

No. 646,104.

Patented Mar. 27, 1900.

F. M. FABER.
BLOW-OFF VALVE.

(Application filed Jan. 18, 1900.)

(No Model.)

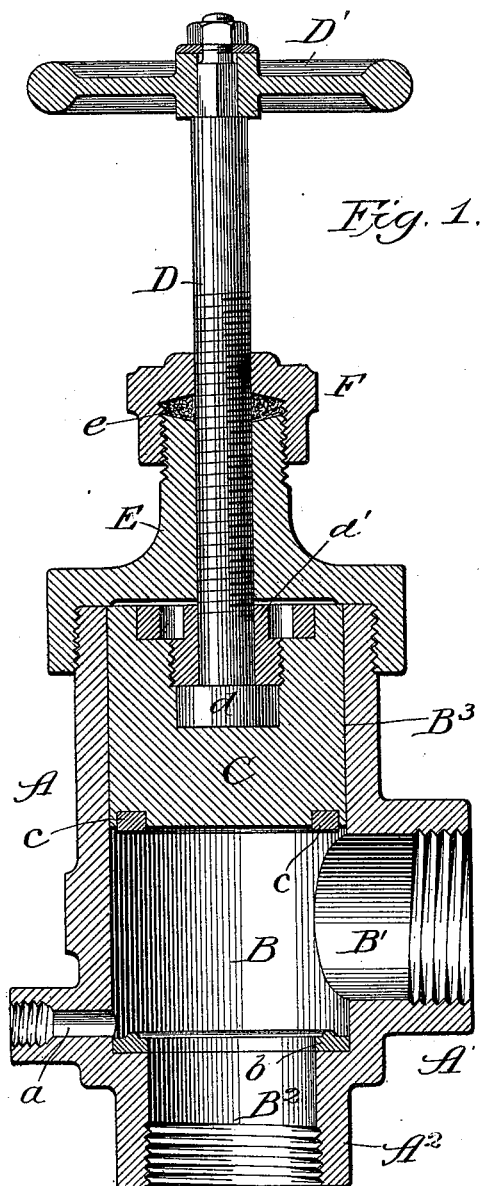


Fig. 1.

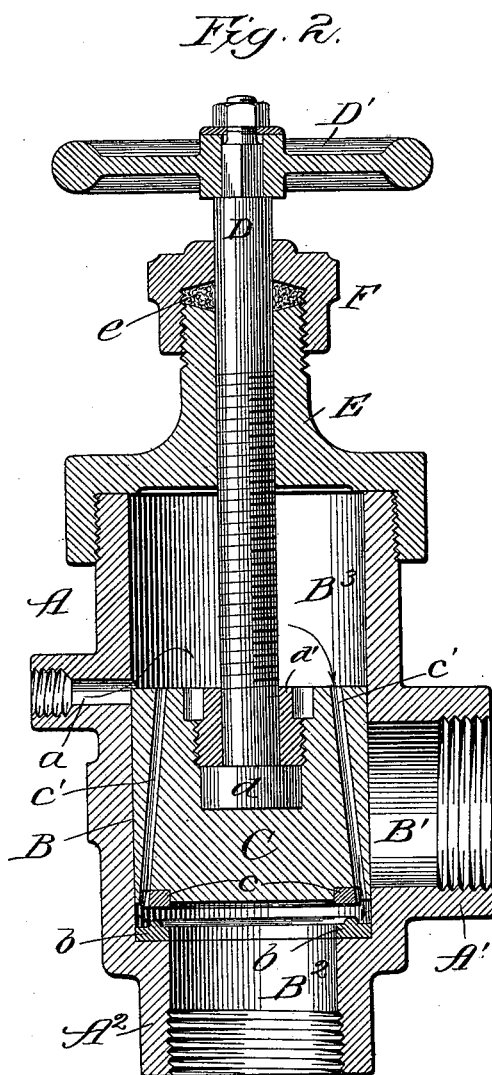


Fig. 2.

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UNITED STATES PATENT OFFICE.

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BLOW-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 646,104, dated March 27, 1900.

Application filed January 18, 1900. Serial No. 1,878. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. FABER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Blow-Off Valves, of which the following is a specification.

The ordinarily-constructed blow-off valve rapidly wears out, for the reason that a large amount of sediment or scale is carried through the valve with the water which is blown out of the boiler. This wearing out is due to the lodgment of some of this sediment on the face of the valve-seat, so that with the closing down of the disk the hard and gritty particles will be caught between the disk and seat, thus preventing the valve from closing properly and causing leakage. The fluid which is forced through the small opening thus formed rapidly cuts away and destroys both the disk and face of the valve. Moreover, the gritty particles are forced into the seat, thus producing indentations or defacement, which also permits of leakage in the use of the valve.

The object of my invention is to overcome these two main objections and other minor objections found in the construction of ordinary blow-off valves and to provide a valve which will allow foreign substances or material to be removed and carried away through the employment of fluid-pressure, thereby removing any material that would interfere with the proper seating of the disk or of a wearing or cutting action on the disk or its seat; and the invention consists in the features and combinations hereinafter described and claimed.

In the drawings, Figure 1 is a sectional elevation through the valve and its working parts, showing my invention applied to a valve having a solid disk; and Fig. 2, a sectional elevation through the valve and its working parts, showing my invention in connection with a disk having discharge-passages therein.

