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W. MODRA ET AL

SIPHON PUMP

Filed Jan. 22, 1927

Fig. 1.

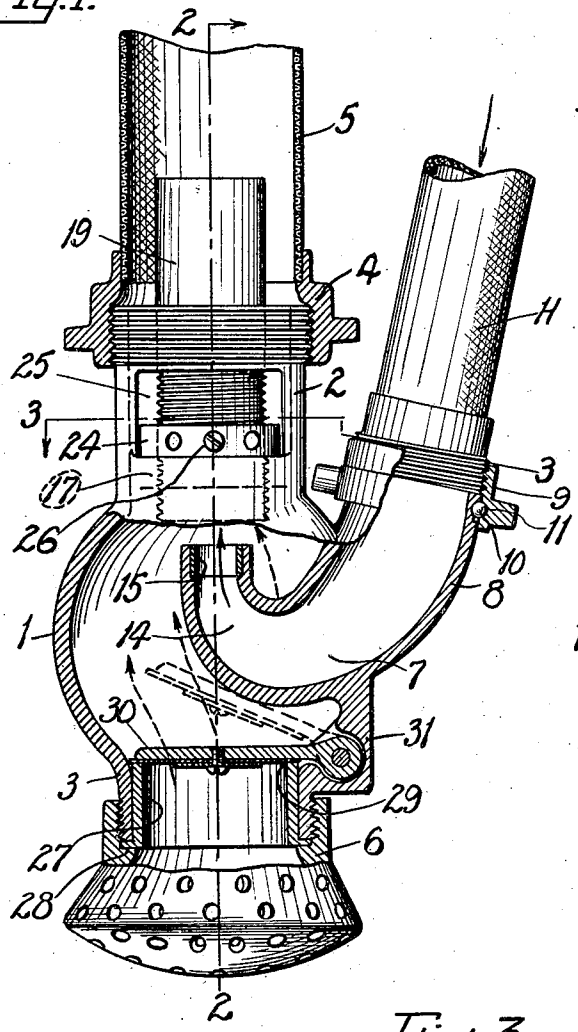


Fig. 2.

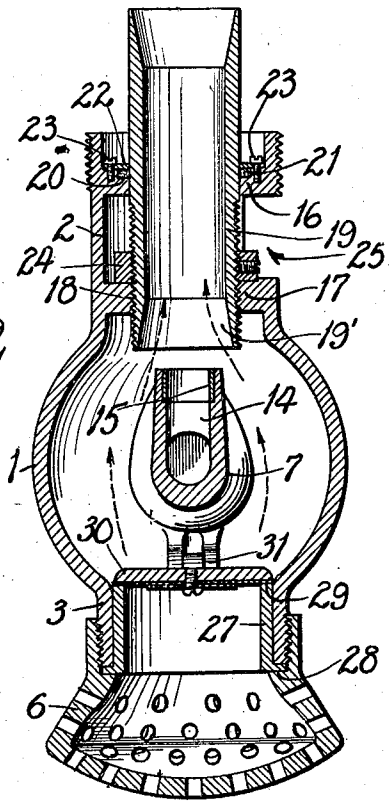
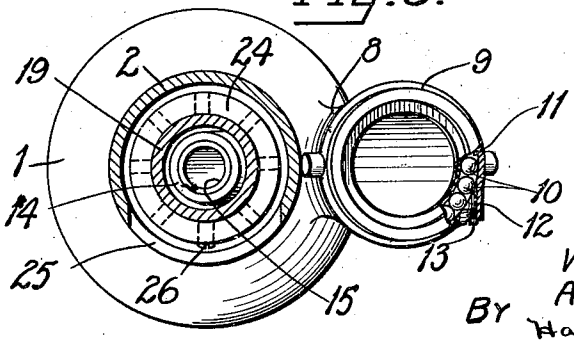


Fig. 3.



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SIPHON PUMP.

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Our invention has relation to improvements in siphon pumps, and consists in the novel features of construction more fully set forth in the specification and pointed out in the claim.

The principal object of the invention is to provide a siphon pump in which the discharge nozzle is adjustable to and from the injector nozzle so as to adapt the pump to variations in the initial water pressure.

Further objects are to provide means for preventing the formation of an air cushion between the injector and discharge nozzle; to provide means for effecting adjustment of the discharge nozzle while the pump is in operation; and to provide the injector with a replaceable bushing. Further and other advantages will be better apparent from a detailed description of the invention in connection with the accompanying drawings, in which—

Figure 1 is a combined side elevation and vertical longitudinal section of our improved siphon pump; Fig. 2 is a vertical longitudinal section taken on the line 2—2 of Figure 1; and Fig. 3 is a horizontal cross-section taken on the line 3—3 of Figure 1.

