

J. H. SHEETS.  
SYRINGE.

APPLICATION FILED MAR. 11, 1903.

NO MODEL.

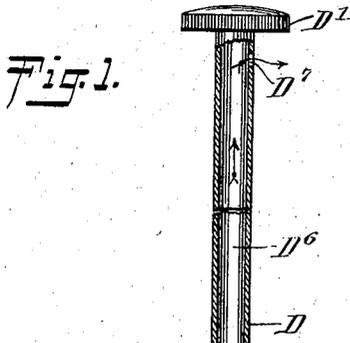


Fig. 1.

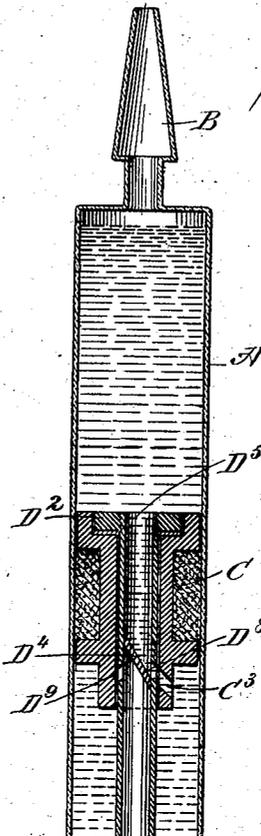


Fig. 2.

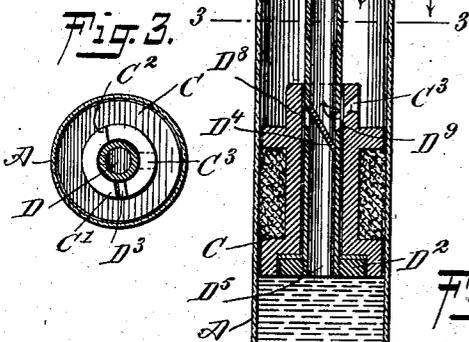


Fig. 3.

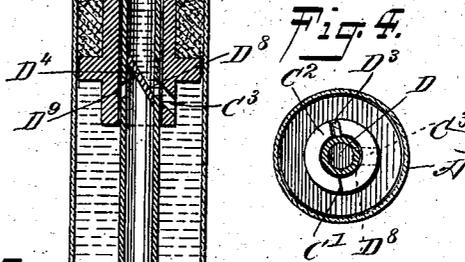


Fig. 4.

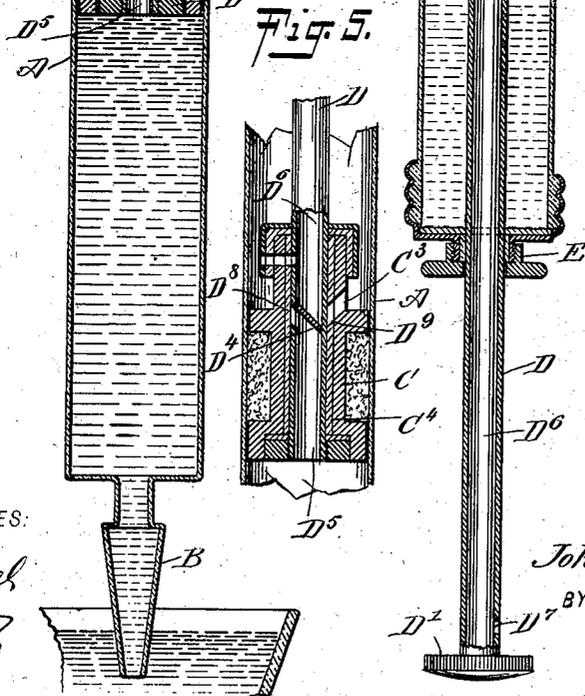


Fig. 5.

WITNESSES:

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INVENTOR

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# UNITED STATES PATENT OFFICE.

JOHN H. SHEETS, OF NEW YORK, N. Y.

## SYRINGE.

SPECIFICATION forming part of Letters Patent No. 730,054, dated June 2, 1903.

Application filed March 11, 1903. Serial No. 147,254. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. SHEETS, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Syringe, of which the following is a full, clear, and exact description.

The invention relates to syringes of the barrel-and-piston type; and its object is to provide a new and improved syringe arranged to permit of conveniently filling the barrel with the desired fluid and carrying the filled syringe about in a pocket, case, or the like and to allow the user to eject any desired portion of the fluid and safely retain the remainder of the fluid in the barrel for future use.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement, arranged for filling the barrel with a fluid. Fig. 2 is a like view of the same, showing the parts in position when a portion of the fluid is to be divided off. Fig. 3 is a sectional plan view of the improvement on the line 3-3 of Fig. 1. Fig. 4 is a similar view of the same, showing the parts in a different position; and Fig. 5 is a sectional side elevation of a modified form of the improvement.

