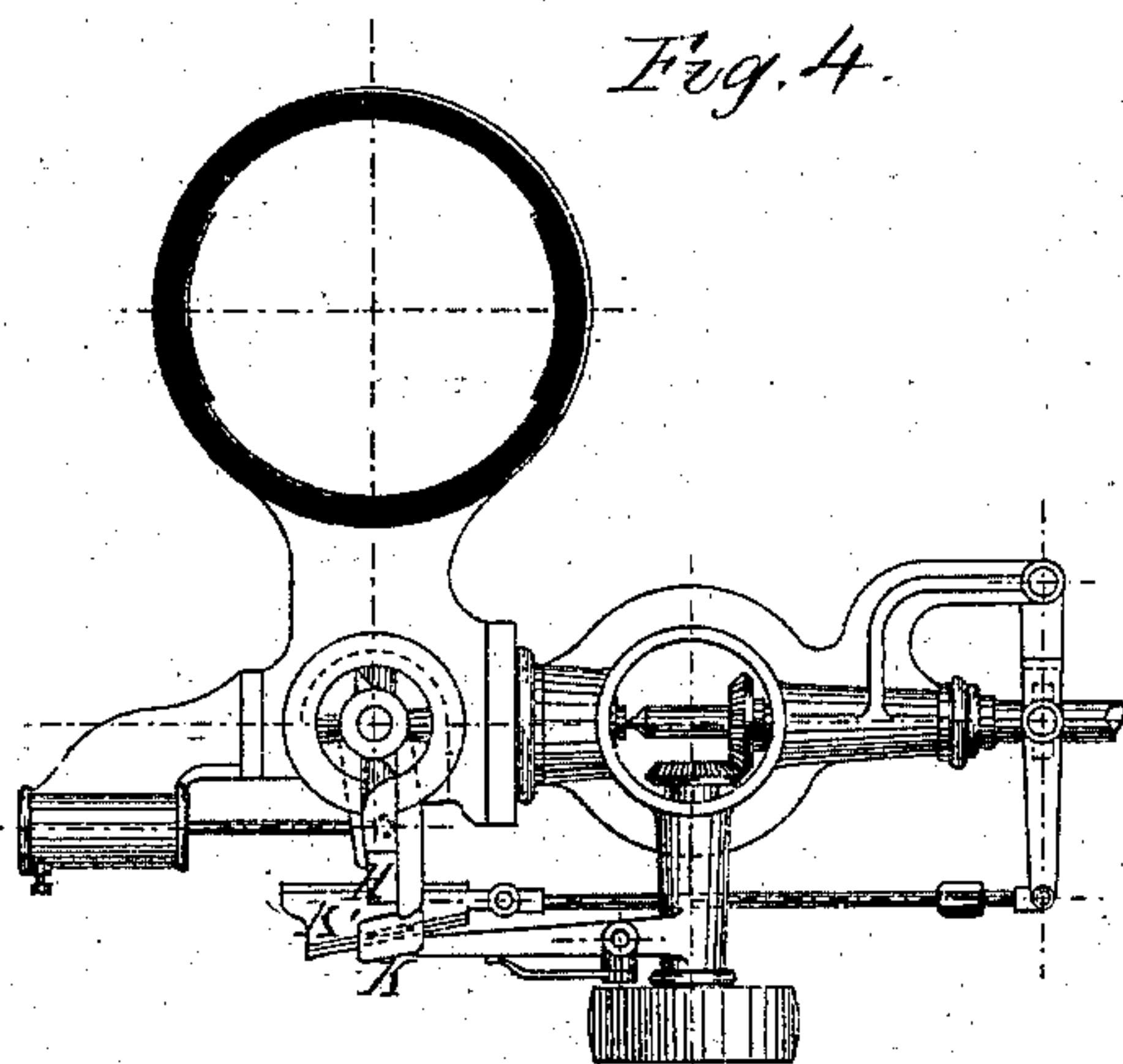


Fig. 4.

