Jan. 12, 1932. N. E. HOUSER 1,841,246

SYRINGE

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Fig. 1.

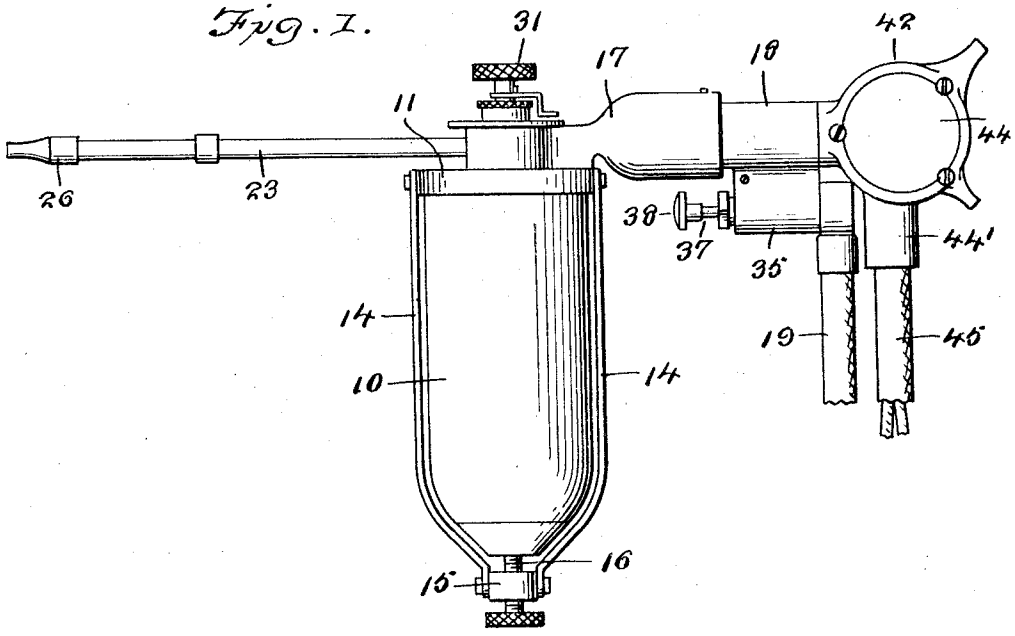


Fig. 2.

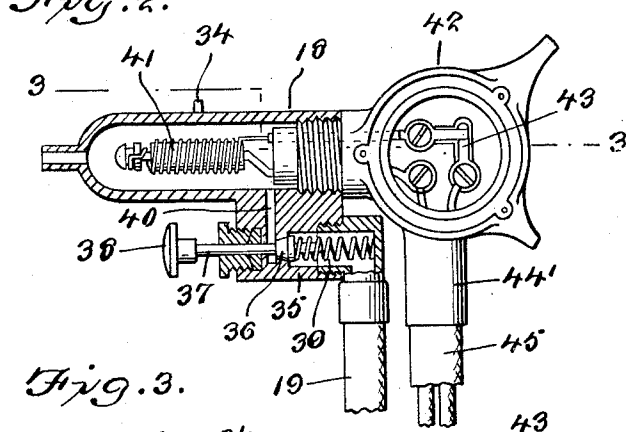
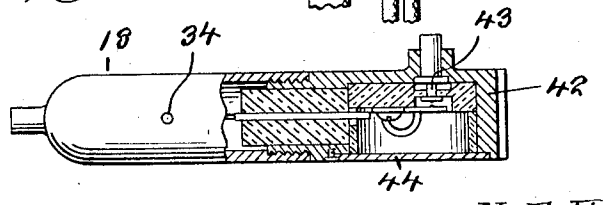


Fig. 3.



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Fig. 4.

