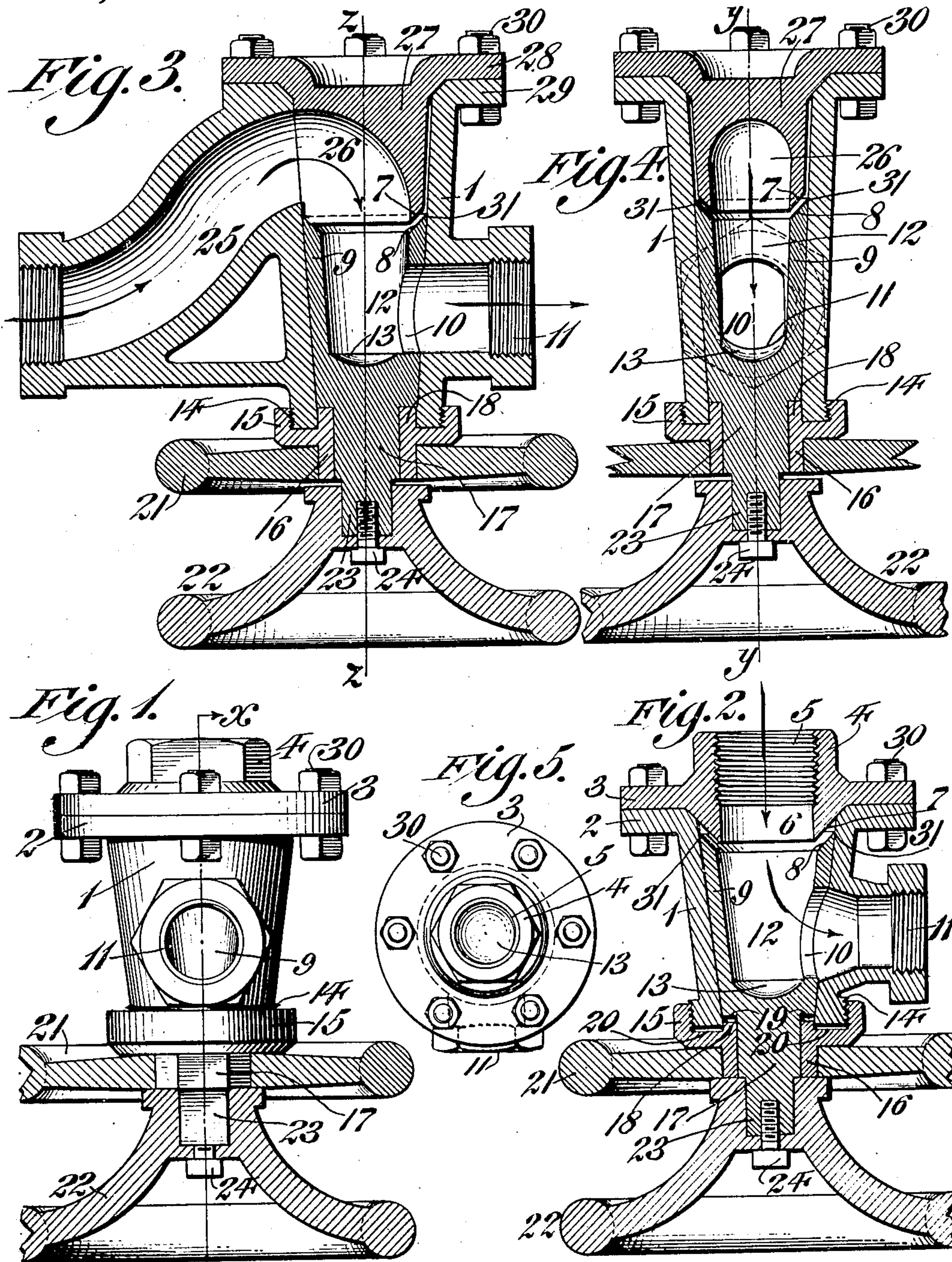


W. T. FOWDEN.
BLOW-OFF VALVE OR COCK.
APPLICATION FILED MAR. 26, 1909.

944,025.

Patented Dec. 21, 1909.



WITNESSES

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WILLIAM T. FOWDEN, OF CHESTER, PENNSYLVANIA.

BLOW-OFF VALVE OR COCK.

944,025.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM T. FOWDEN, a citizen of the United States, residing in the city of Chester, county of Delaware, State of Pennsylvania, have invented a new and useful Blow-Off Valve or Cock, of which the following is a specification.

