

No. 759,448.

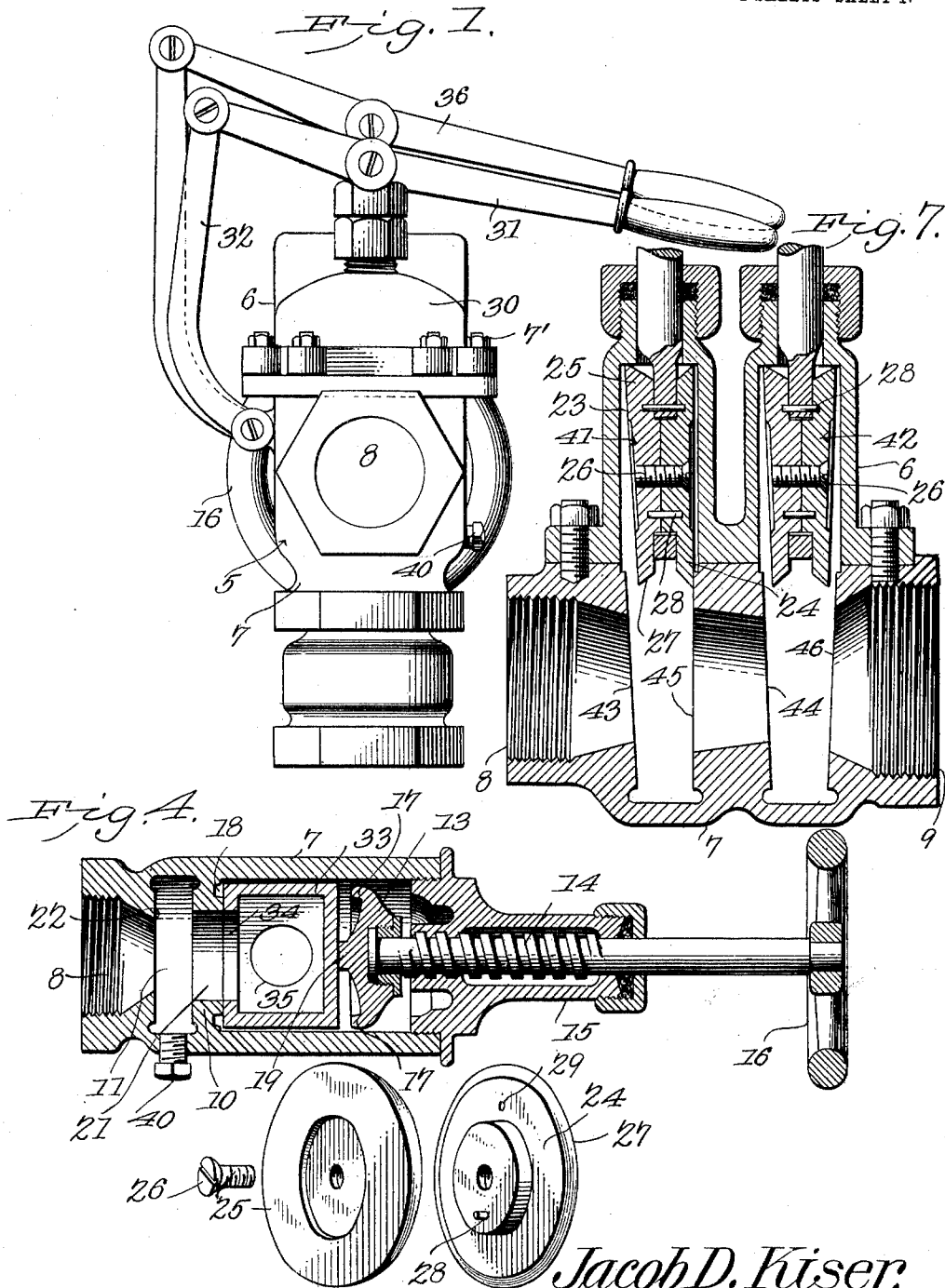
PATENTED MAY 10, 1904.

