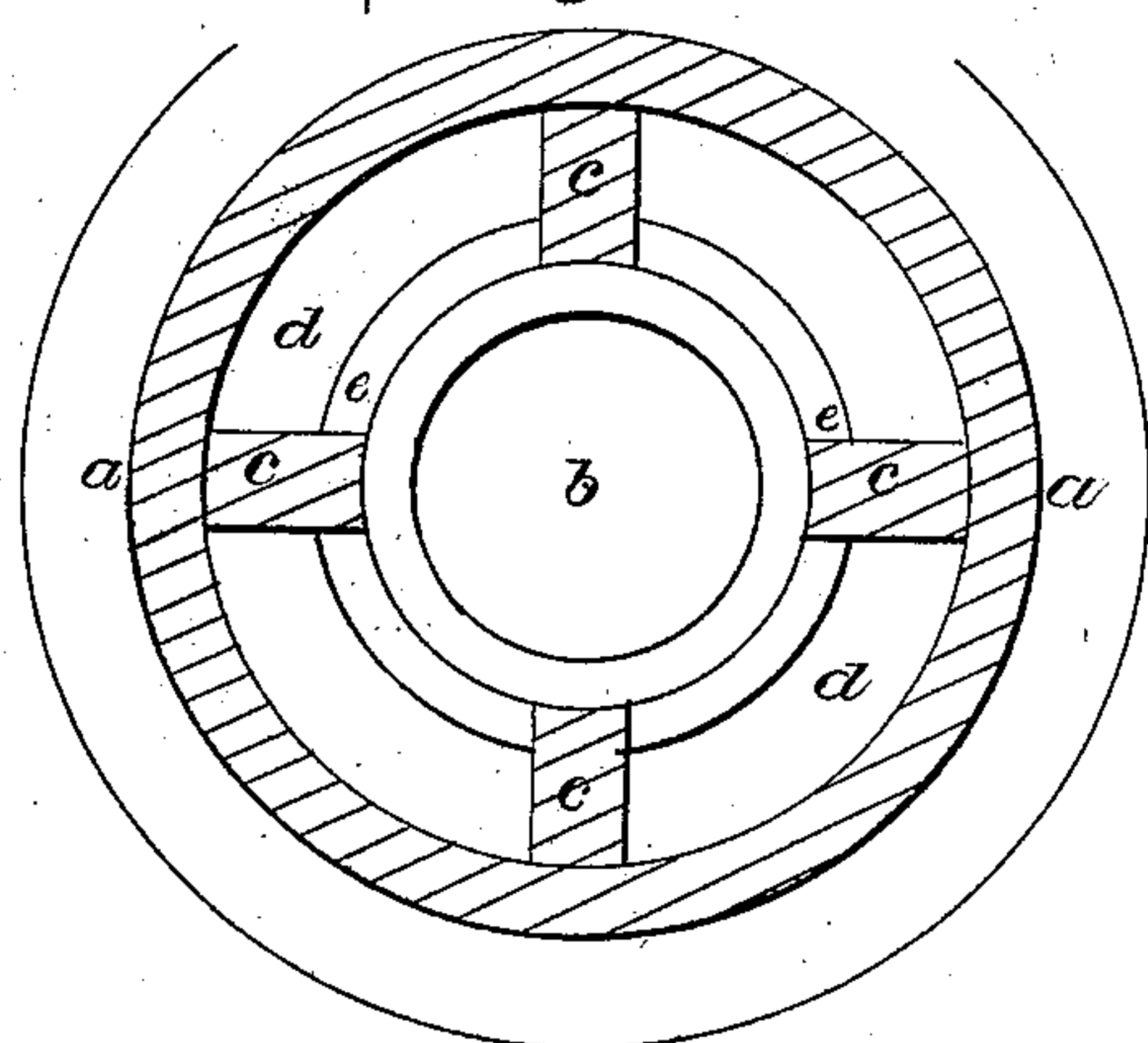
