

A. C. CRUMP.
VALVE MECHANISM.
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1,224,447.

Patented May 1, 1917.

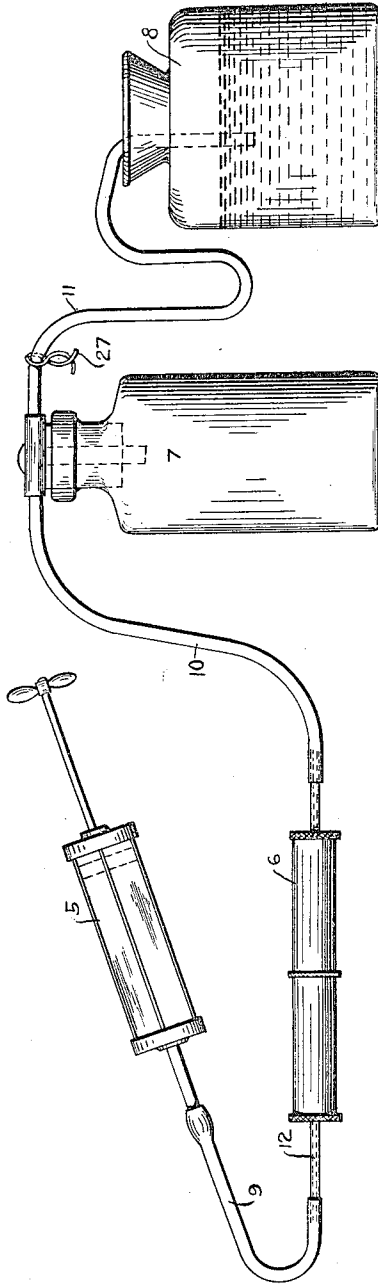


Fig 1

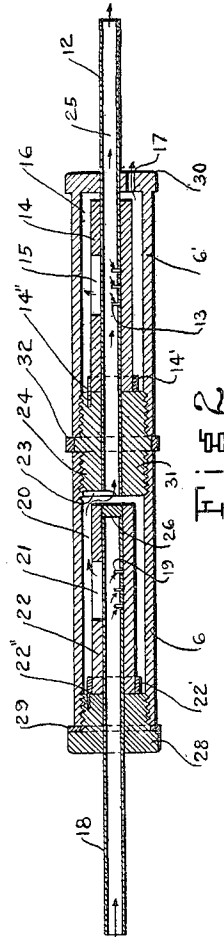


Fig 2

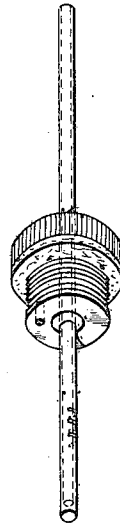


Fig 3

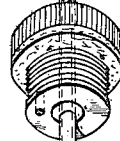


Fig 4

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VALVE MECHANISM.

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To all whom it may concern:

Be it known that I, ARMISTEAD C. CRUMP, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Valve Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in valve mechanism, and is adapted more particularly for use in respirating apparatus such as are used for drawing water from the lungs of a patient and in similar operations.

In the accompanying drawings I have illustrated in Figure 1 an arrangement in side elevation showing a pump, a valve mechanism embodying an application of my invention, a bottle, and a receptacle containing water illustrative of an application of my invention. Fig. 2 is an enlarged cross sectional view of my valve mechanism. Fig. 3 is a perspective view of a detail of part of the same, and Fig. 4 another perspective detail of another part of said apparatus.

5 indicates a hand pump, 6 my valve mechanism, 7 the bottle, and 8 the receptacle containing water, all of which are suitably connected by the tubes 9—10—11.

