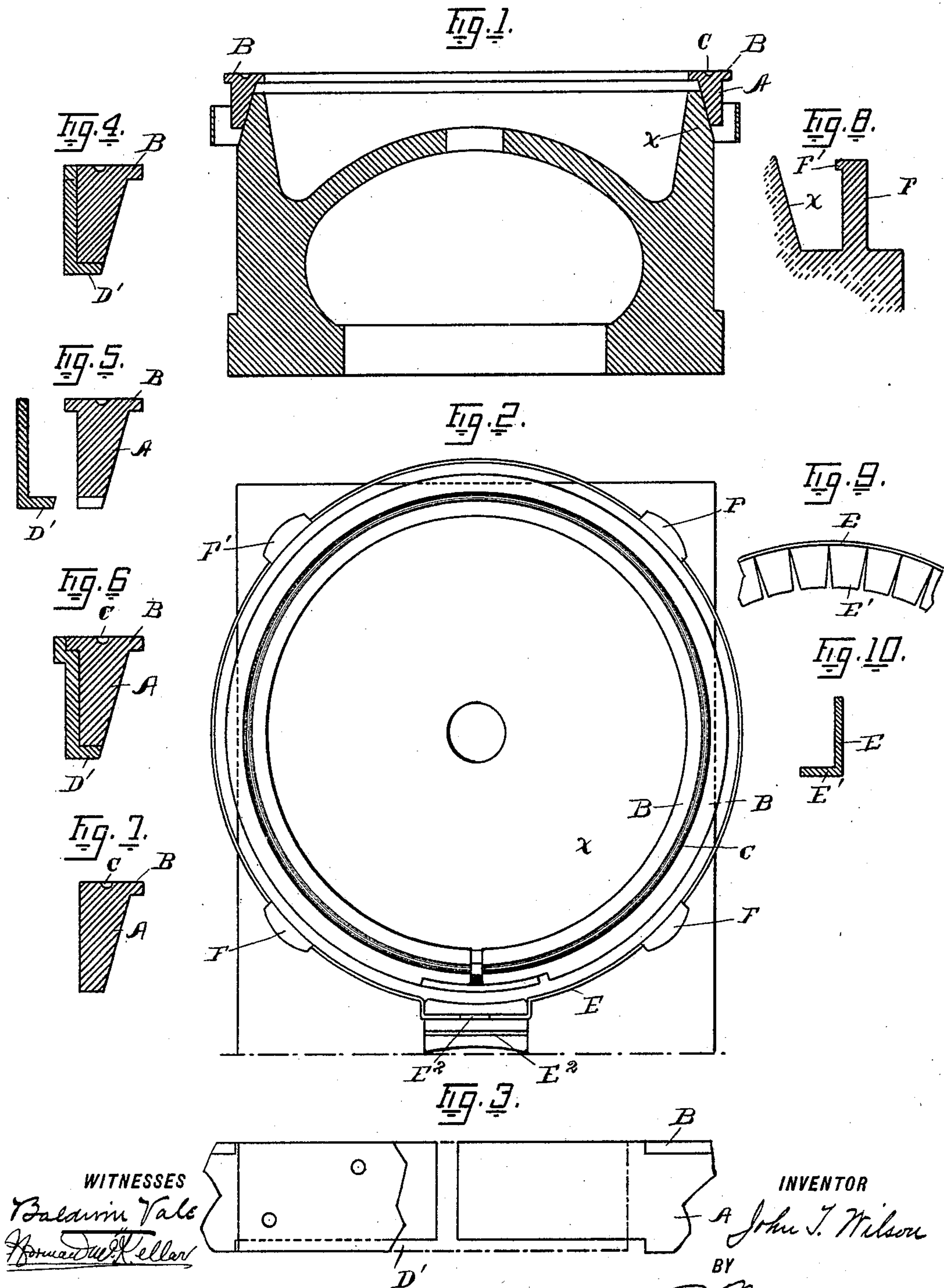


(No Model.)

J. T. WILSON.  
BALANCED VALVE.

No. 605,943.

Patented June 21, 1898.



WITNESSES  
*Baldwin Vale*  
*Howard W. Keller*

INVENTOR

*A John T. Wilson*

BY

*E. A. Muddock & Co.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOHN T. WILSON, OF JERSEY SHORE, PENNSYLVANIA.

## BALANCED VALVE.

SPECIFICATION forming part of Letters Patent No. 605,943, dated June 21, 1898.

Application filed May 13, 1897. Serial No. 636,355. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. WILSON, a citizen of the United States, residing at the borough of Jersey Shore, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Balanced Valves; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in valves, and more particularly to an attachment thereto for relieving the vertical pressure of the valve upon the valve-seat.

The invention consists in an improvement in the construction shown and described in a patent granted to William J. Thomas the 3d day of May, 1892, and bearing No. 474,153; and it consists in the construction of what is therein termed the "balance-ring," whereby the wearing-surface is materially increased and suitable means for lubricating same are provided; also whereby the strength and durability of the plate for preventing the passage of steam to the inside of the ring when the same is spread in its action are increased.