The barrel A, of glass, hard rubber, or other suitable material, is provided at its discharge end with a suitable nozzle B, and in the said barrel is mounted to slide a piston C, engaged by the inner end of a piston-rod D, mounted to slide in a suitable bearing formed in a cap E, screwed or otherwise secured to the rear end of the barrel A. The outer end of the piston-rod D is provided with a suitable handle D', adapted to be taken hold of by the operator for moving the piston C lengthwise in the barrel and for allowing the operator to turn the piston-rod in the pis-

ton C, for the purpose hereinafter more fully described.

The inner end of the piston-rod D is provided with a fixed head D<sup>2</sup>, fitting a correspondingly-shaped recess in the outer face of the piston C, so that when the piston-rod D is drawn rearward the piston C is carried along in the same direction—that is, toward the cap E.

On the piston-rod D, adjacent to the inner face of the piston C, is secured a pin D<sup>3</sup>, adapted to abut against spaced shoulders C' and C<sup>2</sup>, formed on the inner face of the said piston C, so that when the piston-rod D is pushed inward the pin D<sup>3</sup> carries the piston C along, so that the latter is moved outward in the barrel. The pin D<sup>3</sup>, in addition to the function mentioned, serves to limit the turning motion of the piston-rod D in the piston C by the pin alternately abutting against the said shoulders C' and C<sup>2</sup>, as indicated in Figs. 3 and 4.

The piston-rod D is made hollow and provided within the piston C with a transverse partition D<sup>4</sup>, preferably standing at an angle to the axis of the piston-rod, as plainly shown in Figs. 1 and 2. The partition D<sup>4</sup> forms two passages D<sup>5</sup> and D<sup>6</sup> in the said piston-rod D, and the passage D<sup>5</sup> opens into the forward nozzle or discharge end of the barrel A, while the other passage D<sup>6</sup> connects with the atmosphere by a port D<sup>7</sup> in the outer end of the piston-rod adjacent to the handle D'.

In the wall of the piston-rod D, opposite the sides of the partition D<sup>4</sup>, are arranged ports D<sup>8</sup> and D<sup>9</sup>, adapted to register with a port C<sup>3</sup>, formed in the piston C and opening into the storage or rear end of the barrel A, it being understood that when the port D<sup>8</sup> registers with the port C<sup>3</sup> (see Fig. 2) then connection is established between the forward and rear ends of the barrel A by way of the passage D<sup>5</sup> and the said registering ports D<sup>8</sup> C<sup>3</sup>, so that the fluid can pass from one end of the barrel to the other on moving the piston correspondingly. When the several parts are in this position, then the pin D<sup>3</sup> abuts against the shoulder C<sup>2</sup>, as indicated in Fig. 4. When the piston-rod D is turned in the piston C to the position shown in Figs. 1 and 3, then the port D<sup>9</sup> is moved into register with the port C<sup>3</sup>,

so that the rear end of the barrel is connected with the atmosphere by way of the said registering ports C<sup>3</sup> D<sup>9</sup>, passage D<sup>6</sup>, and the port D<sup>7</sup>.

