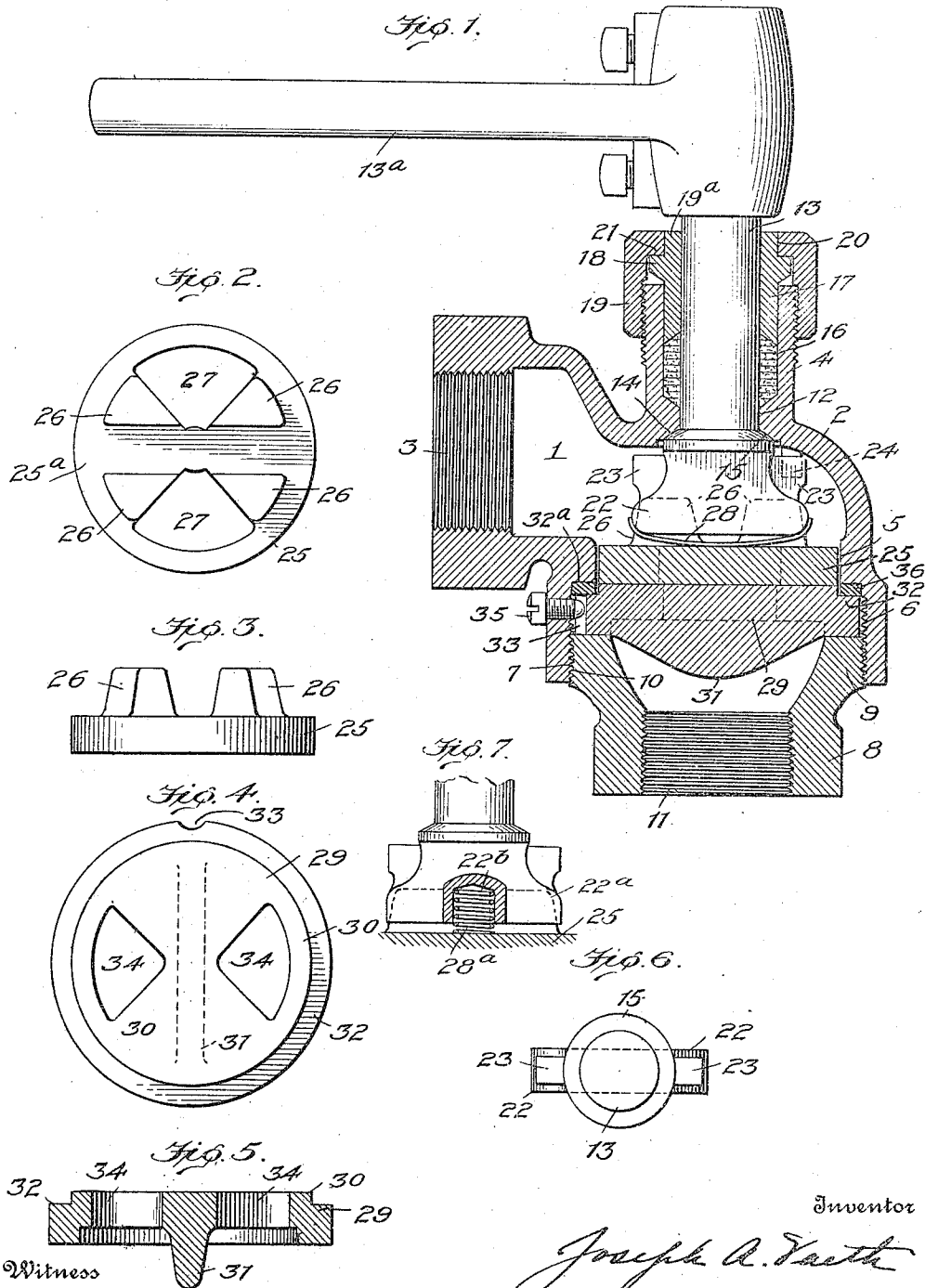


J. A. VAETH.
VALVE.
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Patented July 10, 1917.



Witness

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VALVE.

1,233,262.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH A. VAETH, a citizen of the United States, residing at Baltimore in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to valves and more particularly to a rotary disk valve, which while of general application may be advantageously applied to steam boilers as a blower valve.

Owing to the hard usage to which blower valves are subjected in service both the valve disk and the valve seat become worn and permit leakage. The replacement of the worn parts of this form of valve, now in use, is a constant source of expense to the users.

The object of the present invention is to provide a rotary disk valve with a removable and easily adjustable valve seat, and to so construct the valve casing that the parts thereof are adapted to form both the securing and adjusting means for the valve seat.

There are other features of the invention as will appear from a more detailed description of the same taken in connection with the accompanying drawing, chosen for the purpose of illustration.

Figure 1 is a vertical section of a rotary disk valve, embodying the invention, the valve stem and operating handle being shown in elevation.

Figs. 2 and 3 are, respectively, a top plan and a side elevation of the valve disk.

Figs. 4 and 5 are, respectively, a top plan and a transverse section of the valve seat.

Fig. 6 is a top plan of the valve stem, and

Fig. 7 is a detail view, showing a slight modification.

Throughout the specification and drawing like parts are designated by like numerals.

The numeral 1 indicates the valve casing, the upper portion 2 thereof being provided with an inlet opening 3, a stuffing box 4, and diametrically opposite the stuffing box with a circular opening 5, the lower portion 6 of which is of slightly larger diameter and is internally screw-threaded as

shown at 7. The lower portion 8 of the casing is externally provided adjacent the upper end 9 with a screw-threaded portion 10 adapted to have threaded engagement with the threaded portion 7 of the upper section of the casing. An internally threaded outlet-opening 11 is provided for the lower portion of the casing.