In the drawings, Figure 1 is a cross-sectional view of a valve constructed in accordance with this invention. Fig. 2 is a plan view of the half of a double balanced valve. Fig. 3 is a detail view of the meeting ends of the ring and the joint-plate construction, the plate being partly cut away. Figs. 4 and 5 are detail views in section of the balance-ring and joint-plate, the latter view showing the parts separated to show the construction. Fig. 6 is a cross-section of a modification of the joint-plate. Fig. 7 is a cross-section of the balance-ring at the point where the joint-plate is applied. Fig. 8 is a detail view in section of a retaining-post provided on the top of the valve to hold a retaining-ring. Fig. 9 is a detail view of a small segment of the retaining-ring, and Fig. 10 is a detail view in section of the retaining-ring shown in Fig. 9.

As set forth in the patent above referred to, the pressure on the side of the valve raises the bevel-shaped ring A against the top of the steam-chest. This is accomplished by

means of the bevel-surface on the cone X, the ring being provided with a corresponding bevel on its inner side. It is evident that when the ring is compressed the inclination of the two bevel sides is to force the ring bodily upward and to seat it with considerable force against the top of the steam-chest. As the pressure against the top of the steam-chest is exerted with considerable force and continuance, the wear on the upper surface of the ring is necessarily great. As this wear transpires it permits the ring to rise on the cone X in proportion to the quantity of wear on top. As the spring rises on the cone it becomes weakened in its resilient quality and diminishes its surface for the operation of the steam in setting it against the cone. It further exaggerates the discrepancy of the joint-plate in performing its function of closing the gap between the separated ends, which, when the ring is new or very slightly worn, is perfect in its operation, but which necessarily becomes impaired with the diminution of the circle to which the ring is expanded.

It is with the object to provide an added wearing-surface of greater area and therefore of increased wearing resistance to operate against the top of the steam-chest that this invention is designed. This is here accomplished by adding to the top of the ring A the wearing-surface or extended flange B. This wearing-surface or flange B, I find I can make quite a considerable extension and produces on top of the ring a wide wearing-surface which it requires a greater length of time to wear away perceptibly. The flange B may be either internal or external of the ring, though that preferred by me is the internal extension, as I avoid thereby the lifting strain which would be exerted under the flange to the outside of the ring, and, further, I am enabled to use a ring of full circular capacity inside of small steam-chests in which the external extended flange might interfere with the present construction of the chest. Around the upper surface of the ring so provided with this flange I form a groove C, which is designed to hold a lubricant and is called an "oil-groove." With the oil placed in this groove or accumulated by it in the rapid reciprocating movement of the



valve this surface is still further maintained from wearing. The joint-plate shown in the drawings is secured to one end of the ring, as described in the patent above referred to, and differs here from that therein set forth only in the extension D', which is set under the ring, so as to let the edge bear against the cone X of the valve. In some constructions I find it convenient to cut a recess out of the meeting ends, from the inside thereof, for the insertion of the extension D', as shown in Figs. 3 and 5 of drawings. This permits a closer fitting when the balance is to be applied to valves working in very small chests. This, however, is not necessary, as will be seen by the drawings in Fig. 6, wherein the extension D' is carried into the under side of the ends of the ring without cutting them away, as described.

By means of the construction herein described the life of this balance attachment is prolonged to quite an extent.

In many instances where this balance is applied to valves working within steam-chests of limited capacity it becomes impossible to provide the cone X with a cast-iron retaining ring or extension, which, however, is considered necessary in order to provide against the possibility of the ring becoming broken and falling into the path of the valve. In the present construction, as illustrated in Figs. 2, 8, 9, and 10, I have provided for a thin sheet-metal ring E, which is provided with an inwardly-extending flange E', this being formed by cutting the metal into pieces, as shown in Figs. 9 and 10, the pieces E' serving to form the bottom of the extension. This ring is secured in position by being forced under inwardly-projecting shoulders F' of projections F, cast on the top of the valve. This false ring may be mounted on the valve either in short sections or in a continuous form, as shown in Fig. 2. In the latter construction the ends of the ring E are

secured in grooves E<sup>2</sup>, formed in suitable extensions on the surface of the valve.

Having thus described this invention, it is claimed—

1. A slide-valve provided with a cone-shaped extension on its upper surface the sides of which are beveled inward toward the apex, in combination with a ring having a corresponding internal bevel and adapted to fit snugly the beveled surface of the cone, said ring being divided at one point and recessed on its under side at the point of division and a joint-plate attached to one end of the ring thus divided and overlapping the other end to close the joint, the said joint-plate being provided with an inwardly-extending flange D', which fits into the said recess and extends inwardly to the said cone substantially as set forth.

2. In combination with a slide-valve having a cone-shaped extension on its upper surface, a ring having a corresponding internal bevel and adapted to fit snugly the said cone and a metal ring E of greater diameter than the said beveled ring and provided with inwardly-extended flanges E' divided by slots or cuts yet forming a practically continuous guard for the purpose set forth.

3. In combination with a slide-valve having a cone-shaped extension on its upper surface, and raised lugs F provided with inward flanges, a metal ring internally beveled to fit the said cone and an exterior sheet-metal ring provided with a practically continuous inwardly-presented guard or flange and held in place by said lugs and their overlapping flanges F' substantially as set forth.

In testimony whereof I have hereunto set my hand this 15th day of March, 1897.

JOHN T. WILSON.

Witnesses:

WM. P. PEOPLES,  
NORMAN MCKELLAR.