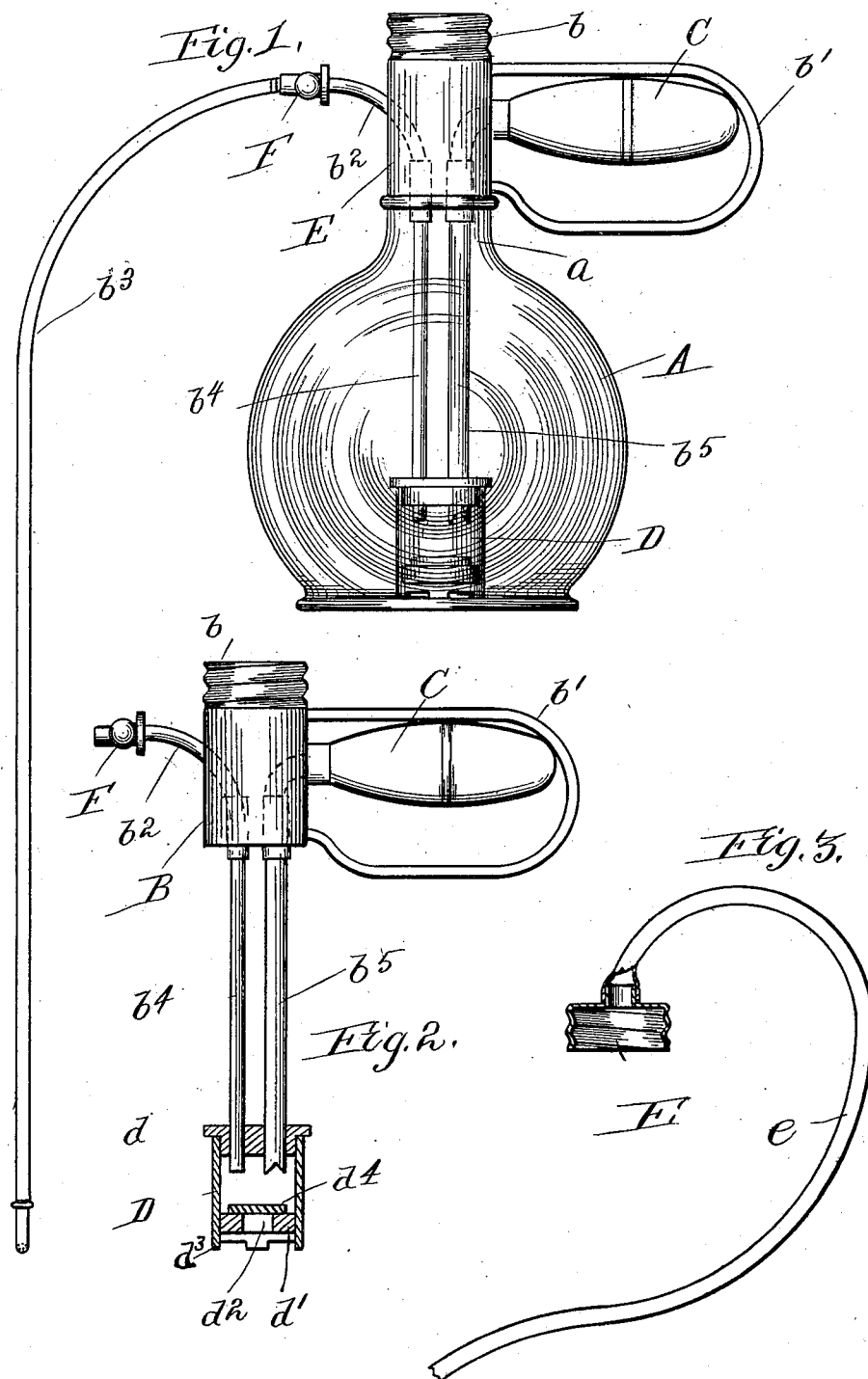


E. E. ERTSMAN.
SYRINGE.

(Application filed Oct. 23, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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SYRINGE.

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To all whom it may concern:

Be it known that I, EMANUEL EDWARD ERTSMAN, a citizen of the United States, residing at Chicago, (Pullman,) county of Cook, State of Illinois, have invented a certain new and useful Improvement in Fluid-Ejectors, of which the following is a specification.

My invention relates to that form of fluid-ejector which consists of a reservoir and means for ejecting the fluid therefrom, and more particularly to devices of this character which are adapted to be held and operated by one hand.