5 The operation is as follows: When the several parts are in the position shown in Fig. 1 and the nozzle B is immersed in a fluid contained in a suitable vessel and the operator draws the piston-rod D outward, then the  
 10 fluid is drawn into the barrel from the said vessel by way of the nozzle B, and at the same time air in the rear end of the barrel A escapes from the latter by way of the registering ports C<sup>3</sup> D<sup>9</sup>, passage D<sup>6</sup>, and port D<sup>7</sup>.  
 15 When the piston C has reached the rear end of the barrel A and the forward end thereof is completely filled with the fluid, then the operator moves the syringe into a reverse position to bring the nozzle B upward and then  
 20 turns the piston-rod D to the position shown in Figs. 2 and 4 and then pushes the piston-rod D to cause the piston C to travel from the rear end of the barrel toward the nozzle B, and in doing so the fluid in front of the piston  
 25 passes by way of the passage D<sup>5</sup> and the registering ports D<sup>8</sup> C<sup>3</sup> into the rear end of the barrel. When the piston reaches the outer end of its stroke, then the operator turns the piston-rod D to an intermediate position, so  
 30 that both ports D<sup>9</sup> and D<sup>8</sup> are cut off from the port C<sup>3</sup>, and the fluid is now safely stored in the barrel A, as it cannot escape to the nozzle B nor to the rear end of the hollow piston C. The operator can now conveniently carry the  
 35 syringe in a pocket, satchel, or other receptacle without danger of spilling the fluid stored in the barrel A. When it is desired to use a portion of the fluid stored in the barrel A, then the operator turns the piston-rod D to  
 40 the position shown in Figs. 2 and 4, so that the ports D<sup>8</sup> and C<sup>3</sup> register with each other, and then draws the piston D outward, so that the portion of the stored fluid can flow from the rear end of the barrel A by way of the  
 45 registering ports C<sup>3</sup> and D<sup>8</sup> and the passage D<sup>5</sup> into the front end of the barrel A, and when the desired quantity of fluid has passed into this front end of the barrel then the operator turns the piston-rod R to the position  
 50 shown in Figs. 1 and 3 and then pushes the piston-rod D outward to cause the piston C to eject the fluid in front of the piston through the nozzle B to the desired place. When the fluid has been ejected, then the piston D is  
 55 again turned to an intermediate position, as previously explained, and the remaining fluid in the barrel A is kept therein until another ejection is to be made. The above-described operation is then repeated.  
 60 From the foregoing it will be seen that when the fluid is stored in the barrel A, as described, the piston C is in the forward end of the barrel A, and consequently the handle D' of the piston-rod extends from the cap E,  
 65 so that the syringe takes up comparatively little room.

Suitable packing devices may be employed for the piston C to prevent leakage between the piston and the barrel, and also suitable packings C<sup>4</sup> may be employed between the  
 70 piston-rod D and the piston, and in this case I prefer to use tubular cork packings C<sup>4</sup>, as indicated in Fig. 5.

If desired, an extra set of ports may be provided in the piston and piston-rod D, as shown  
 75 at the upper left-hand portion in Fig. 5, to form the desired air-passage to the outer air.

Having thus described my invention, I claim as new and desire to secure by Letters  
 80 Patent—

1. A syringe comprising a barrel, a piston movable therein, and a piston-rod connected with the said piston, to move the latter lengthwise in the barrel and allow of turning the  
 85 piston-rod in the barrel, the said piston-rod and piston having ports adapted to register, to connect the nozzle end of the barrel with the rear or storage end and to connect the latter with the atmosphere, as set forth.

2. A syringe comprising a barrel, a piston  
 90 movable therein and provided at the inner end with a port opening into the rear or storage end of the barrel, and a hollow piston-rod connected with the piston, to move the  
 95 latter in the barrel and allow of turning the piston-rod in the piston, the said piston-rod having a transverse partition and ports on opposite sides of the partition, adapted to register with the said piston-port, as set forth.

3. A syringe comprising a barrel, a piston  
 100 movable therein and provided at the inner end with a port opening into the rear or storage end of the barrel, and a hollow piston-rod connected with the piston, to move the  
 105 latter in the barrel and allow of turning the piston-rod in the piston, the said piston-rod having a transverse partition and ports on opposite sides of the partition, adapted to register with the said piston-port, the partition being set at an angle to the axis of the piston-  
 110 rod, as set forth.

4. A syringe comprising a barrel, a piston movable therein, a hollow piston-rod connected with the said piston, to move the  
 115 latter lengthwise in the barrel and to allow of turning the piston-rod in the barrel, the said piston-rod and piston having ports adapted to register, and to connect the nozzle end of the barrel with the rear or storage end, and to connect the latter with the atmosphere,  
 120 and means for limiting the turning motion of the piston-rod on the piston, as set forth.

5. A syringe comprising a barrel, a piston movable therein and provided at the inner  
 125 end with a port opening into the rear or storage end of the barrel, and a hollow piston-rod connected with the piston, to move the latter in the barrel and to allow of turning the piston-rod in the piston, the said piston-rod having a transverse partition and ports on oppo-  
 130 site sides of the partition, adapted to register with the said piston-port, one end of the

hollow piston-rod opening into the discharge or nozzle end of the barrel and the other or outer end opening into the air, as set forth.

5 6. A syringe comprising a barrel, a piston  
movable therein and provided at the inner  
end with a port opening into the rear or stor-  
age end of the barrel, a hollow piston-rod con-  
nected with the piston, to move the latter in  
the barrel and to allow of turning the piston-  
rod in the piston, the said piston-rod having  
10 a transverse partition and ports on opposite

sides of the partition, adapted to register  
with the said piston-port, and means for lim-  
iting the turning motion of the said piston-  
rod in the piston, as set forth.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

JOHN H. SHEETS.

Witnesses:

THEO. G. HOSTER,  
EVERARD BOLTON MARSHALL.

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