Referring now to Fig. 2, it will be observed that the tube 12 of the valve mechanism is connected to the pump 5 by the tube 9 so that upon the intrust of the pump the air is forced from the pump through the tube 12 and through the small cuts 13 in the tube 12 beneath the rubber tube 14 which fits slightly but snugly over the said tube 12, the air passing between the metallic tube 12 and rubber tube 14, through the cut 15 in the rubber tube 14, through the passage 16 and into the atmosphere through the outlet 17.

Upon the out or suction stroke of the hand pump 5 the air is exhausted from the bottle 7 through the connecting tube 10, metallic tube 18 of the valve mechanism, which draws the air through the cuts 19 in said tube 18, the said air being drawn from the chamber 20 through the cut 21 in the rubber tube 22. 23 is a cut away portion in the plug 24 which insures sufficient space between said plug 24 and the end of the tubes 18—22, so that the air is drawn through the passage 25 of the tube 12 and through the connecting tube 9 from which it is discharged by the hand pump 5; thus

exhausting the bottle 7. The tube 18, it will be observed, is closed at the inner end as indicated at 26 so that the air is obliged to travel from the interior of the tube 18 through the cuts 19—21, whereas comparatively little or no air will be drawn into the tube 25 through the hole 17 owing to the direct passage 25 for the escape of the air from the passages 20—23; thus it will be seen that the periodic suction impulses of the pump 5 will serve to exhaust the bottle 7. 27 may be any usual form of snapper, binder, or clip which may be applied to the rubber tube 11 so that upon releasing the same the water is drawn off from the receptacle 8, and of course it will be readily understood that the tube 11 may be provided with a needle or other suitable instrument for taking the water from the lung or other part of the body of the patient. In fact, the invention is susceptible of use for various purposes and in various other forms.

The ends of the valve mechanism may be closed by heads such as 28 which may be screwed therein as shown at the left of Fig. 2, and may be provided with a suitable washer or gasket such as 29 for sealing the same, or the head may be made integral with the body of the valve mechanism as indicated at 30. The outer shell or tubes of the valve mechanism may also be formed in two parts as indicated by the reference characters 6—6' and may be connected together by a threaded plug such as 31 which in turn may be provided with a suitable gasket or washer such as 32 to insure a tight connection between the outer shells 6—6'. The rubber tubes such as 14—22 may also be provided with suitable metallic terminals or rings such as 14'—22' which may be provided with an offset or pin such as 14''—22'' which engage in the plugs 31—28 respectively whereby the relative positions of the cuts 19—21 and 13—15 can be maintained preferably at an angle of about ninety degrees.

From the foregoing it will be readily understood that a valve constructed substantially in accordance with the form shown in Fig. 2 is adapted to operate without leakage and is not liable to get out of order and may be readily and correctly connected for use without difficulty although of course it will be understood that various modifications may be made without departing from the spirit of the invention as claimed.

I claim:

1. In an apparatus of the class described, a body portion and tubes in opposite sides thereof, said tubes provided with openings
5 in their sides, second tubes over said first mentioned tubes also provided with openings, space between the interior wall of said body portion and said last mentioned openings, said space divided by a partition, and
10 said space on one side of said partition open to the atmosphere.

2. In an apparatus of the class described, a pair of tubes connected together by a plug, a central tube extending in the open end of
15 one of said tubes adjacent the end of said plug, and a central tube extending through the open end of the other of said tubes through said plug, each of said central tubes provided with openings within said first
20 mentioned tubes, second tubes over said cen-

tral tubes also provided with openings communicating with the space between said second tubes, and the interior of said first mentioned tubes, and an opening from said space to the atmosphere through the end of
25 one of said first mentioned tubes whereby air may be alternately pumped through one of said central tubes into the atmosphere and drawn from one of said central tubes through the other of said central tubes by
30 way of one set of said openings in one of said central tubes, and in the second tube over said one of said central tubes.

In testimony whereof I hereunto affix my signature in the presence of two witnesses. 35

ARMISTEAD C. CRUMP.

Witnesses:

LOUISE ENDERLE,
THOMAS A. HILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."