The objects of my invention are to provide an improved and highly-effective ejector which may be employed for various purposes and which will not get out of order, to provide a construction which will admit of the reservoir being made of glass, porcelain, or the like and which will permit the same to be readily detached and cleansed, to provide an arrangement whereby a fluid may be either ejected from the reservoir or drawn from some other source, to provide an ejector which may be employed either as a syringe or as a stomach-pump, to provide an ejector having the character of a siphon-syringe, and to provide certain details and features of improvement tending to render a device of this character serviceable and thoroughly reliable.

To the attainment of the foregoing and other useful ends my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of an ejector embodying the principles of my invention. Fig. 2 is a view of the head which fits upon the neck of the glass reservoir and to which are attached the handle, bulb, tubes, &c., which constitute the means for ejecting the fluid. Fig. 3 shows an attachment by which the ejector may be converted into a stomach-pump.

As thus illustrated my improved ejector comprises a receptacle A, which is preferably provided with a neck *a* and which is preferably made of glass, porcelain, aluminium, or some other equivalent material which will not corrode or oxidize and upon which chemicals will have no appreciable effect. Upon the neck of the bottle or receptacle is fitted a head or sleeve B, which is provided with a removable cap *b* and which is also provided

with a handle *b'*. This handle is preferably loop-shaped in form or pattern and may be either attached to or formed integral with the head B. The bottle or receptacle A is adapted to contain liquid, and the means for ejecting the same therefrom are as follows: Suitably connected with the head B and arranged horizontally within the loop-shaped handle *b'* is a compressible rubber bulb C. The opposite side of the head is provided with a nozzle or spout *b²*, and to the latter is preferably attached a long rubber tube *b³*. The bulb C and the nozzle *b²* are connected and in communication with each other through the medium of a couple of tubes *b⁴* and *b⁵*, which extend downwardly to a point at or near the bottom of the reservoir and which have their lower ends coupled together by means of a check-valve device D. This valve device preferably consists of a short tube provided at its upper end with a rubber cork *d* and at its lower end with a rubber cork *d'*, having an inlet-opening *d²*. The bottom of the tube is preferably provided with feet *d³*, which rest upon the bottom of the receptacle A and which permit a free passage of the fluid up through the opening *d²*. The ends of the tubes *b⁴* *b⁵* are extended through the cork *d*, and a small disk *d⁴* is arranged to work between the two corks and in this way serve as a valve for preventing a backflow of liquid through the opening *d²*. Preferably the lower end of the tube *b⁵* is notched or tapered, as shown, and with this provision it will readily be seen that a lifting of the valve will operate to close the lower end of the tube *b⁴* without closing the tube *b⁵* and by opening the inlet *c²* establish communication between the bulb and the reservoir, while a downward movement of the valve will operate to close the inlet-opening *d²* and also establish communication between the bulb and the nozzle *b²*. The tube *b⁵* is preferably somewhat larger in diameter than the tube *b⁴*, and both tubes, as well as the short tube D, are preferably of glass.

In use the handle and bulb are grasped together, and by alternately compressing the latter and allowing it to expand the liquid contained within the receptacle will be drawn into the bulb and ejected therefrom by way of the nozzle. The handle *b'* forms a sort

of guard for the bulb and serves to prevent an accidental discharge of the liquid. The tube *b*³ is preferably of sufficient length to obtain a siphoning action and when employed will enable the operator to siphon the liquid from the reservoir after once starting the flow with the bulb. As a portion of the passage which connects the bulb with the nozzle is at all times filled with liquid, it will readily be seen that no air can enter the bulb, and for this reason my improved ejector can be used for various purposes where it is important that no air be discharged from the nozzle with the liquid.

15 The head B fits tightly upon the neck of the receptacle, so as to exclude air, and the receptacle is filled by removing the cap *b*. This arrangement, involving, as it does, a removable head to which are attached the handle, bulb, tube, &c., constituting the ejecting means, admits of the use of a glass receptacle which, furthermore, can readily be removed or detached for the purpose of cleaning its interior. The device may therefore be regarded as comprising, practically, but two parts—to wit, the bottle or receptacle, which serves as a reservoir, and the removable head, which carries or supports the ejecting means.