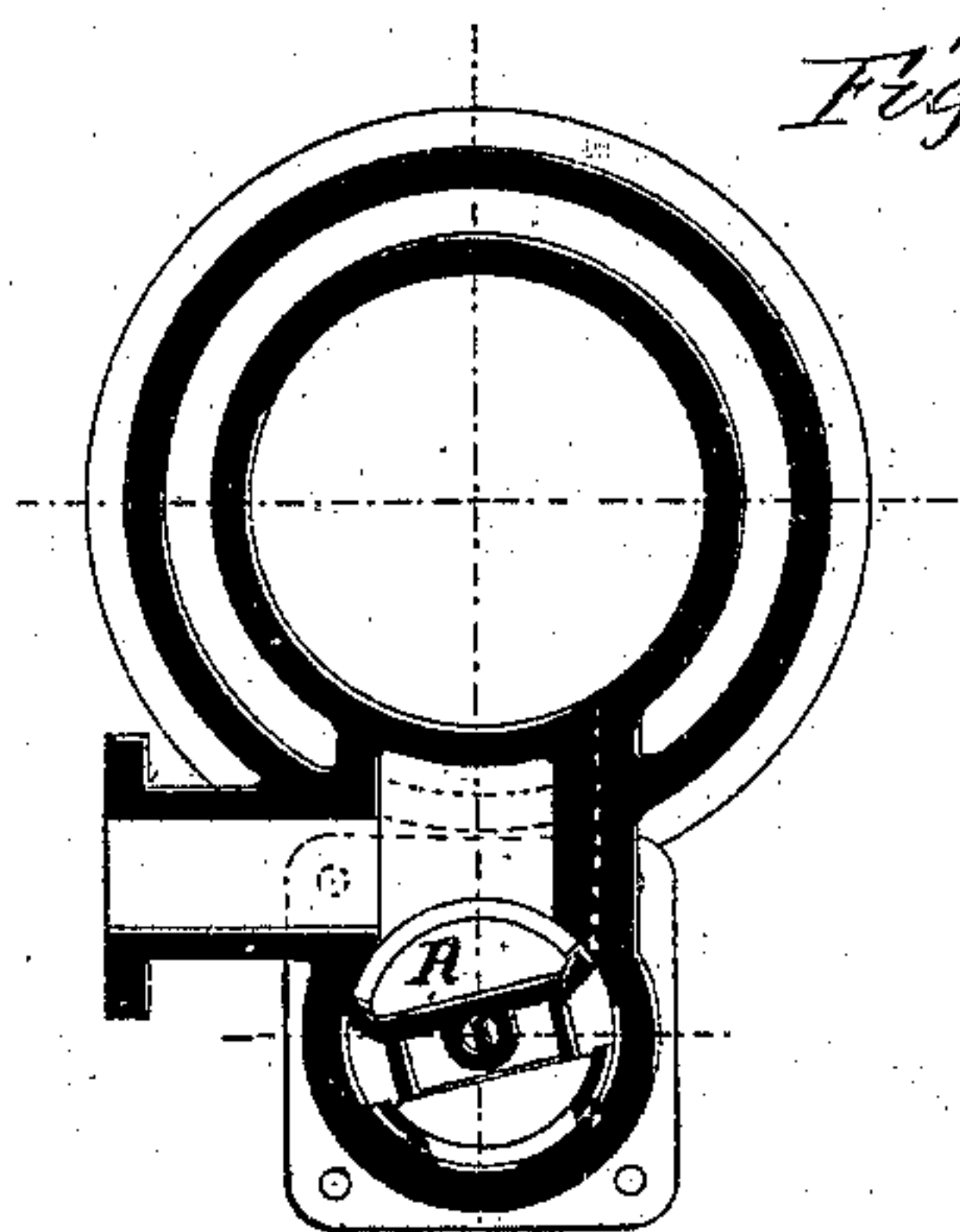
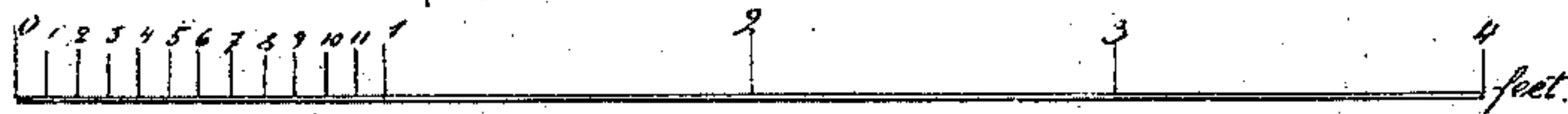


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

CARL PRÖTT, OF BERLIN, PRUSSIA.

