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J. F. ROGERS

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POCKET SPRAYER

Filed Nov. 21, 1930

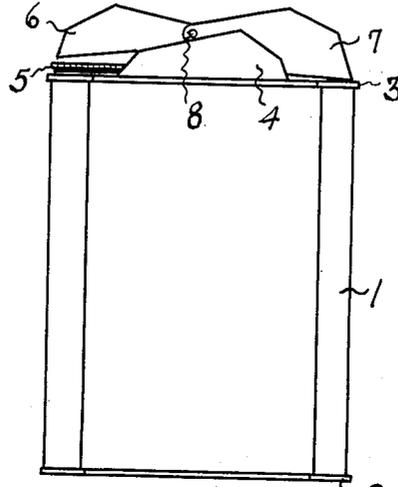


Fig. 1.

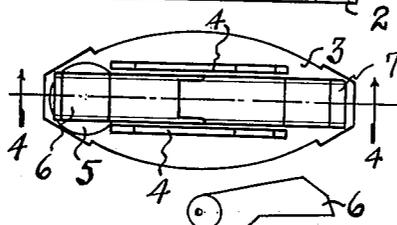


Fig. 2.

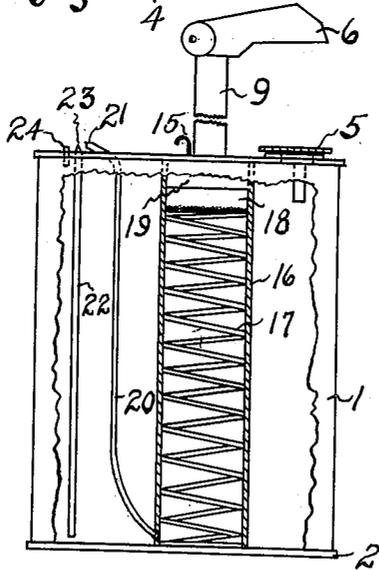


Fig. 3.

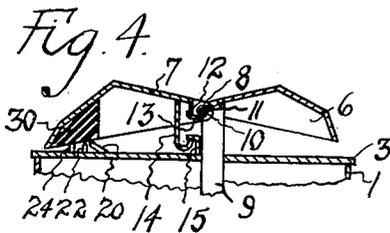


Fig. 4.

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JAMES FRANK ROGERS, OF NORTH ATTLEBORO, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ART METAL WORKS, INC., OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY

POCKET SPRAYER

Application filed November 21, 1930. Serial No. 497,138.

This invention relates in general to a perfume or liquid sprayer or atomizer.

One of the objects of this invention is the provision of a simple device of this nature in the form of a small portable article.

Another object of this invention is the provision of a simple structure for containing fluids such as perfume, and for spraying it as desired in a very fine cloud or mist.

A further object of this invention is the provision of a mechanism of this type which may be operated with one hand.

Another object of this invention is the provision of an atomizer comprising a container for the fluid, and means for spraying the fluid which means is operable with one hand.

Another object is the provision in mechanism of the above type, of an operating handle and a closure member for sealing the liquid discharge port, and means for locking both in closed position.

A still further object of this invention is the provision of the catch mechanism which is released by pressing down on the handle to free the cover.

A still further object of this invention is the provision of an operating handle and closure member mounted upon the piston rod of the air pump.

These and other objects as will appear from the following disclosure are secured by means of this invention.

The invention resides substantially in the combination, construction, arrangement and relative location of parts, all as will be described in greater detail below.

Referring to the drawing:

Fig. 1 is a side elevational view of the device of this invention in closed position;

Fig. 2 is a top plan view of this device;

Fig. 3 is a side elevational view with a portion of the container broken away and some of the parts removed; and

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 2.

The invention will best be understood by direct and detail reference to the drawing. It comprises a container shell 1 closed at the ends by the cover plates 2 and 3. On