In constructing my improved blow-off valve I employ a main shell or casing A, having on one side a neck A', adapted for connection with the blow-off pipe direct or through an intermediate coupling or otherwise, and having also a neck A², adapted for connection

with a discharge-pipe either direct or by a suitable coupling or otherwise. The main shell or casing has a chamber B, into which an induction-port B' leads through the neck A' and out from which an eduction-passage B² leads through the neck A². Around the eduction passage or port is a valve-seat b within the chamber B, and leading into the main chamber, just above the valve-seat in the form of construction and arrangement shown in Fig. 1, is a fluid-pressure passage a, which passage is formed through the wall of the main casing. The fluid-pressure passage a instead of having a location just above the valve-seat can be located higher up in the wall of the main casing, so as to enter the main chamber at a point to open communication with the chamber before the final seating of the valve-disk, as shown in Fig. 2.

The induction-port is controlled by a disk C, having a seating-face c to engage with the valve seat or packing b around the eduction-port. As shown in Fig. 1, the disk is solid and the fluid-pressure induction port or passage is located to maintain communication with the main chamber until the disk is fully seated. As shown in Fig. 2, the disk is provided with longitudinal passages c' for the admission of fluid-pressure into the chamber in front of the disk prior to the final seating of the disk; but with either form of construction the fluid-pressure is to be projected against the acting face of the disk and the valve-seat for removing the dirt, sediment, and other foreign substances therefrom before the final seating of the disk. The disk in either form of construction is carried, as shown, by a stem, which has an enlargement d entering a recess or opening in the end of the disk and held in place therein by means of a nut d', which nut, as shown, has holes for a spanner-wrench or other device, by means of which the nut can be screwed home. The stem extends through a cap or cover E, which cap or cover has an opening with a screw-thread to receive the exterior screw-thread on the stem, so that by turning the stem the disk can be retracted and advanced to open and close the induction-port. The end of the cap or cover is, as shown, in the form of a neck, having an exterior screw-thread to receive a cap or nut F, between which and

the end of the neck suitable packing *e* is located for making a tight joint. The stem is turned by means of a hand-wheel *D'* or a suitable handle or other device.

5 The valve is to be attached to the blow-off pipe from the boiler or mud-drum and to a discharge-pipe leading to the point of discharge, and the operation of the valve is as follows: The receding of the disk into the position *B*³ of the main chamber and into the position shown in Fig. 1, which movement is had by turning the stem in the proper direction, opens the induction-port for the discharge of the water and other substances and material from the boiler or mud-drum through the induction-port and out through the eduction port or passage. The advancing of the disk by reversing the rotation or turning of the valve-stem closes the induction-port and shuts off the discharge from the boiler or mud-drum.

The advance of the disk in the construction and arrangement shown in Fig. 1 closes the induction port or passage prior to the closing of the fluid-pressure passage into the main chamber, so that the fluid-pressure, which can be either steam from the boiler or water from the pump or injector or a suitable pressure from other sources of supply, forcibly enters and passes through the passage or channel and is projected into the main chamber over the valve-seat, striking the face of the disk and the face of the valve seat or packing with sufficient force to carry away all substances and material gathered either on the face of the disk or on the valve-seat, and thus cleanse the disk and the packing or seat.

The advance of the disk in the construction and arrangement shown in Fig. 2 maintains the fluid-pressure passage or channel into the main chamber closed until the disk has approached the seating-point, as shown in Fig. 2, at which time the fluid-pressure passage or channel is open to communication with the chamber at the rear of the disk for such pressure to pass through the openings or passages *c'* and be forcibly projected against the valve-seat, and, as a necessary consequence, against the face of the disk, with sufficient action to carry away all material gathered on the disk and the valve-seat and cleanse both of these parts.

The fluid-pressure in either form of construction and arrangement continues to act until the disk is fully seated, when further action is prevented by the closing of the fluid-pressure channel or passage by the disk in the form of construction and arrangement of Fig. 1 and by closing the passage through the disk in the construction and arrangement shown in Fig. 2.

It will be seen that the fluid-pressure is projected in such manner as to strike the valve-seat and the face of the disk and clean there-

from the dirt, sediment, scale, or other foreign substances, such cleansing being had from the force and action of the fluid-pressure, which enters and passes between the seating-face of the disk and the packing or seat around the induction-port. The result of this construction and operation is that the valve can be used for a great length of time without the necessity of repairs, and a long-continued use will not wear the valve out, as the valve will be subjected to the natural wear of the surfaces and not to the cutting or injurious action of any foreign substance or material.

The application of fluid-pressure to a valve for the purpose of maintaining the seating-faces of the disk clean and clear from foreign substances and material forms the subject-matter of and is claimed in my application, Serial No. 736,827, filed Nov. 13, 1899, and such application of fluid-pressure is therefore not broadly claimed herein.

I claim—

1. In a blow-off valve, a main casing or shell provided with a chamber, a valve-seat, an induction-port, an eduction-passage and a fluid-pressure passage leading into the chamber above the valve-seat, in combination with a disk traversing the chamber and having an engaging face for the valve-seat and operating to open and close the fluid-pressure passage and the induction-port for the admission of the fluid-pressure into the main casing to operate and cleanse the acting face of the disk and the valve-seat, substantially as described.

2. In a blow-off valve, a main casing or shell provided with a chamber, a valve-seat, an induction-port, an eduction-passage and a fluid-pressure passage leading into the chamber, in combination with a disk traversing the chamber and opening and closing the fluid-pressure passage and the induction-port and provided with discharge openings or passages for the admission of fluid-pressure to act and cleanse the acting face of the disk and the valve-seat, substantially as described.

3. In a blow-off valve, a main casing or shell provided with a chamber, a valve-seat, an induction-port, an eduction-passage and a fluid-pressure passage leading into the chamber above the valve-seat, in combination with a disk traversing the chamber and opening and closing the fluid-pressure passage and the induction-port and having an engaging face for the valve seat or packing for the admitted fluid-pressure to act against the face of the disk and the valve-seat to cleanse the parts, a valve-stem for moving the disk, and a cap inclosing the valve-stem, substantially as described.

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Witnesses:

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