

G. McNAUGHTON.
Steam-Valve.

No. 159,198.

Patented Jan. 26, 1875.

Fig. 1.

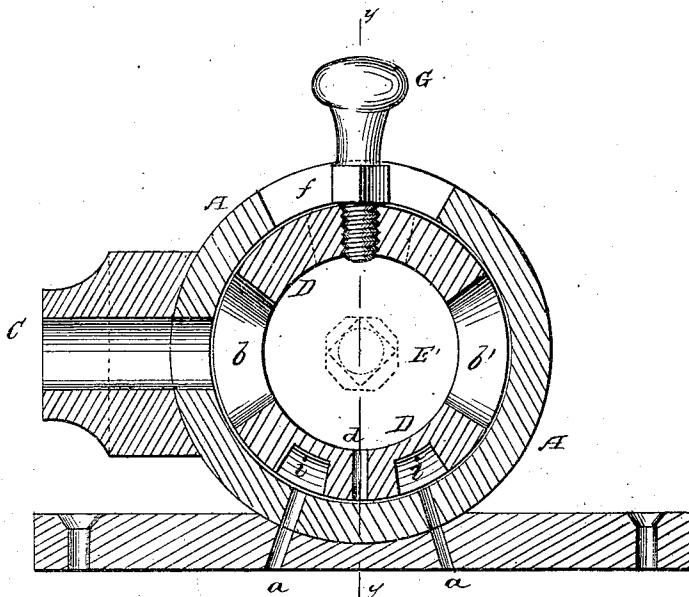
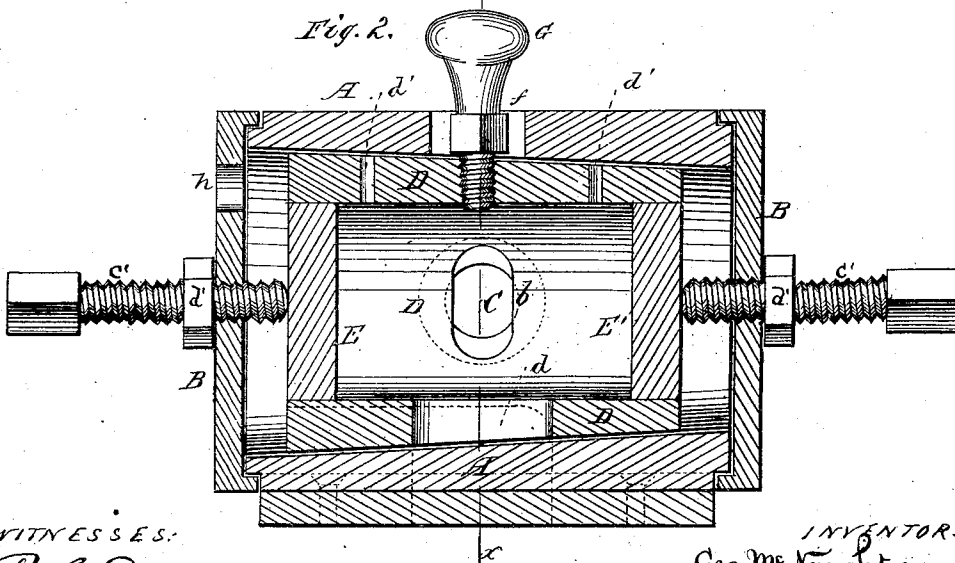


Fig. 2.



WITNESSES:

P. C. Dietrich

H. C. McArthur

INVENTOR:

Geo. McNaughton

per
C. H. Watson & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE McNAUGHTON, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO GUSTAV H. ROTH, OF BOSTON, MASS.

IMPROVEMENT IN STEAM-VALVES.

Specification forming part of Letters Patent No. 159,198, dated January 26, 1875; application filed December 12, 1874.

To all whom it may concern:

Be it known that I, GEORGE McNAUGHTON, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Steam-Valves; 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 which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to overcome friction arising from steam-pressure, and consequent wear and loss of power, and also to construct a valve and cut-off combined that shall be simple and durable, and have all the advantages which others have in expansion of steam; and it consists in the construction and combination of parts, as will be hereinafter more fully set forth, and pointed out by the claims.

In the accompanying drawing, Figure 1 is a transverse vertical section of my valve, and Fig. 2 is a longitudinal vertical section of the same.

A represents the outside casing chest or cylinder, in which the valve revolves. B B are the heads of the outside casing. C is a collar or pipe, into which the feed-pipe is screwed. *a a* are the ports, admitting steam into the steam-cylinder for operating the piston. D is the body of the valve, made hollow, and provided with heads E E', and held and adjusted in the cylinder by set-screws *c'* and nuts *d'*.

The interior of the valve is cylindrical in form, while the exterior is made conical or slightly tapering, the interior of the casing A being made to correspond with the exterior surface of the valve.

b is the port through which the steam enters from the main pipe C. In the opposite side of the valve is cut a hole, *b'*, of the same size as the port *b*, to compensate or to give the same steam-pressure on both sides of the valve by offering the same surface of metal to the steam-pressure. *d* is the port through which the steam passes from the valve through either of the ports *a* into the cylinder to act

on the piston. In the opposite side of the valve are cut two holes, *d'* *d'*, the combined area of which is equal to that of the port *d*, for the same purpose as the hole *b'* is made. *i i* are exhaust-grooves in the outside of the valve—one on each side of the port *d*—said grooves leading to the space at the larger end E of the valve, between it and the head of the casing, the exhaust-steam escaping through escape-pipe at *h*. *f* is a slot in the outer casing A, through which runs the arm or lever G, which moves the valve.

The valve D, being hollow, as described, in the center, is charged to the same pressure as the boiler while moving from one point to the other, and when it comes into position to deliver the steam into the cylinder, it gives the steam full power to expand as delivered. Being conical in form, it is thrown toward the small end of the casing and against the set-screw *m* by the exhaust steam pressing against the large end E and the head of the casing.

By taking steam inside of the valve, there must be an equal pressure on all sides, provided there is no more surface on the one side or in one direction than another. I accomplish this by cutting openings in the sides of the valve opposite to the inlet and outlet ports, and equal in area therewith, and thus perfectly balancing the valve.

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

1. The conical valve D, provided with steam-inlet *b*, outlet *d*, balancing openings *b'* *d'*, and exhaust-grooves *i i*, all constructed and arranged substantially as and for the purposes herein set forth.

2. The conical valve D, with steam-inlet *b*, outlet *d*, openings *b'* *d'*, and grooves *i i*, in combination with cylinder A B and screws and nuts *c'* *d'*, all as and for the purpose herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEO. McNAUGHTON.

Witnesses:

JAS. B. BELL,
MICHAEL FARNHAM.