My invention relates to a novel construction of a blow-off cock or valve which is adapted to be employed in any situation or under any condition, wherein the blowing off or removal of the contents of a boiler tank or other receptacle is desired, provision being made for enabling the valve proper to be readily manipulated according to requirements, and means being further provided for preventing dirt, mud, sediment or other deleterious material from entering the joint between the valve and its casing.

My invention further consists in making the valve proper hollow and in causing the rounded base thereof to terminate substantially on a line with the outlet from the valve casing, whereby wear upon the body of the valve proper and the outlet is reduced to a minimum, provision being also made for enabling the pressure upon the valve to cause the valve to be tightly seated at all times against the casing and its adjuncts, which is effected by making the valve and its casing of conical shape having its walls converging downwardly.

My invention further consists in the employment of a lifting wheel in conjunction with the valve plug.

My invention further consists of the novel construction and application of a lifting nut which is adapted to co-act with the valve body or plug and which may be operated by a wrench or lifting wheel applied thereto, provision being thus made for first slightly unseating or moving upwardly said valve plug or body, after which the valve can be manipulated or adjusted to the desired extent by the operating wheel.

My invention further consists of a novel construction of an inlet or companion flange which is adapted to be bolted or otherwise secured to the valve body, said flange having an inwardly projecting extension provided on its under side with converging walls, whereby the incoming fluid is discharged directly into the hollow valve body or plug, the upper walls of the latter terminating in a beveled portion located substantially under the projecting portion of the inlet or com-

panion flange and valve body, and the casing and coupling having a ground joint thus entirely obviating the necessity of employing any packing in the valve, thereby greatly reducing the cost of manufacture.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a front elevation of a blow-off valve or cock embodying my invention. Fig. 2 represents a section on line $x-x$, Fig. 1. Fig. 3 represents a sectional view of another embodiment of my invention, the section being taken on line $y-y$, Fig. 4. Fig. 4 represents a section on line $z-z$, Fig. 3. Fig. 5 represents a plan view of Fig. 1, on a reduced scale.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates the body or casing of my novel valve or cock, the same being of conical shape exteriorly and provided with the flange 2 to which is bolted or otherwise secured a flange 3 of the coupling 4, which may be screw-threaded, as indicated at 5, for the reception of a suitable inlet pipe.

6 designates an inwardly projecting extension which is provided with the outer downwardly inclined or converging wall 7, which is substantially parallel with the upper beveled wall 8 of the valve body or plug 9, which latter has the outlet 10 adapted to discharge the liquid through the threaded opening 11 of the valve casing 1, it being noted that the outer periphery of the valve body or plug 9 is of conical shape having the downwardly converging walls which conform to the conical shape of the inner surface of the casing 1. It will be noted that the plug or body 9 is hollow and provided with the inner chamber 12, the bottom or base of which is curved or concave as at 13 and terminates on substantially a level

with the outlet 11. The lower portion of the valve casing 1 is screw-threaded as indicated at 14 for engagement with the lifting nut 15, which latter has the sleeve 16 having an opening therethrough which is engaged by the extension or spindle 17, which projects downwardly from the valve body.

18 designates an annular extension of the sleeve 16 which projects upwardly into the space 19, there being a chamber 20 formed between said annular extension 18 and the outer portion of the lifting nut, whereby it will be apparent that when said nut 15 is raised, which may be done by the application of a wrench thereto or by the application of a lifting wheel 21 as I have indicated in Figs. 1 and 2, the valve plug or body 9 is slightly raised from its seat, after which the valve can be readily rotated to the desired extent by rotating the operating wheel 22 which is secured to the terminal 23 of the spindle 17 and held in position by the bolt or other fastening device 24.

