

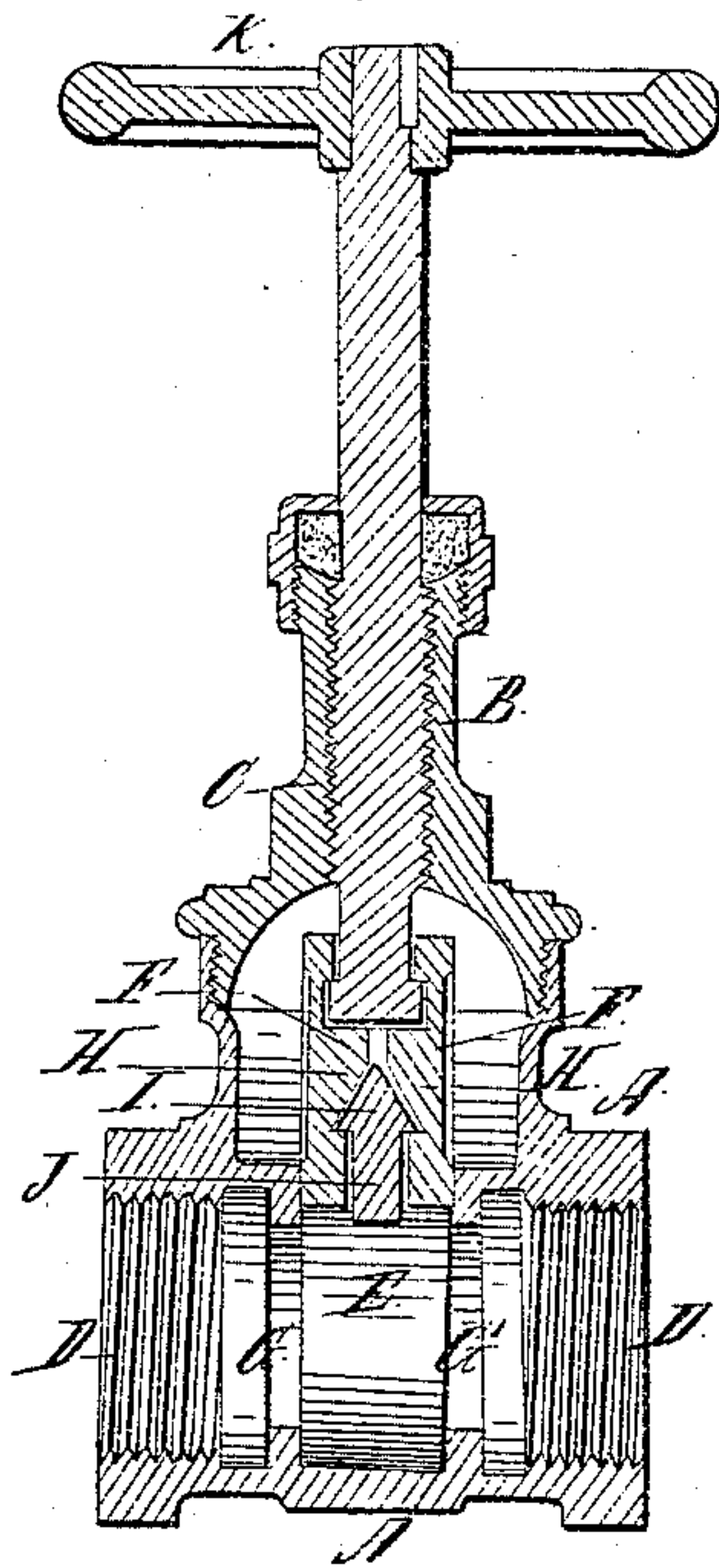
*Radford & Sawyer*

*Globe Valve.*

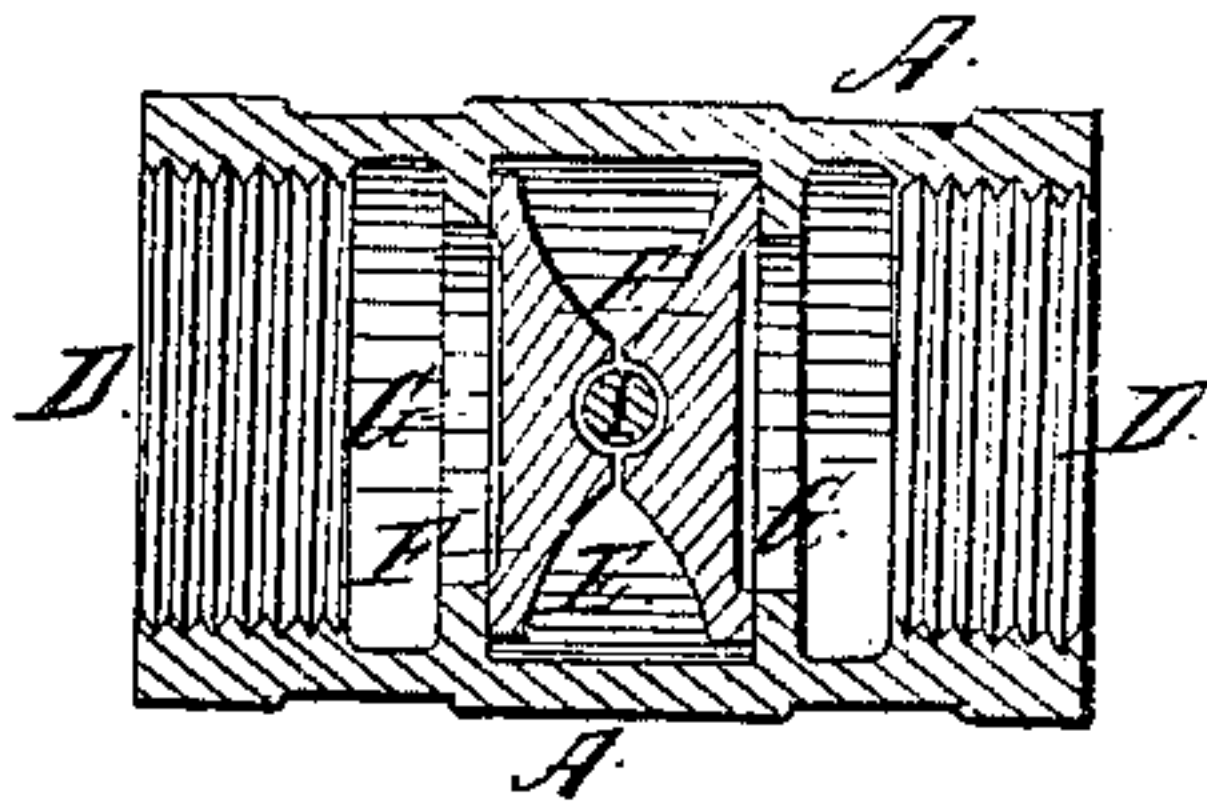
*N<sup>o</sup> 86,447.*

*Patented Feb. 2, 1869.*

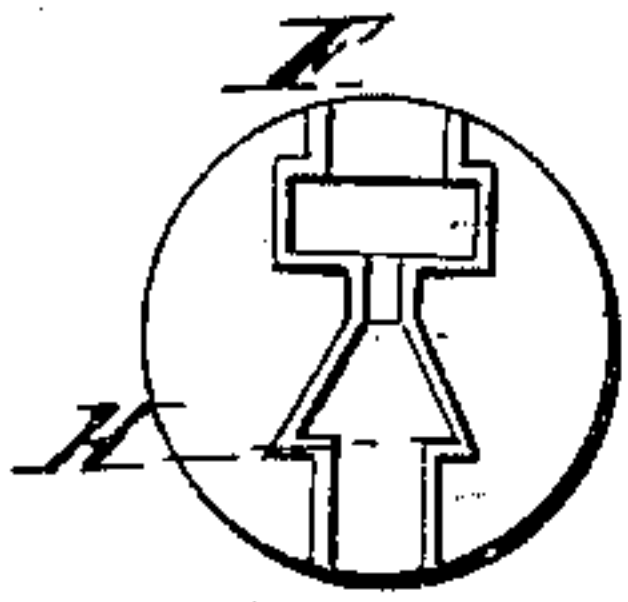
*Fig 1.*



*Fig 2.*



*Fig 3.*



*Witnesses:*  
*Geo A Long*  
*C W Baldwin*

*Inventors:*  
*B E Radford & D Sawyer*  
*by their Attorney*  
*Frederick Curtis*



# United States Patent Office.

BENJAMIN F. RADFORD, OF HYDE PARK, AND DANIEL SAWYER,  
OF BOSTON, MASSACHUSETTS.