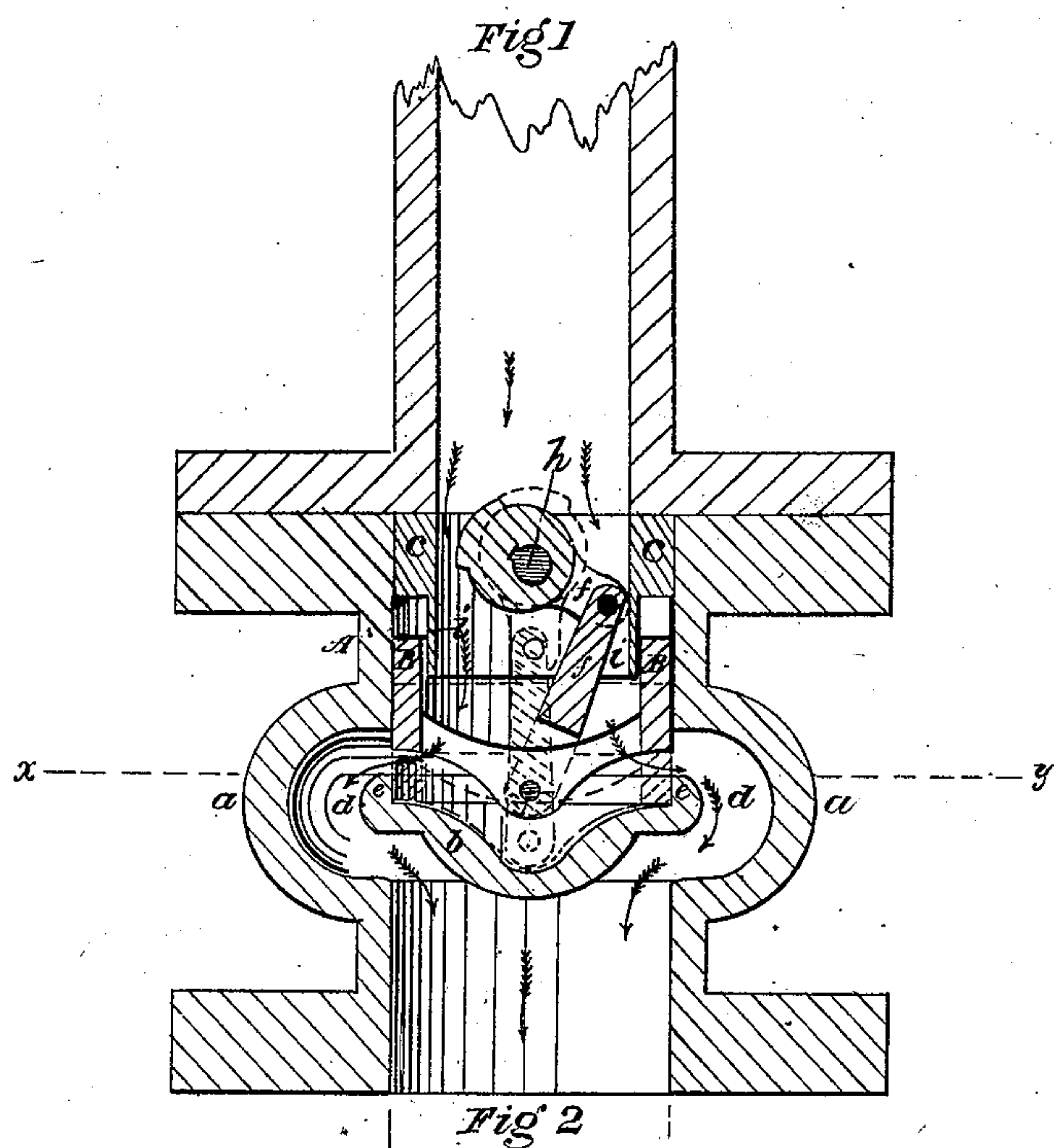