The operation is as follows:—When the parts are in the position seen in Fig. 2, it will be understood that the valve is opened and the liquid can freely flow from the inlet 5 through the extension 6, the hollow valve chamber 12, outlet port 10 in the valve and thence through the outlet 11 of the casing. In this position it will be apparent that the pressure of the incoming fluid is at all times exerted downwardly upon the walls of the bottom 13 of the valve plug so that by reason of the conical contour of the valve and casing, a tight joint is always formed between the valve and its casing, whereby leakage is prevented under all conditions. It will also be apparent that by arranging the extension 6 with the beveled wall 7 in the relation shown to the beveled wall 8 of the valve plug, an injector action takes place so that any mud or sediment is prevented from entering the contacting conical surface of the valve and casing. When the operator desires to close the valve he first rotates the lifting nut 15 by means of the lifting wheel 21 or its equivalent, whereupon said nut is rotated upon the screw threads 14, thereby causing the annular projection 18 to rise into contact with the shoulder 19, thereby raising or unseating the valve plug or body 9, as is evident, whereby the valve can be readily turned by the manipulation of the operating wheel 22. It will be further apparent that by constructing and arranging the lifting nut as indicated and by the provision of the annular upward extension 18 located and correlated as shown, that there will be no possibility of leakage upon the lifting wheel or operating wheel under any conditions. It will be further apparent that I employ no gasket or packing between the flanges 2 and 3, since the same are ground

joints as is also the joint between the conical surface of the valve and casing, whereby my novel valve can be very cheaply constructed and is not liable to get out of order.

It will be apparent that when the lifting nut 15 is raised that the knife edge 31 will dislodge any sediment which may happen to exist upon the wall of the casing intermediate the juxtaposed beveled walls 7 and 8. It will be further apparent that when the valve 9 is in its closed position or turned to the right or left of the position seen in Fig. 2 that any mud, sediment or any other deleterious material will be contained within the internal chamber 12 in readiness to be immediately discharged or blown out through the discharge opening 11 when the parts are caused to assume the position seen in Fig. 2.

It will of course be understood that if desired I may employ two or more outlets for the valve casing instead of the single outlet 11 shown, without departing from the spirit of my invention.

In the construction seen in Figs. 3 and 4, I have shown my invention as applied to a straight valve as contradistinguished from the angular valve seen in Figs. 1 and 2. In Figs. 3 and 4 I employ substantially the same construction and arrangement of parts so far as regards the hollow valve 9 having the chamber 12 with the bottom 13, the valve having the spindle 17, the lifting nut 15, the annular extension 18, the lifting wheel 21 and the operating wheel 22, the latter being secured in position to the terminal 23 of the spindle 17 by means of the fastening device 24, as already described, and the valve being provided with the outlet port 10 discharging into the threaded outlet 11 of the valve casing. In the construction seen in Figs. 3 and 4, however, I employ the inlet or flume 25 which discharges into or against the curved inner wall 26 of the cap 27, which latter is provided with the flanges 28 adapted to be secured to the flange 29 of the casing by the bolts or other fastening devices 30. The lower extremity of the cap 27 is provided with the beveled wall 7 adapted to co-act with the upper beveled wall 8 of the valve as already described with respect to Fig. 2. It will be apparent to those skilled in the art that the operation of the valve seen in Figs. 3 and 4 is substantially the same as the operation of the parts already described with reference to Figs. 1 and 2.

It will now be apparent that in both the embodiments of my invention shown the valve may at all times and under all conditions be readily actuated, since by actuating the lifting nut 15 the valve will be unseated in such a manner that it may be readily rotated by means of the operating wheel 22 or its equivalent, and owing to the manner in which the fluid exerts a pressure against the base 13 of the valve, there will be no lia-

bility of any leakage. When it is desired to close the valve when there is no pressure on the same, this can be accomplished by actuating the handle 21, whereupon the lifting nut will be moved downwardly and abut against the operating handle 22 so that on the further movement of the handle 21 the handle 22 and the valve to which it is connected will be moved downwardly so that the valve will be properly seated in the casing 1.

It will now be apparent that I have devised a novel and useful construction of a blow-off valve which embodies the features of advantage enumerated as desirable in the foregoing and while I have in the present instance shown and described the preferred embodiments thereof which give in practice satisfactory and reliable results, it is to be understood that the same are susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a valve, a casing having an inlet and an outlet and provided with a conical seat therebetween, a hollow valve having an open end and a conical seat co-acting with the conical seat of the casing and provided with an outlet through its side adapted to register with the casing outlet, a lifting nut for seating and unseating said valve, actuating means for said nut, and means for rotating said valve.

2. In a valve, a casing having an inlet and an outlet and provided with a conical seat therebetween, a hollow valve open at one end and having a conical seat co-acting with the conical seat of the casing and provided with an outlet registering with the casing outlet and having a curved bottom in alinement with the valve outlet, a lifting nut co-acting with said valve to seat and unseat the same, actuating means for said nut, and means for rotating said valve.