*Letters Patent No. 86,447, dated February 2, 1869.*

## IMPROVEMENT IN GLOBE-VALVES FOR STEAM AND OTHER ENGINEERY.

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

*To all to whom these presents shall come:*

Be it known that we, BENJAMIN F. RADFORD, of Hyde Park, in the county of Norfolk, and Commonwealth of Massachusetts, and DANIEL SAWYER, of Boston, in the county of Suffolk, and Commonwealth aforesaid, have made a new and useful invention of certain Improvements in Valves for Steam and other Purposes; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawings, making part of this specification, and in which—

Figure 1 is a vertical central and longitudinal section, and

Figure 2, a horizontal section of a valve containing our invention or improvements.

Figure 3, an inner face view of one of the twin-valve disks, to be hereinafter referred to and explained.

The invention comprising the subject of this application may be considered in the light of an improvement upon that for which Letters Patent of the United States of America were issued, on the 1st day of January, 1867, to Samuel J. Peet, of New York, for improvement in valves.

This patented valve consists in the employment of two metal disks, fitted in a box or shell, and closed against seats disposed upon opposite sides of them by the interposition of a conical wedge affixed to or making part of a rod or bar extended downward from the upper part of the valve-case.

In practical operation of this valve, it has been found that when oxidation, corrosion, or roughening of the outer faces of the valve-disks and contiguous parts of the valve-case occurs, which is often the case, these parts adhere when the water-way of the valve is partially or wholly open, and the effect of any movement of the conical spreader, toward closing the valve, has the tendency to wedge these parts still more closely together and render such closing of the valve impossible.

Our invention relates to means for insuring at all times, and in a smooth and even manner, the movements of the valve-disks, and consists in the employment of a wedge of any proper form, isolated from the actuating-rod of the valve except through the medium of the disks, such wedge serving to force apart the disks and against their seats, but not aiding in the elevation or depression of the same, the latter being effected by the rod before mentioned.

In the drawings before mentioned as accompanying this specification and illustrating our invention,

A denotes the shell,

B, the stuffing-box and cap, and

C, the rod, which effects the movements of the valve, such parts being constructed in manner and of metal similar to many valves now in general use.

The steam or water-way of the valve is shown at D, passing through the shell A, at right angles to the axis of the rod C, such steam-way having two flat

valve-seats, G G, disposed within it, thus forming a central cavity or valve-chamber, E.

Within this chamber E are disposed loosely two twin-shaped disks, F F, such disks, by reciprocating vertical movements, serving to open or close the passage through the steam-way D, as occasion requires.

The disks F F are susceptible of free movements to and away from the seats G G, and are supported in position by suspension in a suitable manner from the lower extremity of the rod C, or its equivalent.

The central part of the inner face of each disk, F, is formed with a tapering or conical-shaped recession, H, such two recessions, when in conjunction, serving to retain an interposed conical or tapering spreader, I, extending downward through or between the disks, and resting, when such disks are at their lowest position, upon the bottom of the valve-chamber, or upon a raised ledge or extension of such chamber, the shank J of the spreader being of such proportionate size therewith, as to prevent the latter from dropping out of its position between the disks, when raised from contact with the bottom of the valve-chamber, during the ascent of the disks in the act of opening the passage of the steam-way.

The action of the above-described arrangement of parts is as follows, it being premised by the remark that the disks are at their highest elevation within the valve-chamber, and the steam-way, as a consequence, full open:

Upon turning the rod C in the right direction, by means of its hand-wheel, K, such rod and the disks F F are lowered, until the latter have arrived nearly or quite opposite the seats G G before mentioned.

At this point, the lower end of the shank of the spreader I abuts against the lower surface of the valve-chamber, and, as a consequence, a further slight lowering of the disks about such spreader has the effect of forcing them tightly up against the seats G G, and so as to close the steam-way in both directions. A slight elevation of the disk from this lowest position at once frees them from further action of the spreader until they again reach this position.

It will be obvious that as the spreader I has no effect upon the disks until they reach nearly their lowest position, and then only by their over-action, there is no possibility of such disks being illegitimately fixed in position above their seats.

Having now described our invention,

What we claim, and desire to secure by Letters Patent, is—

The arrangement of the spreader I, with reference to the disks F and disks G, substantially as herein shown and set forth.

BENJ. F. RADFORD.  
DANIEL SAWYER.

Witnesses:

FRED. CURTIS,  
EDWARD GRIFFITH.