J. D. KISER.
BLOW-OFF VALVE.

APPLICATION FILED DEC. 5, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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Fig. 5.
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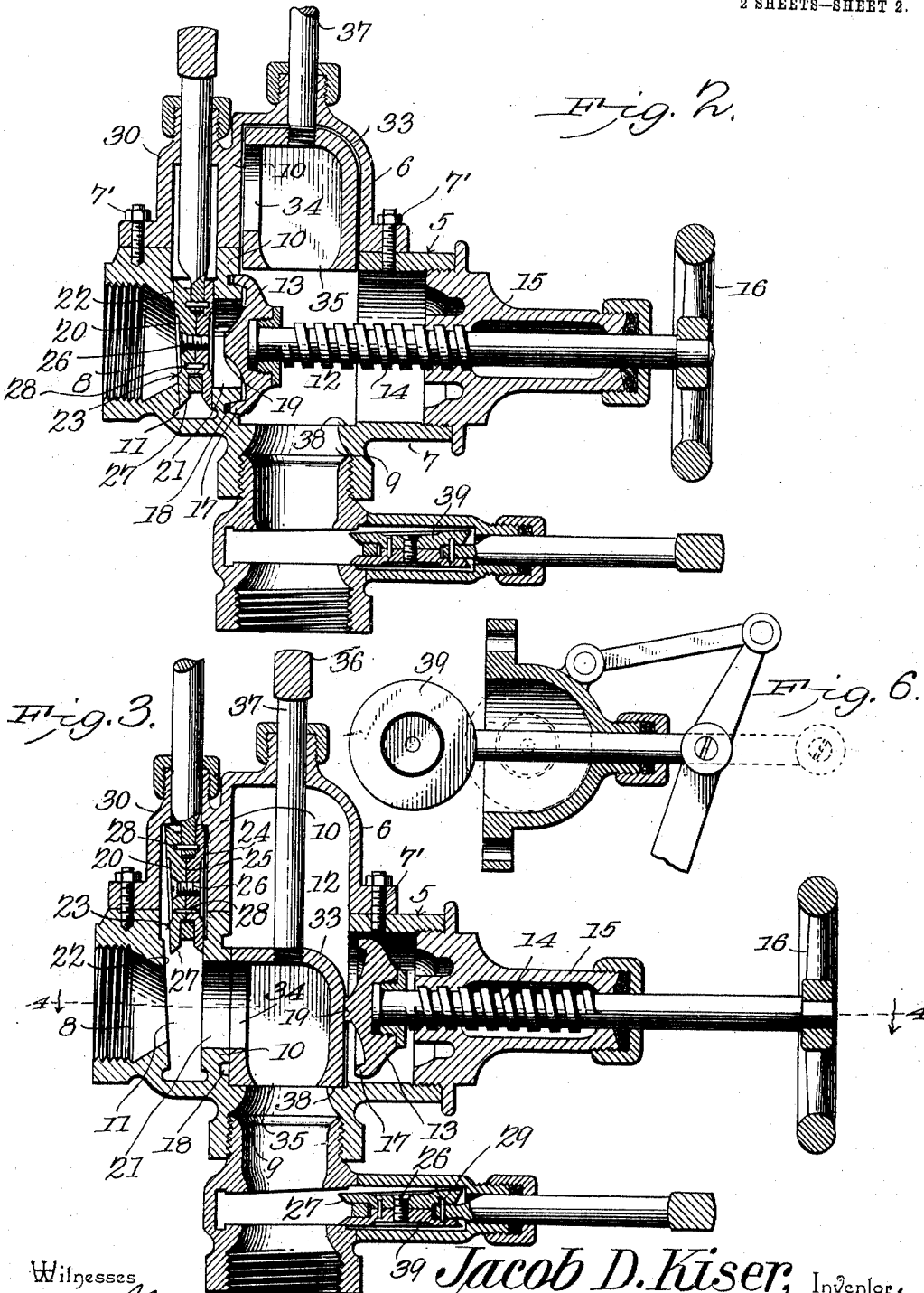
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Witnesses
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UNITED STATES PATENT OFFICE.

JACOB D. KISER, OF FREMONT, OHIO.