3. In a valve, a casing having an inlet and an outlet and provided with a conical seat therebetween, a hollow valve having a conical seat co-acting with the conical seat of the casing and provided with an outlet registering with the casing outlet, a lifting nut co-acting with said valve to unseat the same, actuating means for said nut, said valve having its upper end beveled, a coupling secured to said casing and having its inner end beveled, and actuating means for said valve.

4. In a valve, a casing having an internal conical seat and an outlet at an angle to said seat, a conical shaped hollow valve within said casing open at one end and having an outlet registering with the casing outlet, a lifting nut movably carried by said casing and co-acting with said valve to seat and un-

seat the latter, actuating means for said nut, and means for rotating said valve.

5. In a valve, a casing having a conical seat and an outlet extending at an angle to said seat, a hollow valve within said casing open at one end and having an outlet through one side thereof registering with the casing outlet, a lifting nut having threaded engagement with said casing and provided with an extension adapted to engage said valve and on which the valve has a bearing, actuating means for said nut, and means for rotating said valve.

6. In a valve, a casing having a conical seat therein and an outlet at an angle to said seat, a hollow valve open at one end and having a conical seat co-acting with the conical seat of the casing and having an outlet through its side registering with the casing outlet, said valve having a spindle extending therefrom, a lifting nut rotatably mounted on said spindle and having threaded engagement with said casing, said nut being adapted to raise and lower said valve, actuating means for said nut, and means for rotating said valve.

7. In a valve, a casing having a conical seat and an outlet leading from said seat, a hollow valve open at one end and having a conical seat co-acting with the conical seat of the casing and provided with an outlet through its side registering with the casing outlet, said valve having a spindle connected therewith, a lifting nut rotatably mounted on said spindle and having threaded engagement with said casing, said nut having an extension co-acting with said valve to unseat the same, an actuating handle secured to said nut, and means on said spindle for rotating said valve.

8. In a valve, a casing having a conical seat and an outlet leading from said seat, and provided with a flange at one end thereof, a hollow valve having an outlet through the side thereof registering with the casing outlet and having its upper end beveled, a coupling having a flange forming a ground joint connection with the casing flange and having an extension provided with a beveled wall in proximity to the beveled wall of the valve, means for securing said flanges together, means for unseating said valve, and means for rotating said valve.

9. In a valve, a casing having a conical seat and an outlet communicating with said seat, a hollow valve having a conical seat co-acting with the conical seat of the casing and provided with an outlet registering with the casing outlet, said valve having a conical chamber therein provided with a concave bottom in proximity to the valve outlet, a lifting nut rotatably mounted on said valve for seating and unseating the same and movably carried by said casing, actuating means for said nut, and a wheel opera-

tively connected with said valve for rotating the latter.

10. In a valve, a casing having a conical seat and an outlet leading therefrom, a hollow valve engaging said seat and having one end open to the fluid, said valve having an outlet and provided at its open end with a beveled wall, a member connected with said casing and having an extension provided with a beveled wall in proximity to the end of the valve, means on said casing for unseating said valve, and means for rotating said valve.

11. In a valve, a casing having an inlet and an outlet and provided with a conical seat therebetween, a hollow valve having an open end adapted to receive the fluid, a conical seat coacting with the conical seat of the casing and provided with an outlet through its side adapted to register with the casing outlet, a lifting nut for unseating said valve against the pressure of the fluid and on which the valve is rotatable when unseated, actuating means for said nut, and means for rotating said valve.

12. In a valve, a casing having an inlet and an outlet, a valve plug controlling the inlet and outlet and open at one end to receive fluid, a lifting nut movably carried by the casing and having means adapted to

engage the valve to unseat the same, and means for rotating said valve, and said lifting nut coacting with said means to seat the valve.

13. In a valve, a casing having an inlet and an outlet, a valve plug controlling the inlet and the outlet and open at one end to receive fluid, a lifting nut loosely mounted on said valve plug and having threaded engagement with said casing, said nut having a projection coacting with the valve plug to unseat the same, said casing limiting the forward movement of the lifting nut, and means for rotating the valve plug.

14. In a valve, a casing having an inlet and an outlet, a valve plug controlling the inlet and outlet and open at one end to receive fluid, a lifting nut having threaded engagement with the casing and provided with a projection coacting with the valve plug to unseat the latter, the forward movement of the lifting nut being limited by its abutment against the casing, and an actuating handle mounted on the valve plug for rotating the latter.

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Witnesses:

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