Referring to the drawings, 1 represents the pump housing having upper and lower cylindrical terminals 2 and 3 respectively, each of which terminates in screw threads, those of terminal 2 receiving the fitting 4 of a hose 5 and those of terminal 3 receiving a strainer 6. An inverted goose-neck 7 is formed integral with the bowl of housing 1, a part 8 of said goose-neck extending outside of the housing and having a coupling nut 9 mounted on ball-bearings 10 in a raceway 11 contiguous to the outer edge of the goose-neck. The ball-bearings 10 operate to hold the nut 9 in place, and are insertible in the race 11 through a threaded hole 12 in the nut 9, said hole being closed by a set-screw 13.

A hose H may be connected to the goose-neck 7 by means of said coupling for the purpose of injecting water or steam into the pump housing. This will be more fully explained when the operation of the pump is described.

The inner end 14 of goose-neck 7 is pointed toward the terminal 2 of the housing, and is provided with a removable bushing or nozzle 15 whose axis coincides with that of the cylindrical terminal 2.

The terminal 2 has two spaced annular flanges projecting from its inner surface, the outer flange 16 being disposed slightly in from the end of the terminal and the inner flange 17 being at the base thereof and having internal threads 18. A threaded tube 19, which serves as the discharge nozzle of the pump, is inserted in the terminal 2 and is screwed into the lower flange 17. The flange 16 has an annular recess 20 into which packing 21 is placed to render airtight the space between flange 16 and tube 19, said packing being held in place by a ring 22 secured against the flange by cap screws 23. An adjustment nut or collar 24 is inserted into the terminal 2 through a hand-hole 25 in the side thereof, and the tube 19 before entering the flange 17 is passed through said collar which bears against the flange and may be locked on the tube by a set screw 26. When the pump is in use the hose 5 prevents access to the tube 19 in order to adjust the same to and from the nozzle 15. This adjustment may, however, be effected by the collar 24. If the operator wishes to withdraw the tube he merely turns the collar 24 to the left, whereupon the tube 19 is screwed out of the flange 17 the desired amount. Should one wish to bring the tube closer to the nozzle the set screw 26 is unscrewed whereupon the collar 24 is turned to the left to cause it to move upwardly on the tube, after which the set screw is made tight and the collar then turned to the right by screwing the tube into the flange 17.

The terminal 3 has a removable throat or lining 27, the lower end of which is provided with a flange 28 extending over the edge of the terminal 3, and the upper edge 29 of said lining serving as a seat for a valve 30 hingedly mounted within an enlargement 31 at the lower end of the bowl. It will be observed that the ends of tube 19 flare outwardly, the flaring mouth 19′ of the tube having an object that will appear in the description of the operation of the invention, as follows:

We will assume that the pump is to be used by firemen to pump the water from the cellar of a building after a fire. The goose-neck 8 is connected to a fire-plug or hydrant by hose H and the outlet terminal 2 is connected with a sewer by hose 5. The pump is then immersed in the water to be removed and the hydrant turned on. The water, of course, passes through the goose-neck 8 and is discharged at high velocity

from nozzle 15 and injected into tube 19. Obviously, the air is exhausted from the bowl 1 and the valve 30 forced open by the pressure of water behind it. The air is forced through tube 19 and has a tendency to cushion at the mouth of the tube. By flaring the mouth 19′ (as shown) this cushioning effect is avoided. Having expelled the air from the bowl, tube 19, and the hose 5, a siphon is created and the water rushes into the pump, past valve 30, and is discharged through tube 19 and hose 5.

The city water pressure behind the hydrant may vary between wide limits, anywhere from 20 to 90 lbs., consequently to obtain the greatest efficiency from the pump the tube 19 must be adjusted to obtain the relative positions of tube and injector nozzle 15 best suited to the pressure at the time.

Another feature of our invention is that the water to be pumped passes through the pump in a straight line thus avoiding loss of velocity through turns or bends. The strainer, obviously, is to prevent the passage of large solid objects into the pump and cause it to clog. However, should an obstruction occur in the hose 5 or should suction be interrupted through any cause the valve 30 will immediately close to prevent the water from the hydrant from backflowing into the cellar. Thus, after placing the pump in operation, it may safely be allowed to operate without attention.

Having described our invention, we claim:

A siphon pump comprising a housing having a substantially cylindrical terminal at one end and an inlet at the opposite end, a discharge tube disposed within said terminal, an injector nozzle within the housing, means for connecting said nozzle with a source of fluent medium under pressure, an adjusting collar mounted on the tube, and said terminal having a hand-hole whereby access to the collar may be had for effecting adjustment of the tube while the pump is in operation.

In testimony whereof we hereunto affix our signatures.

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