

P. W. HODGKINSON.
VALVE.
APPLICATION FILED JAN. 17, 1910.

980,260.

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Fig. 1.

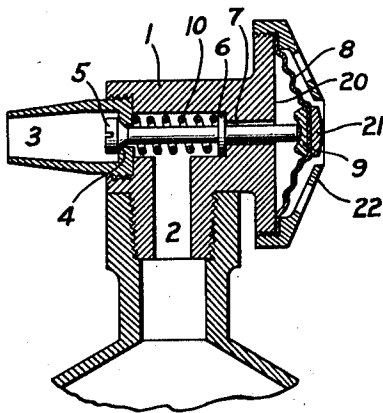


Fig. 2.

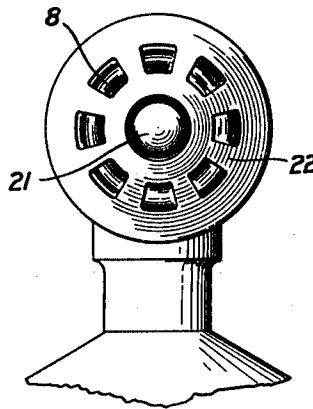


Fig. 3.

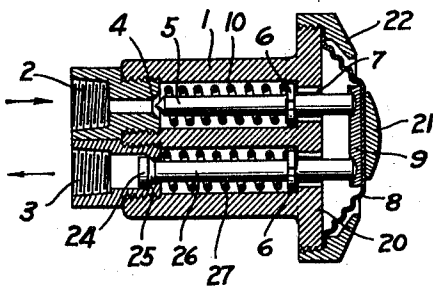
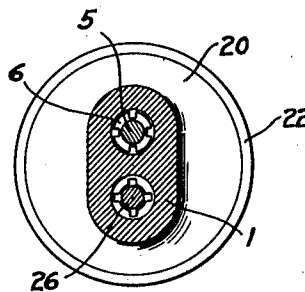


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VALVE.

980,260.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PERCY W. HODGKINSON, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to valves of the type in which the necessity for a stuffing-box is avoided by the use of a flexible diaphragm, which permits a valve within the diaphragm to be moved by means external to the diaphragm.

One object of my invention is to provide a valve of the kind above referred to with a guard by means of which the valve is protected against accidental application of pressure to the diaphragm, such as would operate to open the valve unintentionally.

A second object of my invention is to produce a valve of the kind above referred to which is adapted for discharging a measured quantity of fluid.

In the accompanying drawings: Figure 1 is a vertical median section showing a complete valve embodying my invention; Fig. 2 is an elevation of the valve of Fig. 1, looking from right to left in Fig. 1; Fig. 3 is a view similar to Fig. 1, of a modified form of the valve arranged to operate as a measuring valve; and Fig. 4 is an elevation of the valve of Fig. 3, looking from right to left in Fig. 3.

In the embodiment of my invention illustrated in Figs. 1 and 2, the valve is provided with a body 1 which is chambered to form a fluid passage. Two openings into the fluid passage, 2 and 3 respectively, may be used alternatively as an inlet and an outlet. The opening 3 is located in a plug provided with a valve seat 4 which cooperates with a conical-ended member 5 constituting the valve proper. The valve 5 slides longitudinally in the valve body, and is guided by a circumferential flange 6. The end of the valve 5 passes outward through a third opening 7 from the fluid passage, and engages a recessed boss 9 fixed in the center of a diaphragm 8. The diaphragm is composed of thin, flexible, corrugated metal, and is attached to the body 1 by a suitable fluid-tight connection, so that the diaphragm acts as a closure for the open-

ing 7. A compression spring 10 coiled about the valve 5 engages the flange 6, and tends constantly to move the valve to the right, away from the valve seat 4, so as to open the fluid passage. This movement of the valve is permitted by the diaphragm, owing to its elasticity. The movement of the valve to its left-hand or open position, against the pressure of the spring 10, is accomplished by the application of pressure to the outside of the diaphragm, the diaphragm being accessible for this purpose. A button 21 is fixed at the center of the outer surface of the diaphragm. A guard 22 partly incloses the outer surface of the diaphragm, but it is provided with a central aperture through which the button 21 is accessible. This valve is opened by pressing with the thumb against the button 21, but the form and arrangement of the guard is such that the accidental application of pressure to the diaphragm is practically impossible, so that the contents of the receptacle will not be accidentally released in case the valve be struck or the receptacle fall upon its side. The head of the valve is slotted, as shown in Fig. 5, to permit the insertion of a screw-driver by which the valve may be turned to rub or grind it to an even bearing on its seat or free it if clogged by viscous or dried material.

In the modified form of the valve illustrated in Figs. 7 and 8, the valve-proper 5 is arranged to be self-opening but in addition to the valve 5 there is a second valve 24 arranged to be self-closing as in the constructions illustrated in Figs. 3 and 5. Both valves are controlled by the same diaphragm 8, which is provided with a button 21 to be pressed by the thumb and with a centrally-perforated guard 22 inclosing a portion of the outer surface of the diaphragm. If the valve body be connected with a fluid receptacle, so that the opening 2 constitutes the inlet into the valve body, a measured quantity of fluid may be delivered through the valve by pressing the button 21, thereby opening the valve 24 and closing the valve 5 and permitting the fluid in the valve body and the diaphragm chamber to flow out through the valve 24. When the button is released again, the valve 26 closes and the valve 5 opens, thereby permitting fluid to flow from the source of supply

through the inlet 2. Since the chamber formed between the diaphragm 8 and the plate 20 constitutes a portion of the measuring recess, the guide flanges 6 on the valves are notched, as shown in Fig. 8, to permit the free passage of fluid into and out of this chamber.

My invention is not limited to the embodiment hereinbefore described and illustrated in the accompanying drawings, but may be embodied in various forms within the nature of the invention as it is defined in the following claims:

I claim:—

1. The combination of a valve body provided with a fluid passage and with three openings including an inlet and an outlet, a valve in the fluid passage, a spring in the fluid passage engaging the valve and arranged to move it into position to close the fluid passage, a diaphragm connected with the valve and closing the third of said openings, a guard substantially inclosing the outer surface of the diaphragm but provided with a substantially central opening, and means projecting from the diaphragm into, but not substantially beyond, said opening to permit the application of pressure to the diaphragm to move the dia-

phragm and the valve in opposition to the spring.

2. The combination of a valve body provided with a fluid passage and with three openings including an inlet and an outlet, two valves located in the fluid passage and arranged to open and close the inlet and the outlet therefrom alternatively when moved simultaneously in the same direction, resilient means located in the fluid passage and arranged to move the valves simultaneously in one direction, and a diaphragm connected with the valves and closing the third of said openings.

3. The combination of a valve body provided with a fluid passage and an inlet and an outlet; a valve in the fluid passage arranged to close the outlet against the direction of flow of the fluid and accessible through the outlet, the valve having its head slotted to receive an instrument inserted through the outlet to rotate it; and means for normally retaining the valve upon its seat.

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Witnesses:

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