J. Tremper,
Steam Poppet Valve.
N^o 12,399. Patented Feb. 13, 1855.



UNITED STATES PATENT OFFICE.

JOHN TREMPER, OF PHILADELPHIA, PENNSYLVANIA.

STEAM-VALVE.

Specification of Letters Patent No. 12,399, dated February 13, 1855.

To all whom it may concern:

Be it known that I, JOHN TREMPER, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and Improved Balanced Valve to be Used as a Throttle or Regulator, and for other Purposes; 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, forming part of this specification, in which—

Figure 1, is a central section of the valve, and Fig. 2, a transverse section in the line, *x, y*, of Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in a ring without opening port or passage through its sides, employed in a pipe or casing in connection with a suitable arrangement of passages, and a fixed head or cup, in such manner as to constitute a balanced valve, of exceedingly simple construction and great durability. It also consists in a guard ring applied to the said valve to protect it from the percussion effect of the sudden rush of steam which takes place at the commencement of the stroke of the engine

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is the valve casing, and B, is the ring constituting the valve. The casing consists of a short joint of pipe having a bulbous enlargement, *a, a*, in which the fixed head, *b*, see Fig. 1, is suspended or supported by pillars, *c, c*, see Fig. 2, in such a manner as to leave a passage or passages, *d, d*, from the part of the casing above the said head, to the part below it. The fixed head, *b*, is in the form of a cup, and it is preferable that it should be supported by pillars below, rather than suspended from above; for the reason, that in the former case, the upper mouth of the passage *d, d*, can be turned out to an equal width all round. This upper part and the rim, *e*, which is left around the head to form a cup, are turned or bored out very slightly tapering inwards in order that the ring valve, B, which is turned externally to a corresponding slight taper may fit snugly into the cup, *b*, and the part of the casing above the passage *d, d*, but may be raised easily, and without friction, and may have no wear upon it.

When the ring valve is down to the posi-

tion shown in red lines, the upper mouth of the passage, *d, d*, is closed and it is obvious that nothing can pass through the casing; but if the lower part of the ring is lifted above the rim of the cup, *b*, there is communication through the rim and between the upper and lower parts of the casing through the passage, *d, d*, and as the valve rises, the area of the opening increases, until the valve rises entirely above the mouths of the passages. I prefer always to admit the steam through the ring from the inside, as in that case its pressure cannot fail to be equal all round, and keep the valve perfectly balanced; but a slight inequality might be possible, if the steam were admitted from the outside, and the passage, *d, d*, happened to be faultily constructed.

The valve is raised and lowered to open and close the passage, *d, d*, by means of a toggle joint; one arm, *f* of which, is connected with the valve, and the other, *f'*, with a spindle, *h*, passing transversely through the casing to attach the mechanism by which the valve is controlled. This joint is so arranged that it is fully extended when the valve is closed, so that it serves a limit to its movement and only just lets the valve drop steam tight into its seat preventing it jamming, and as it were locking it in place. It also opens and closes the valve very gradually, its motion being quicker the farther it is from its seat.

In order to guard the top or inlet end of the valve, against the percussive effect of the rush of steam to the cylinder at every stroke of an engine, I fit snugly and secure in the mouth of that part of the casing in which the valve works, a metal ring, C, which I term a guard ring, the inner diameter of which is not less than that of the interior of the ring of the valve. The efficiency of this guard ring will be increased by a lip, *i*, which enters loosely into the valve; but this lip is not indispensable.

The valve and casing may be inverted from the position shown in the drawing if desired. It may also be used otherwise than in an upright position; it is applicable under most or all conditions, in which a puppet valve is commonly used.

Having thus fully described my invention, I will proceed to state what I claim as new and desire to secure by Letters Patent.

1. I claim the valve composed of a ring without ports or passages in its sides, ap-

plied substantially as herein described,
within a casing containing a fixed head or
cup, *b*, and a passage or passages, *d*, lead-
ing from one side to the other of the said
5 fixed head or cup.

2. The guard ring, *C*, applied substantially
as described—either with or without the
lip, *i*, for the purpose of protecting the in-

let side or end of the valve, against the per-
cussive effect of the rush of steam or other 10
fluid at the commencement of the stroke of
the engine.

JOHN TREMPER.

Witnesses:

A. W. RAND,

CHARLES D. FREEMAN.