The opening 12 leading from the casing 1 into the stuffing box 4 and through which the valve stem 13 extends is preferably provided with a spherical bearing surface 14 adapted to engage the rounded ball collar 15 on the said valve stem. This form of joint allows of a slight angling of the valve stem 13 and permits the stuffing box to be packed when the valve is under pressure. Within the stuffing box 4 is the packing 16 which is held in place by the packing ring 17, that is preferably provided with an outwardly extending shoulder 18 adjacent its outer end 19^a. To hold the packing ring 17 in adjustable position there is provided the nut 19, which is threaded on the stuffing box and is preferably provided with an opening 20 through which the end of the packing ring extends, the annular shoulder 21 on the said nut engaging the coacting shoulder 18 on the said ring. An operating handle 13^a is shown attached to the valve stem 13.

Below the collar 15 the valve stem is provided with a cross-head 22, and extending outwardly upon opposite sides thereof are the shoulders 23, which are adapted to contact with opposite sides of the downwardly projecting lug 24 on the casing, to thereby limit the turning movement of the said stem. The lug 24 is commonly formed of sufficient length to limit the turning movement of the said stem to an angle of 90°. The cross-head 22 on the valve stem is adapted to extend into the slot or groove 25^a in the valve disk 25, the said groove may and preferably is formed by the pairs of upwardly projecting lugs 26 which are provided on the upper face of the disk 25, adjacent the sides of the ports 27 therein. A plate spring 28 is preferably interposed between the lower face of the cross-head 22 and the said disk, the said spring serving to keep the valve disk firmly seated while permitting free expansion of the valve stem under the influence of heat, to which the device is subjected when serving as a blower valve.

The removable valve seat is designated by

the reference numeral 29 and preferably comprises a circular disk provided with a raised central portion 30 and also provided with a transversely extending rib 31 which
 5 may be of truss form. An annular shoulder 32 is formed by the raised portion 30 and in the outer circumference of the disk and preferably in line with the rib 31 there is formed a transversely extending notch or
 10 groove 33.

The raised portion 30 is provided on opposite sides of the rib 31 with the ports or openings 34 which are adapted to simultaneously register with the ports 27 in the
 15 disk valve.

The diameter of the raised portion of the seat is substantially the same as the valve disk, and both of these members are housed within the circular opening 5 of the portion 2 of the casing. The greatest diameter of valve seat is slightly less than the diameter of the lower portion 6 of the said opening 5 to permit the ready insertion and removal of the said seat within this portion.
 20 To maintain the seat in a fixed position with reference to rotation, there is preferably provided a round ended screw 35 which extends into the opening 5 and engages within the notch 33.

The seat 29 is held firmly in position by means of the lower portion 8 of the casing, the upper portion 9 of which engages the lower face of the said seat and holds the latter in contact with the lower face of the
 25 disk valve 25. The annular shoulder 32 on the said seat is adapted to cooperate with the shoulder 32^a formed by the portion 6 to limit the inward or upward movement of the valve seat 29.

To provide for adjustment of the seat, a soft metallic ring washer 36 is preferably inserted between the coacting shoulders 32 and 32^a, whereby the simple screwing up of the lower portion 8 will compensate for
 35 any wear which may occur during a long period in service.

It will thus be evident that I have designed a simple form of valve which, while possessing all the advantages of the best
 40 type of rotary disk valves, such as rotation of the seat, ease of operation and assembly, has in addition a removable and adjustable seat, of a type easy and inexpensive to manufacture and capable of prolonged use.

As is clearly illustrated in Fig. 7 of the drawing a coil spring 28^a may be interposed between the cross-head 22^a and the upper face of the valve disk 25, the coil spring being adapted to be secured within the recess
 45 22^b provided in the lower face of the cross-head. The coil spring 28^b is adapted to perform the same function as the plate spring

28, which function has already been fully described.

Having now described my invention, although it is to be understood that by the
 65 foregoing I do not intend to limit the invention, since the terms used are to be understood in their descriptive, and not in their limiting sense, what I claim and desire to
 70 secure by Letters Patent is:

1. A valve casing provided with inlet and outlet openings, said outlet opening having the inner portion thereof of less diameter than the outer portion, a detachable outlet
 75 member adapted to be received in and connected to the outer portion of said outlet opening, a removable valve seat, said seat having a raised portion thereon of less diameter than the inner portion of said outlet
 80 opening, the shoulder formed by said raised portion being adapted to limit the movement of said seat in said casing, and a valve disk cooperating with said casing, and means for operating said valve.

2. A valve casing provided with inlet and outlet openings, a removable outlet portion adapted to be received in and connected to said outlet opening, a rotatable disk valve, an adjustable and removable seat therefor,
 90 and means including a valve stem for operating said disk valve, a spherical collar integral with said stem, a seat in the said casing adapted to cooperate with said collar, and a spring interposed between said stem and
 95 valve disk and adapted to force said collar and said valve disk against their respective seats.

3. A valve casing provided with inlet and outlet openings, a removable outlet portion
 100 adapted to have overlapping connection with said outlet opening, a rotatable valve disk, a removable seat therefor, said seat having a raised portion thereon corresponding in diameter to said valve disk, and a compressible
 105 metallic washer interposed between said casing and said removable seat, said outlet portion serving as means for adjustably maintaining said seat in position.

4. A valve casing having a lateral inlet
 110 opening and provided with a detachable outlet portion, means integral with said outlet portion and casing for uniting the same, a rotatable valve disk, a removable valve seat, said seat having a raised portion thereon, the shoulder formed by said raised portion being adapted to coact with said casing to position said seat, and means including a valve stem for operating said disk valve, a spherical collar on said stem and a correspondingly formed seat in said casing adapted to cooperate with the said collar.
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In testimony whereof I affix my signature.

JOSEPH A. VAETH.