BLOW-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 759,448, dated May 10, 1904.

Application filed December 5, 1903. Serial No. 183,954. (No model.)

To all whom it may concern:

Be it known that I, JACOB D. KISER, a citizen of the United States, residing at Fremont, in the county of Sandusky and State of Ohio, have invented a new and useful Blow-Off Valve, of which the following is a specification.

This invention relates to an improved blow-off cock especially designed for use on boilers, and has for its object to provide an inexpensive, durable, and efficient device of this character for cleaning the boiler and effectively removing scales, mud, and other sedimentary deposits.

A further object of the invention is to provide a blow-off cock in which the main controlling-valve is at all times protected from the boiler-discharge and to provide means for preventing the accumulation of mud and sediment on the valve-seat as the discharge passes through the blow-off cock.

A further object is to provide an auxiliary valve for protecting the main valve when closed and to provide an intermediate deflector adapted to protect said valve when open and deflect the steam and water from the inlet-pipe through the discharge-pipe.

A further object of the invention is to form the deflector in such a manner that when the same is closed it forms a source of communication between the inlet and discharge pipes, said deflector being locked in position by engagement with the main valve.

A further object is to provide means for regulating the back pressure in the blow-off cocks when several boilers are connected to a common discharge-pipe.

A still further object is to form the auxiliary valve and back-pressure valve in two sections capable of being adjusted to fit their respective valve-seats when the latter are worn from constant use and to provide said valves with beveled or cutting edges adapted to scrape the valve-seats when the valves are closed, and thereby remove any deposits which may adhere thereto.

The invention consists in the construction and novel combination and arrangement of

parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

In the accompanying drawings, Figure 1 is a front elevation of a blow-off cock constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view of the same, showing the box-valve in the elevated position and the main and auxiliary valves closed. Fig. 3 is a similar view showing the auxiliary valve open and the box-valve locked in position by the main valve. Fig. 4 is a transverse sectional view on the lines 4-4 of Fig. 3. Fig. 5 is a detail perspective view of a portion of the auxiliary valve detached. Fig. 6 is a detail sectional view of the back-pressure valve. Fig. 7 is a longitudinal sectional view of a modified form of the invention.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The casing 5 of the blow-off cock is preferably formed in two sections 6 and 7, detachably secured together in any suitable manner, as by bolts 7'. The lower section 7 of the casing is provided with interiorly-threaded openings 8 and 9, preferably arranged at right angles to each other, as shown, the steam and water from the boiler (not shown) entering the opening 8 and discharging through the opening 9 to a sewer or other suitable receptacle. The two sections 6 and 7 comprising the casing are provided with aligned partitions 10, which when said sections are connected divide the casing into two compartments or chambers 11 and 12. Mounted in the chamber 12 and arranged at right angles to the discharge-opening 9 is the main valve 13, the threaded stem 14 of which engages the interior threads of a bushing 15, secured to the valve-casing, said valve being operated by a suitable hand-wheel 16, as shown. The valve

