

No. 640,868.

Patented Jan. 9, 1900.

L. BRING.
SYRINGE.

(Application filed Mar. 9, 1899.)

(No Model.)

Fig. 1.

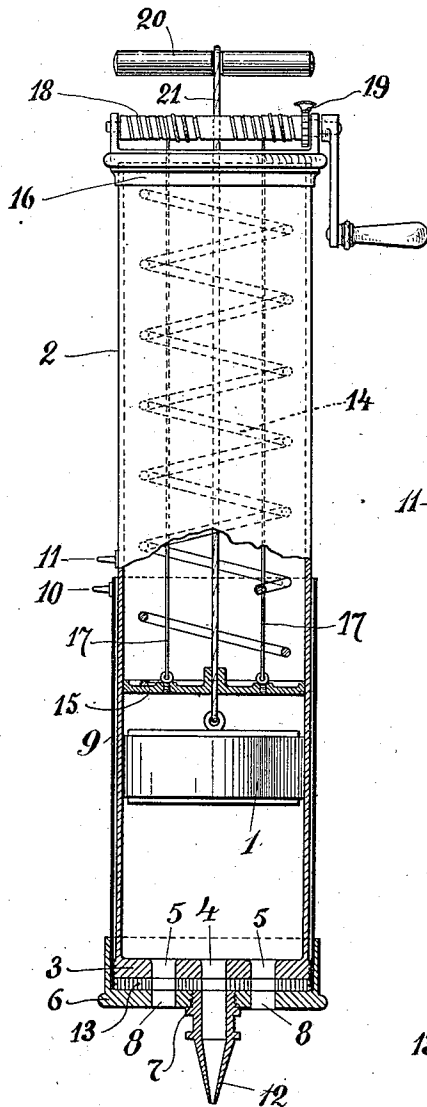


Fig. 3.

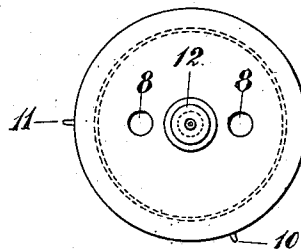
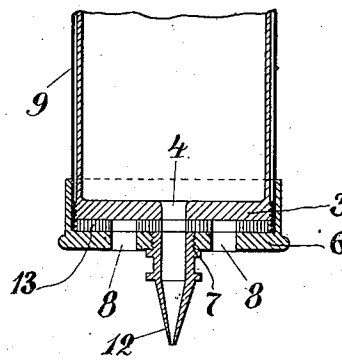


Fig. 2.



WITNESSES:

Ella L. Giles
William

INVENTOR

Lars Bring
BY *Richardson*

ATTORNEYS

UNITED STATES PATENT OFFICE.

LARS BRING, OF STOCKHOLM, SWEDEN.

SYRINGE.

SPECIFICATION forming part of Letters Patent No. 640,868, dated January 9, 1900.

Application filed March 9, 1899. Serial No. 708,431. (No model.)

To all whom it may concern:

Be it known that I, LARS BRING, a subject of the King of Sweden and Norway, residing at Stockholm, Sweden, have invented a new and useful Syringe, of which the following is a specification.

The present invention relates to such a construction of syringes that they can be filled more quickly than they are emptied.

In the accompanying drawings, Figure 1 illustrates a longitudinal section of this improved syringe during filling, and Fig. 2 a section of its forward end in position for the forcing out of the liquid. Fig. 3 illustrates the syringe viewed from its forward end.

1 is the piston, and 2 the cylinder or barrel. The latter, according to the present invention, is provided at its forward end 3, besides the usual central discharge-opening 4, to which the nozzle is usually attached, with one, two, (as in the drawings,) or more apertures 5, and, moreover, there is placed close outside said end a cap, disk, or cover 6, with apertures 7 8, one of which 7 lies opposite the discharge-opening 4, while the other or others 8 are so located that when the cap is turned into a certain position they will come opposite the apertures 5. In order to facilitate the rotation of the disk or cap 6 when the forward end of the syringe is dipped in the liquid to be drawn in, the said cap should preferably be connected with a tube or sleeve 9, closely surrounding the cylinder or barrel of the syringe. On the circumference of said tube or sleeve there is suitably placed a pin 10 or other indicator, as also the barrel is provided with an indicator 11, said two indicators being so located in relation to each other that they will be in line with each other—for instance, when the cap 6 has been so rotated that its apertures 8 are opposite the apertures 5 in the end of the syringe. The aperture 7 may be connected with a nozzle 12. 13 is a packing inserted between the cap 6 and the forward part of the syringe.

When the syringe is to be filled, the cap 6 is rotated so as to bring its apertures 8 opposite the apertures 5, Fig. 1, in the end or bottom piece of the syringe, and by subsequently withdrawing the piston the liquid is drawn in both through the two central openings 4 and 7 and through the other apertures 5 8.

When the syringe is to be emptied, the cap 6 is so rotated that its apertures 8 will fall at one side of the corresponding apertures 5, Fig. 2, the latter being thus closed by the cap, and when the piston is subsequently forced outward the liquid is driven out through the central openings 4 7.

From the above it may be evident that such a syringe can be filled almost instantaneously. This is impossible with the ordinary syringes, which are not filled by far by a single suction operation.

The syringe is more especially adapted for use where the liquid is to be forced out in the shape of a very fine jet—i. e., when the aperture 4 is very small. In this case, however, a considerable force on the piston is required for forcing out the liquid through the small discharge-aperture, and therefore with a view to facilitating the advance of the piston there may be placed a spiral spring 14 behind the latter, said spring tending to keep the piston pressed forward. A still better plan is, however, to place behind the piston a disk 15 and between this disk and the cylinder-head 16 the spiral spring, while the disk by means of one or more cords or flexible connections 17, passing through the head end, is connected with a winding-drum 18, provided with a detent 19. This device furnishes a convenient means of withdrawing the disk 15 by rotating the drum 18 and of thus placing the spring 14 in tension, so that the piston can be easily withdrawn. The piston may be connected with the handles 20 by means of a rod or cord 21, passing through the disk 15. When the piston 1 has been drawn up far enough to be in contact with said disk, liquid having in the meantime entered the cylinder, it is only necessary to release the detent 19 in order that the spring 14 shall force the disk 15 and piston 1 forward and force out the liquid previously drawn in. This construction is more especially of advantage in the case of liquids which are to be ejected very hot and therefore must be sucked in quickly.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a syringe, a barrel, a piston therein, said barrel having a discharge-opening, an

inlet-opening independent of the discharge-opening and a cover for said inlet-opening rotatable across the same in closing or opening the same and adjusted by hand, substantially as described.

2. In combination in a syringe, a barrel, a piston therein, said barrel having an opening 5 at its forward end, a rotary cap carried by the front end of the barrel and having an opening to register when the cover is turned with the opening 5 and having also an opening in line with the discharge-opening leading from the barrel, substantially as described.

3. In combination in a syringe, a barrel, a piston therein, said barrel having a discharge-opening and an opening 5 at its end, a rotary cover having a discharge-opening in line with the discharge-opening of the barrel and having also an opening 8 adapted when the cover

is turned to register with the opening 5 and the spring within the barrel acting on the piston, substantially as described.

4. In combination in a syringe, the barrel having the openings 4, 5, at its end, a rotary cover fitted to the end of the barrel and having the openings 7 and 8, a piston in the barrel, a disk in rear of the piston, a drum at the end of the barrel, a pawl for holding the drum, a spring in rear of the disk and flexible connections between the drum and the disk, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LARS BRING.

Witnesses:

H. TELANDER,
T. RISBERG.