30 In Fig. 3 I have illustrated an attachment by which my improved ejector can be employed to pump and discharge liquid from sources other than its own reservoir. The attachment consists simply of a cap E, which is designed to screw upon the head B in place of the cap *b* and which has its top provided with a flexible rubber tube *e*. When this attachment is employed, I find it desirable to provide the nozzle with a check-valve, as at 40 F, which serves to prevent a backflow of air through the nozzle and into the reservoir and which, it will be understood, may be of any known or suitable form. With this arrangement and by compressing the bulb in the usual manner a liquid may, as previously stated, be drawn into the receptacle and then ejected from the latter by way of the nozzle *b*². For instance, should it be found desirable to draw the liquid from a pail or 50 pan, it will in such case be only necessary to attach the cap E and immerse the end of the tube *e* in said liquid, so as to permit the action of the bulb to first draw the liquid into the reservoir and then expel or eject it from the latter by way of the tubes and nozzle. Also with this attachment the ejector becomes capable of efficient service as a stomach-pump, the manner of employing it as such being obvious.

60 It will be readily understood that in practice the cap *b* can be loosened to permit air to enter and replace the liquid as fast as the latter is ejected from the bottle.

What I claim as my invention is—

65 1. The combination of a receptacle provided with a neck, a sleeve removably fitted upon said neck, a removable cap fitted upon

the upper end of said sleeve, a bulb projecting laterally from the side of said sleeve, a spout or nozzle projecting laterally from the side of said sleeve, a passage which connects said bulb with said spout or nozzle, said passage extending downward into the receptacle and having at its lowest point a lateral opening, a check-valve for said lateral opening, 75 said valve opening to permit fluid to enter the said passage and closing to prevent backflow therefrom, and a handle secured to the side of said sleeve and arranged in such manner that the bulb can be compressed against its under surface, substantially as and for the purpose set forth.

2. The combination of a suitable receptacle provided with a neck, a sleeve removably fitted upon said neck and provided with a bulb and a spout or nozzle, means for connecting said bulb with said spout or nozzle whereby the contents of the receptacle can be drawn into the bulb and then ejected therefrom by way of said spout or nozzle, and a cap which is adapted to screw upon the upper end of said sleeve and which is provided with a flexible tube through which liquid can be drawn into the receptacle by the action of the bulb and then ejected therefrom by way of said spout or nozzle, substantially as and for the purpose set forth.

3. A fluid-ejector comprising a receptacle provided with a nozzle and a laterally-extending bulb and having also a laterally-extending loop-shaped handle which incloses and forms a guard for said bulb and which is arranged in such manner that its upper horizontal portion and the bulb can be grasped together and the latter thereby compressed against the under surface of such portion.

4. A fluid-ejector comprising a glass bottle provided with a neck, a metal sleeve fitted upon said neck, a spout secured to said sleeve, a loop-shaped handle extending laterally from said sleeve, a bulb arranged horizontally within said handle, and in such manner that the handle serves as a guard for the bulb, and glass tubing which connects the spout with the bulb and which extends downwardly into the interior of the bottle, the tubing being provided at its lower portion with a valved opening, and a compression of the bulb against the under surface of the upper horizontal portion of the handle operating to eject the fluid from the bulb by way of said tubing and spout.

5. A fluid-ejector comprising a receptacle provided with a neck, a sleeve fitted upon said neck, a spout secured to said sleeve, a bulb secured to said sleeve, a loop-shaped handle secured to said sleeve and arranged to inclose and form a guard for said bulb, the arrangement being such that the bulb and handle can be grasped together and the bulb thereby compressed against the inner surface of said handle, and means for connecting the bulb and spout with the interior of said receptacle, so as to permit the liquid to be first

drawn into said bulb and then ejected therefrom by way of said spout.

6. The combination of a receptacle, a compressible bulb, a siphon, suitable valves and connecting-passages whereby the contents of the receptacle can be first drawn into the bulb and then ejected therefrom by way of said siphon, the liquid entering and leaving the bulb through one and the same passage, and means for admitting air to the interior of said receptacle; the siphon and bulb passages leading downward to a point near the bottom of the said receptacle, and the two passages being connected at such point by a suitable check-valve device; and a metal sleeve which is fitted upon the neck of said receptacle, and to which are secured the said bulb, siphon and tubes providing the afore-said passages, substantially as described.

7. The combination of a receptacle, a siphon, a compressible bulb, a handle arranged

to inclose and form a guard for the said bulb, and suitable valves and passages whereby the liquid can be first drawn into the bulb and then ejected therefrom by way of said spout, the liquid entering and leaving the bulb by one and the same passage.

8. The combination of a glass receptacle, a metal sleeve fitted upon the neck of said receptacle, a spout secured to said sleeve, a bulb secured to said sleeve, a handle arranged to inclose and form a guard for said bulb, suitable passages whereby the liquid can be first drawn into the bulb and then ejected therefrom by way of said spout, and a flexible tube having its end adapted for attachment to the said sleeve, substantially as and for the purpose set forth.

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