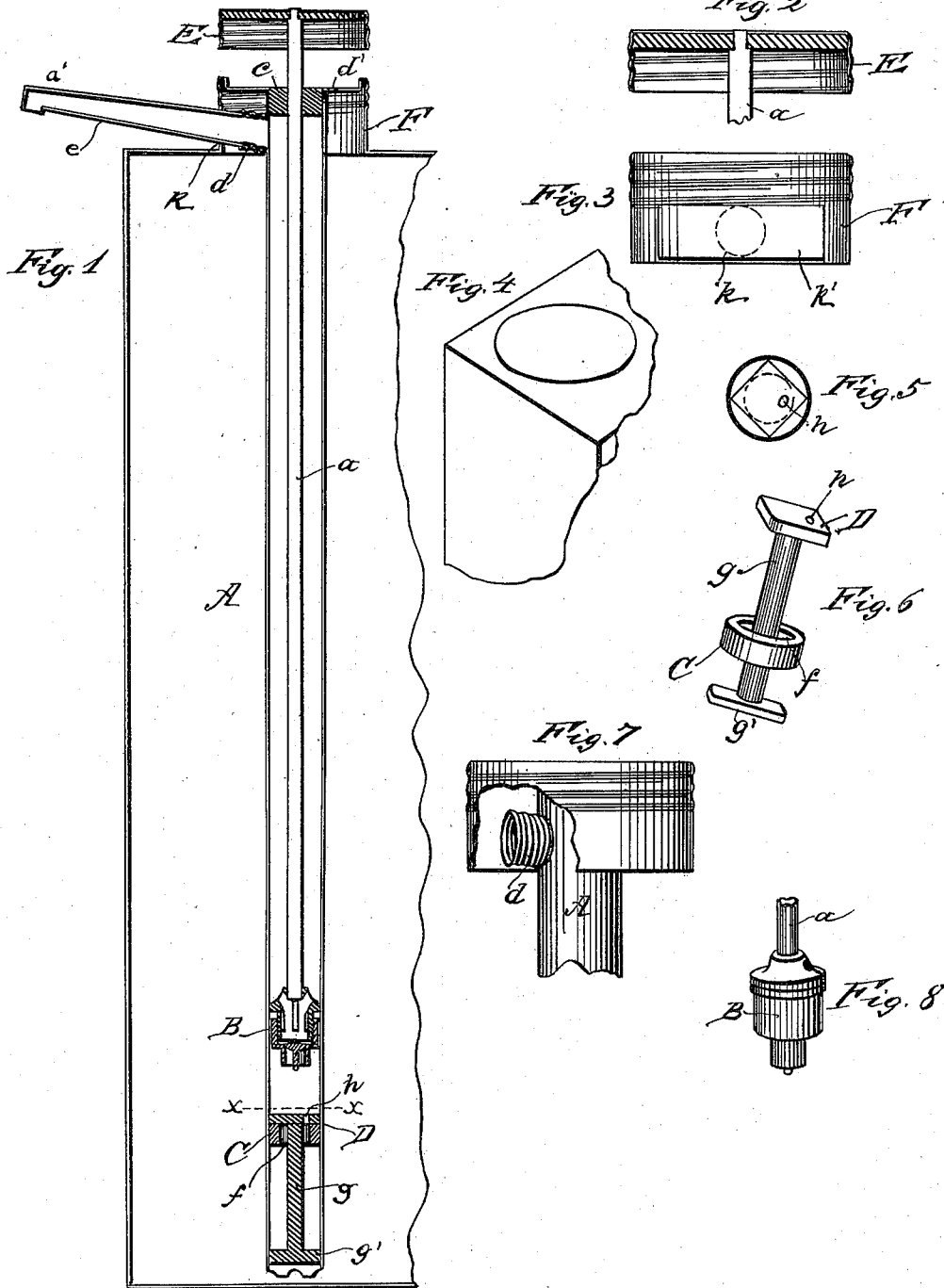


(No Model.)

B. J. DOUDS.
PUMP.

No. 579,296.

Patented Mar. 23, 1897.



WITNESSES

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UNITED STATES PATENT OFFICE.

BYRON J. DOUDS, OF CANTON, OHIO.

PUMP.

SPECIFICATION forming part of Letters Patent No. 579,296, dated March 23, 1897.

Application filed September 21, 1894. Serial No. 523,696. (No model.)

To all whom it may concern:

Be it known that I, BYRON J. DOUDS, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have
5 invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this
10 specification, and to the letters of reference marked thereon, in which—

Figure 1 is a longitudinal section of the pump, showing the same properly attached to a can. Fig. 2 is horizontal section of the
15 piston top or handle, showing a portion of the piston-rod and the rod properly attached. Fig. 3 is a detached view of the screw-threaded flange designed and calculated to be attached to cans. Fig. 4 is a view showing a portion
20 of the can and its opening directly below the screw-threaded flange. Fig. 5 is a transverse section through line *xx*, Fig. 1. Fig. 6 is a detached view of the floating valve and its different parts. Fig. 7 is a view of the screw-
25 threaded flange, showing the same somewhat enlarged and illustrating a portion of the pump-barrel and its screw-threaded nozzle socket or thimble. Fig. 8 is a detached view of the piston-valve, showing a portion of the
30 piston-rod.