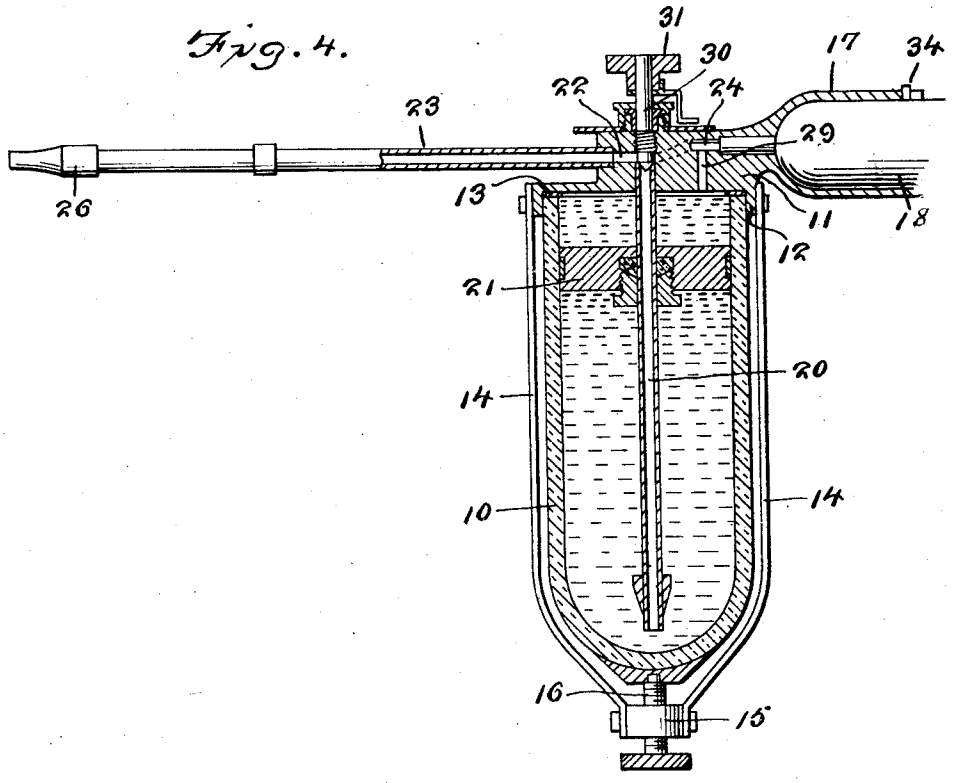
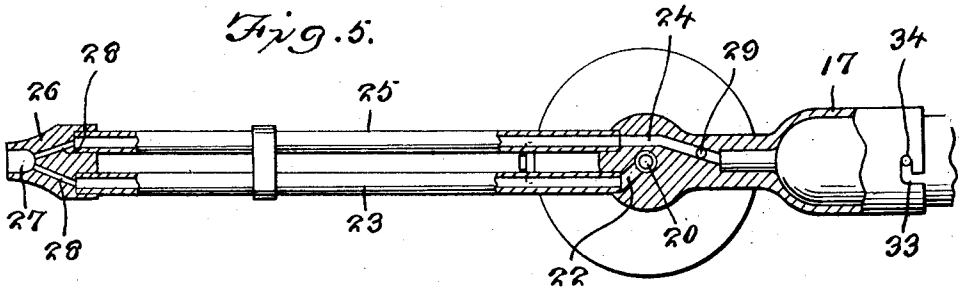


Fig. 5.



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UNITED STATES PATENT OFFICE

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SYRINGE

Application filed August 2, 1929. Serial No. 383,040.

The present invention relates to an atomizer or spray, and contemplates a construction wherein a continuous luke-warm or hot sterile medicated spray may be obtained instantly when desired, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawings forming part of this application like numerals of reference indicate similar parts in the several views, and wherein:—

Figure 1 is a side elevation of the device.

Figure 2 is a plan view partly in section showing the heating element.

Figure 3 is a sectional view on line 3—3 of Figure 2.

Figure 4 is a vertical sectional view through the syringe.

Figure 5 is a plan view thereof partly in section.

Referring to the drawings in detail, 10 indicates a container of any suitable construction adapted to receive a medicinal solution, and while the container may be constructed from any suitable material and vary in design it is preferably of the design illustrated and formed of glass. The container 10 is closed at its upper end by means of a casting 11 constituting a cover, preferably formed with a depending flange 12, while interposed between the casting and the cover 11 is a suitable gasket 13. Depending from the flange 12 at diametrically opposite points are supporting arms 14 arranged at opposite sides of the container and having their lower ends extended toward each other and connected with a suitable nut 15, which accommodates an adjustable bolt or screw 16 as clearly illustrated in Figure 1. This screw has one end received by a recess formed in the bottom of the container to assist in supporting the latter between the arms 14.

The casting or cover 11 is formed with a thickened portion which terminates to provide a socket 17 projecting from one side of the container 10 and adapted to receive a heating device indicated generally at 18, and which has associated therewith a water supply pipe 19. The thickened portion of the casting is also formed with a vertical bore to receive the adjacent end of a hollow tube 20 which depends into the container 10 and terminating a slight distance from the bottom thereof, and through which tube the medicinal solution is discharged. Slidably mounted upon the tube 20 is a piston 21 which when moved downwardly into the container forces the medicinal solution upwardly through the tube 20 as will be readily understood. Upon inspection of Figure 5 it will be noted that the casting is also provided with a lateral bore or passage 22 communicating with the tube 20, and also with a horizontally disposed tube 23, while the casting is further formed with a laterally disposed bore 24 communicating with the adjacent end of the heating device 18, and also with a tube 25 arranged adjacent and parallel with the tube 23. The corresponding outer extremities of the tubes 23 and 25 respectively are associated with a mixing device or head 26 in the form of an injector, having a single outlet 27 communicating with bores 28 leading from the respective tubes as illustrated. A vertical bore 29 is also formed in the casting 11, and communicates with the bore 24, to establish communication between the latter and the container 10, so that the aqua solution can be utilized to operate the piston 21 in the manner to be presently described.