IMPROVEMENT IN VALVE-GEARS.

Specification forming part of Letters Patent No. **205,208**, dated June 25, 1878; application filed January 18, 1878.

To all whom it may concern:

Be it known that I, CARL PRÖTT, residing at Berlin, Prussia, have invented certain Improvements in Self-Acting Expansion-Valve Gearing, of which the following is a specification:

The present invention has reference to that class of valve-gear in which a valve is arranged to cut off the connection between the boiler and cylinder at a certain period of the stroke of the piston, in order that the steam may act expansively during the remainder of the stroke.

The invention consists in a novel mechanism for imparting an axial or rotary movement to a reciprocating steam-valve, for the purpose of cutting off the steam by the same valve which effects the induction and education thereof, as will be hereinafter more fully explained, and then set forth in the claim.

In the accompanying drawings, forming part of this specification, Figure 1 represents a vertical section of the steam-chest and side elevation of the valve-operating devices. Fig. 2 is a horizontal longitudinal section taken through the steam-chest and cylinder. Fig. 3 is a vertical cross-section of the steam-cylinder, steam-valve, and steam-chest. Fig. 4 is an end elevation, representing the governor-connection with the valve-gear.

In the present instance I employ a cylindrical valve, A, the end edges and channels of which are inclined toward each other. The valve may be said to possess the same external form as the Bieder expansion-valve, and it is balanced in the customary manner.

The valve is operated by the ordinary eccentric or other motion, so as to give a rectilinear reciprocating motion to the same for effecting the inlet of the steam into the cylinder and the exhaust therefrom. The valve receives an axial motion in order to close the entrance-channel, and thus shut off the steam from the cylinder, the steam which is within the cylinder then acting expansively. From this moment, or the time when the expansion takes place, the valve receives a spiral motion, which is effected by the screw-shaped surfaces W W on the stirrup H, fastened to

the valve-rod, and by similar surfaces on the boxes B B, through which the valve-rod reciprocates.

After the valve has reached its middle position, and after the stirrup H has been raised to the limit of its upward motion, the latter is engaged by a latch, K, carried by a lever, H', and caused to reciprocate with the valve until the latch is disengaged by a vertically-moving wedge, K', coming in contact with the inclined surfaces *f* of the stirrup. The wedge is connected with the ordinary governor mechanism, and when the latch is released from the stirrup the lever H' is drawn downward by an air-buffer and spiral spring, so as to cause the turning of the valve. The governor serves to raise and lower the wedge K', which moves in a cut in the latch K, and thereby the front edge of the wedge is caused to advance toward and recede from the stirrup for effecting an early or late expansion.

The weight of the wedge is so small that the precise operation of the governor is not affected thereby, and consequently the expansion-gear can be operated in a perfect and satisfactory manner.

The wear of the valve will be perfectly uniform, because during each stroke of the same the entire valve-seat is touched, and, moreover, by reason of the particular movement given to the valve, the grinding action will affect the entire surface of the valve, so as to always maintain the same tight. The external mechanism is subjected to little wear, because the force required for operating the valve is comparatively slight.

The particular valve-gear devised by me, and illustrated in the present instance, is far more simple and effective than the ordinary expansion-gear heretofore known, because I dispense with separate valves for effecting the induction and cutting off of the steam, and use a single valve, which receives the customary reciprocating motion in addition to the axial movement, preferably imparted to it by the devices above described.

It will be understood that the expansion is influenced by the governor mechanism, the latter being connected with the valve.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the stirrup H, having inclined surfaces *f* and screw-shaped surfaces or cams W, the boxes B, having similar screw-shaped surfaces, the latch K, the lever H', and the vertically-movable wedge K' with the governor mechanism, the reciprocating valve, having an axial or rotary movement and valve-

rod, the piston-cylinder, and the steam-chest, all constructed and arranged as and for the purpose set forth.

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

CARL PRÖTT.

Witnesses:

GERARD WENCESLAUS V. NAWROCKI,
BERTHOLD ROI.