13 is provided with an annular rib 17, which engages a correspondingly-shaped groove or seat 18, formed in the partition 10, said valve being also provided with a centrally-disposed lug 19, which projects slightly beyond the rib 17, the function of which will be referred to hereinafter. Slidably mounted in the chamber 11 is a gate or auxiliary valve 20, which normally closes the opening 8 and a coincident opening 21, formed in the partition 10, and prevents the steam and water from the boiler from coming in contact with the valve 13 when the latter is closed, as clearly shown in Fig. 1 of the drawings. The inner wall of the chamber 11, surrounding the opening 8, is inclined or beveled, as shown at 22, and forms a seat for the correspondingly-inclined face 23 of the auxiliary valve, the opposite face of the valve being straight and seated against the outer wall of the partition 10, as shown. The valve 20 is preferably formed in two sections 24 and 25, detachably secured together by means of a screw 26, so that said sections may be readily separated and a sheet of metal or other suitable packing inserted between the same to permit the valve to fit snugly in its seat when either the valve or valve-seat has become worn by constant use. The peripheries of the sections are preferably inclined or beveled, as shown at 27, to form cutting edges, which effectively remove any deposits of mud or other foreign matter from the valve-seat as the valve is raised or lowered. The sections comprising the valve are also provided with inwardly-extending pins or lugs 28, which engage corresponding sockets 29, said pins or lugs forming guides and permitting said section to be easily and correctly assembled. The stem of the valve 20 slides within a guide 30 in the casing, said valve being operated by means of a handle 31, pivoted to an arm 32, secured to the casing. As a means for protecting the main valve 13 and deflecting the steam and water through the discharge-opening when said valve is open I provide a centrally-disposed deflector 33, consisting of a hollow casing the rear wall of which is preferably curved, as shown, said casing being provided with inlet and discharge openings 34 and 35, respectively, adapted to register with the openings 8 and 9 when said deflector is in the position shown in Fig. 3 of the drawings. The deflector 33 may be operated in any suitable manner, as by a hand-lever 36, one end of which is pivoted to the stem 37, the opposite end of said lever being pivoted to a suitable support on the casing 5. When the deflector 33 is in the closed position, the lower edge thereof rests on a shoulder or seat 38, while the side of the deflector adjacent the inlet-opening bears against the outer wall of the partition 10, said deflector

being locked in position by engagement with the lug 19 on the main valve 13, as shown. As a means for preventing back pressure in the blow-off cock when two or more boilers are connected to a common discharge-pipe I provide a back-pressure valve 39 of a construction similar to that of the auxiliary valve 20, which closes the discharge-opening and cuts off communication with the discharge-pipe when other cocks are in operation on the line. The diameter of the inlet-opening 8 is less than that of the opening 21, and the interior walls of the former are inclined or beveled, as shown, so as to direct the discharge from the boiler through the opening 21 and prevent the mud and other deposits from lodging on the valve-seats. The walls of the openings forming the seat of the back-pressure valve are similarly disposed to likewise prevent the accumulation of mud, &c., from the boiler-discharge. Suitable plugs 40 are threaded in the casing 5 to permit the cleaning of the auxiliary and back-pressure valves when necessary.

The construction of the valve will be readily understood, and the operation thereof is as follows: The valves of the blow-off cock being in the position shown in Fig. 1 of the drawings, when it is desired to blow the scales, mud, and other sedimentary deposits from the boiler the main valve 13 is first unseated and moved rearwardly a sufficient distance by turning the hand-wheel to permit the deflector 33 to be lowered and seated on the shoulder 38, after which the main valve is moved forwardly, causing the lug 19 to engage the deflector and lock the same from accidental displacement. The auxiliary valve 20 is now opened, the discharge from the boiler striking the rear wall of the deflector and being forced downwardly through the discharge-opening to a sewer or other convenient place without coming in contact with the main valve, as illustrated in Fig. 2. To cut off the discharge from the boiler, the auxiliary valve is first closed, after which the deflector is elevated, permitting the main valve to be seated. When two or more boilers are connected to a common discharge-pipe, the back-pressure valve is closed, thereby permitting any one of the boilers to be cleaned without the liability of steam and water being forced upwardly through the discharge-opening of the cock.

In Fig. 7 I have illustrated a modified form of the invention in which inlet and discharging openings are arranged in alinement, thereby dispensing with the deflector. The auxiliary valve 41 is arranged in advance of the main valve 42, so as to protect the main valve and permit the same to be opened and closed without being exposed to the boiler-discharge.

The diameters of the openings 43 and 44 are also less than that of the openings 45 and 46 to prevent the accumulation of mud and similar deposits on the valve-seats as the discharge passes through the blow-off cock.

From the foregoing description it will be seen that I have provided an exceedingly effective and durable blow-off cock in which the main controlling-valve is at all times protected from the injurious effects of the boiler-discharge and the scales and other sedimentary deposits prevented from accumulating on the valve-seats, thereby not only materially lengthening the life of the valve, but rendering the same more positive in action and less liable to get out of order.

Having thus described the invention, what is claimed is—

1. In a valve construction, a casing, a main valve, an auxiliary valve, and means for deflecting the fluid from contact with the main valve when the auxiliary valve is open.