The upper end of the tube 20 constitutes a valve seat for the valve 30, and the stem of this valve is threaded into the casting as illustrated and operated by a suitable head or nut 31. The valve, of course, controls the amount of the medicinal solution allowed to pass through the tube 20 into the outlet tube 23.

As is clearly illustrated in the drawings, the syringe hereinabove described has associated therewith an electrical heating device indicated generally at 18, which includes a casing of proper cross sectional contour to be fitted within the socket 17. This socket is formed with a bayonet slot 33 to receive the pin or lug 34 carried by the heating device. Arranged beneath the casing 18 of the heating device, and preferably forming an integral part thereof is a valve body or casing 35 with which the water supply pipe 19 is

coupled in any suitable manner. Operating within the valve body or casing 35 is a valve 36, the stem of which indicated at 37 projects out from beyond the body 35 and is formed or provided with a finger engaging button 38. Located within the valve body 35 is a spring 39 which normally maintains the valve 36 seated, and thereby cuts off communication between the water supply pipe 19 and the heating device 18 through the bore or port 40. A heating element of any desired construction as indicated at 41, and arranged within the casing 18 of the heating device, so that when water is allowed to pass from the supply pipe 19 into the syringe, it passes around the heating element 41 and is thereby properly heated. The casing or body portion of the heating device generally is provided with a relatively broad end portion 42 which is hollow to accommodate a switch indicated generally at 43, and which hollow portion is covered or closed by a removable plate 44. As clearly illustrated in Figure 3 the operating element of the switch projects from one side of this enlarged portion 42, and is so related with the valve stem 37, that the entire device can be conveniently handled or manipulated. Depending from the enlarged end portion 42 is a tubular extension 44′ which receives the wires 45 for the heating device.

By reason of the construction illustrated and described it is manifest that the heating device in its entirety can be quickly and easily associated with the syringe, or removed therefrom as the occasion may require. In practice, it is only necessary to adjust or regulate the valve 30, and by holding the device in one hand, press upon the valve stem 37, thereby unseating the valve 36 to allow the aqua solution to pass from the supply pipe 19 through the heating device and around the heating element 41. This aqueous solution is also forced through the bore 22 into the tube 25. However, a portion of the solution is also directed downwardly through the bore 29 into the container 10, thereby depressing the piston 21 and forcing a portion of the medicinal solution upwardly through the tube 20 into the tube 23. The passage of the aqua solution through the tube 25 and the mixing head 26 also creates a suction in the tube 23 to facilitate the discharge of the medicinal solution from the container 10 as will be readily appreciated.

The medicinal solution and the aqua solution are brought together and mixed in the head 26 before the mixture is discharged from the ejector into the nose, throat or other part of the body to be treated. When the device is held in one hand, the arrangement is such that the switch can be conveniently closed when desired to heat the water flowing through the pipe 19, and at the same time the valve stem 37 can be manipulated by the index finger to regulate the flow of the water or solution into the heating device. By reason of the construction illustrated and described it is manifest that a continuous lukewarm or hot sterile medicated spray may be readily obtained when needed, and by simply regulating the valve 30 the flow of the said solution will remain constant until the container 10 is empty.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily understood, I desire to have it known that I do not limit myself to what is herein illustrated and described and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim is:—

1. In a device of the character described, a container for a medicinal solution, a cover therefor, a discharge tube depending from the cover into the container, a piston slidably supported on said tube, spaced parallel tubes projecting from said cover, an ejector supported by the outer ends of the last mentioned tubes, one of said tubes having valve controlled communication with the discharge tube, a heating device adapted to be coupled with said cover, a water supply pipe coupled with said heating device, a valve controlling communication between the water supply pipe and said heater, and said cover having a vertical passage for directing a portion of the water supply against the piston to operate the latter, and an additional bore establishing communication between said heater and the other mentioned parallel tube for the purpose specified.

2. In a device of the character described, a container for a medicinal solution, a cover therefor, means depending from the cover for supporting the container, a discharge tube depending from the cover into the container, a piston slidably supported on said tube, spaced parallel tubes projecting laterally from the cover, said cover having a bore establishing communication between one of the parallel tubes and the discharge tube, an adjustable valve controlling said communication, a heating device adapted to be coupled with said cover, a water supply pipe coupled with the heating device, a valve controlling communication between the water supply pipe and said heating device, said cover having a vertical bore directing a portion of the water supply against the piston to operate the latter, an additional bore establishing communication between the said heater and the other of said parallel tubes, and an ejector supported by the outer ends of said parallel tubes for the purpose specified.

In testimony whereof I affix my signature.

NORMAN E. HOUSER.