The present invention aims to provide pharmaceutical pumps that will overcome the annoyances heretofore experienced in the operation of pumps of this class, which are the
35 dripping and the escaping of the liquid during and after the piston descends; and the objects are, first, to withdraw the liquid from the nozzle when the piston descends; second, to prevent the liquid from rising in the barrel
40 when the piston descends; third, to prevent dripping of adherent liquid from the free end of the nozzle after operating the pump; fourth, to return the overflow of liquid to the can, and, fifth, to prevent leakage from a can hav-
45 ing a pump during transportation.

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

In the accompanying drawings, A represents the pump-barrel, which is formed of a
50 length to correspond substantially with the

length or height of the can to which it is attached and extends a short distance above the top of the can for the purpose hereinafter described. Within the pump-barrel A is located the piston-rod *a*, to the lower end of
55 which is attached in any convenient and well-known manner the piston-valve B, which may be of any desired style, and to the top or upper end of the piston-rod *a* is attached the cap or
60 handle E, which cap or handle is constructed as hereinafter described.

The top or upper end of the barrel A is provided with the stopple *c*, which stopple is for the purpose of closing the upper end of
65 the barrel and also forms a guide for the piston-rod. At the upper end of the barrel and below the stopple is located the screw-threaded socket *d*, which communicates with the interior of the barrel A and is for the purpose
70 of receiving and holding the nozzle *e*, which nozzle is provided at its outer end with a pendant *a'*, the main part *e* being inclined downward, as illustrated in Fig. 1, and is so
75 inclined for the purpose of properly draining the adhering liquid into the barrel, and thereby prevent the liquid from dripping from the outer end of the nozzle after operating the pump. Below the piston-valve B and within
80 the barrel A is secured the valve-seat C, which valve-seat is provided with an opening *f*, which opening is for the purpose of allowing the liquid to pass the valve-seat in either direction. The valve D is formed so as to
85 allow the liquid to pass above it during the time the piston-valve is raised. The valve D is secured to the upper end of the rod *g*, which rod extends through the valve-seat opening *f* and has secured at its lower end a stop *g'*,
90 all of the described parts being made of material that will float, preferably wood, so that at the downward stroke of the piston-valve a considerable quantity of the liquid in the barrel will escape before the valve D comes
95 into contact with its seat, the stop *g'* serving to limit the upward movement of the valve D, so that a sufficient quantity only of the column of the liquid in the barrel will escape to empty the nozzle *e*. It will be understood
100 that a stop could be secured to the barrel A above the valve D without departing from the nature of my invention, as the only ob-

ject of the stop g' is to limit the movement of the valve D, and hence I do not desire to be confined to any particular kind of stop.

The valve D is provided with the small opening h to allow a sufficient quantity of liquid to escape or pass through the valve after it engages with its seat and during the continued downstroke of the piston-rod and its valve, the object being to allow for the increased room taken up by the piston-rod as it enters the barrel, but it will be understood that the opening h may be differently located and the same object accomplished; and it is not absolutely necessary that the opening be located in the valve D, as the same object can be accomplished by providing an opening in the valve-seat and so locating the opening that it would not be covered by the valve D when said valve has become seated.

The upper end of the barrel A above the can is formed somewhat larger in diameter than the barrel proper, and is so formed on its top or upper end that a cup will be provided to catch the overflow of liquid, which overflow of liquid is permitted to return to the can through the aperture d' . The outer periphery of the flange forming the cup is screw-threaded, and is so formed for the purpose of receiving and holding the screw-threaded cap E, which screw-threaded cap is attached to the top or upper end of the piston-rod a .

The cap E limits the downstroke of the piston-rod and its valve, and when said cap is screwed down onto its flange all of the parts are held in proper position and leakage is prevented from the can when transported.

The flange F, which forms the cup, is extended downward and is attached to the can in any desired manner.

For the purpose of providing a means for properly attaching the nozzle to its socket the opening k is provided, which opening is located in the flange F. It will be understood that the nozzle e should be detached for placing the can in proper condition for

shipment. For the purpose of preventing leakage through the opening k when the nozzle is not in use the strip k' is provided, which strip is so attached that it can be easily removed. The operations of the pump are as follows: When the piston-rod, together with its valve, is raised, the liquid will flow from the nozzle in the ordinary manner, but at the downstroke the entire column of the liquid in the barrel A will descend until the valve D rests on its seat, thereby removing the liquid from the nozzle e , and as the piston-rod and its valve B descends to its lowest point a sufficient quantity of liquid escapes through the opening h to prevent the liquid from rising in the barrel A, and, last, any adhering liquid will have drained from the inclined nozzle into the barrel.

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

1. The combination of a pump-barrel A, having located therein a piston-rod, provided with a valve, the valve-seat C provided with an opening f , the floating valve D secured to the rod g extended through the opening f and provided with a stop and the opening h formed in the valve D, substantially as and for the purpose specified.

2. The combination of a pump-barrel having located therein a piston-rod provided with a piston-valve, the nozzle e connected to the barrel and inclined upward toward its outer end, and the outer end thereof provided with the pendent portion a' , the flange F, provided with the opening k , the strip k' and the valve D, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

BYRON J. DOUDS.

Witnesses:

F. W. BOND,

E. A. C. SMITH.