2. In a valve construction, a casing, a main valve, an auxiliary valve, and a main-valve-protecting means locked in operative position by said main valve.

3. In a valve construction, a casing, a main valve, an auxiliary valve, and an intermediate deflector for protecting the main valve when the auxiliary valve is open.

4. In a valve construction, a casing, a main valve, an auxiliary valve for protecting the main valve when the latter is closed, and means for deflecting the fluid from contact with the main valve when the auxiliary valve is open.

5. In a valve construction, a casing, a main valve, an auxiliary valve, means for deflecting the fluid from contact with the main valve when the auxiliary valve is open, and a back-pressure valve.

6. In a valve construction, a casing, a main valve, an auxiliary valve, and a deflector for protecting the main valve when the auxiliary valve is open, said deflector being locked in operative position by engagement with the main valve.

7. In a valve construction, a casing provided with entrance and discharge openings, a main valve controlling both openings, and an auxiliary valve for protecting the main valve when the latter is closed.

8. In a valve construction, a casing provided with entrance and discharge openings, the area of the entrance-opening being less than that of the discharge-opening, a main valve controlling both openings, an auxiliary valve for protecting the main valve when the latter is closed, and means for deflecting the fluid from contact with the main valve when the auxiliary valve is open.

9. In a valve construction, a casing having entrance and discharge openings, a main valve,

an auxiliary valve, and an intermediate deflector provided with inlet and outlet openings adapted to register with the entrance and discharge openings, respectively, and deflect the fluid from the main valve when the deflector is closed.

10. In a valve construction, a casing, a partition dividing the casing into two compartments, a main valve mounted in one of the compartments and an auxiliary valve in the other, and means for deflecting the fluid from contact with the main valve when the auxiliary valve is open.

11. In a valve construction, a casing, a partition dividing the casing into a plurality of compartments, a main valve mounted in one of the compartments, and having its seat formed in the partition, an auxiliary valve mounted in the opposite compartment, and an intermediate deflector for protecting the main valve when the auxiliary valve is open.

12. In a valve construction, a casing having inlet and discharge openings, a main valve, an auxiliary valve adapted to protect the main valve when the latter is closed, a deflector for deflecting the fluid from the main valve when the latter is open, and a shoulder on the casing for seating the deflector.

13. In a valve construction, a casing, a main valve provided with a projecting lug, an auxiliary valve, and a deflector for protecting the main valve when the latter is open, the lug on the main valve being adapted to engage the wall of the deflector and lock the same in operative position.

14. In a valve construction, a casing, a perforated partition dividing the casing into two compartments, a valve-seat formed in the partition, a main valve mounted in one of the compartments and adapted to engage the valve-seat, an auxiliary valve mounted in the opposite compartment, and an intermediate deflector for deflecting the fluid from the main valve when the auxiliary valve is open, said deflector being held in contact with the valve-seat by engagement with the main valve.

15. In a valve construction, a casing having angularly-disposed entrance and discharge openings, a main valve, an auxiliary valve, a deflector having its rear wall curved mounted for reciprocation between said valves and adapted to deflect the fluid from the main valve when the auxiliary valve is open, and a back-pressure valve carried by the casing.

16. In a valve construction, a casing, a valve formed in two sections detachably secured together, one of said sections being provided with guiding pins or lugs and the opposite section with corresponding recesses adapted to receive said pins or lugs.

17. In a valve construction, a casing provided with entrance and discharge openings,

a main valve controlling both openings, and a main-valve-protecting means locked in operative position by engagement with said main valve.

- 5 18. In a valve construction, a casing having angularly-disposed entrance and discharge openings, a main valve controlling both openings, an auxiliary valve for protecting the main valve when the latter is closed, a deflec-
10 tor for deflecting the fluid from contact with the main valve when the auxiliary valve is

open, and a back-pressure valve carried by the casing and arranged at right angles to the deflector.

In testimony that I claim the foregoing as 15 my own I have hereto affixed my signature in the presence of two witnesses.

JACOB D. KISER.

Witnesses:

LOUIS SHELBY,
R. J. HATTON.