the upper cover plate 3 are two upright parallel plates 4 between which the mechanism operates and by means of which the parts are partially hidden. At 5 is a threaded block which screws into an opening in the top cover plate through which opening the fluid is introduced into the container. Operating through the top cover plate is a square piston rod 9 upon which is rigidly mounted the operating handle 6. Pivottally supported on a pin 8 mounted on the piston rod is a cover 7. As shown in Fig. 4 a coil spring 10 encircles the pivot pin 8, and has one end 11 lying against the fixed handle 6. The pivottally supported cover 7 is provided with an inwardly projecting lug 12 against which the other end 13 of the spring lies. Projecting downwardly within the cover 7 is a hook 14 which engages a catch 15 fixedly supported on the cover plate 3. Mounted within the container as shown in Fig. 3, is a small metal cylinder 16 within which moves the piston 19 secured to the piston rod 9 and provided with a suitable packing cup of soft leather or rubber 18. Lying within the cylinder 16 between the piston and the bottom of the container is a coil spring 17. Connected to the lower end of the cylinder is a very small tube 20 which has a very fine bore. The upper end of this tube passes through the cover plate 3 and terminates in a pointed end 21. At 22 is a similar small tube extending close to the bottom of the container at one end and projecting through the cover plate to provide an exposed end 23. Another small bore 24 projects through the cover for a short distance on each side thereof. Within the cover 7, as shown in Fig. 4 is a soft rubber block 30 which is secured therein in such a position as to press down over the end of tube 24 and the ends 21 and 23 of tubes 20 and 22.

The device operates as follows:

The liquid, such as perfume which is to be sprayed is filled into container 1 by removing block 5. The liquid fills the container around cylinder 16 and around tubes 20 and 22. The container should not be filled above the lower end of tube 24. Assuming the

device is closed as shown in Fig. 1, the operator presses down on handle 6. This causes the piston 9 to move downwardly as well as cover 7. The lower end of the hook 14 which is rounded engages with the top cover plate 3, and as piston rod 9 and pivot pin 8 continue downwardly the cover 7 rotates about its pivot pin under the fulcruming action of hook 14 on the cover plate. When hook 14 moves out of engagement with stop 15, spring 10 which is under tension causes cover 7 to fly upwardly. The release of pressure on handle 6 then permits spring 17 to move the piston rod 9 and all the parts mounted thereon upwardly to the position shown in Fig. 3. The operator then presses, usually with his thumb, downwardly on handle 6 in rapid strokes causing the piston to force air up through tube 20 and out of the end 21. The end 21 is positioned so that the fine air blast is directed across the end 23 of tube 22. The rush of air across the end of this tube creates a vacuum in tube 22 and the atmospheric pressure pressing on the liquid through tube 24 permits the liquid to rise to the end 23 of tube 22, from which it is blown in a fine spray by the air blast from tube 20. The tube 24 which opens the interior of the container to the atmosphere serves to maintain atmospheric pressure therein at all times. When the operator is through with the device he places his finger so as to engage both the handle 6 and the cover 7 and presses down on them until the parts are moved to the position where hook 14 engages stop 15. When the pressure is released the parts remain in the closed position shown in Fig. 1. When the cover is in closed position as shown in Fig. 4, the soft rubber block 30 engages the openings of tubes 24, 22 and 20, particularly 24 and 22 to seal them so that the liquid cannot escape. Tube 20 should preferably have long smooth curves at each end to aid in cleaning the tube.

From the above description it will be apparent that my invention resides in certain principles of construction and operation which may be embodied in other physical forms, and I do not, therefore, desire to be strictly limited to the disclosure given for purposes of illustration, but rather to the scope of the appended claims.

What I seek to secure by United States Letters Patent is:

1. An atomizer of the type described comprising a container for the liquid to be atomized, an air pump in said container having an air delivery tube emerging therefrom, a liquid tube emerging from the container with its end terminating near the end of the air tube, a rod projecting through the container for operating the pump mechanism having a handle rigidly secured thereon, and a cover pivotally mounted on said

rod for movement about a substantially transverse axis, said cover in closed position closing the end of the liquid tube.

2. An atomizer of the type described comprising a container for the liquid to be atomized, an air pump in said container having an air delivery tube emerging therefrom, a liquid tube emerging from the container with its end terminating near the end of the air tube, a rod projecting through the container for operating the pump mechanism having a handle rigidly secured thereon, a cover pivotally supported substantially transversely of but on said rod, and means for holding the cover in closed position to cover the end of said liquid tube.

3. An atomizer of the type described comprising a container for the liquid to be atomized, an air pump in said container having an air delivery tube emerging therefrom, a liquid tube emerging from the container with its end terminating near the end of the air tube, a rod projecting through the container for operating the pump mechanism having a handle rigidly secured thereon, a cover pivotally mounted on said rod for movement about a substantially transverse axis, a spring engaging said cover and tending to cause it to rotate on its pivotal support, and means on the cover and the container for holding the cover in closed position against the action of the spring to close said liquid tube.

4. An atomizer of the type described comprising a container for the liquid to be atomized, an air pump in said container including a spring pressed piston and a piston rod connected to the piston and extending exteriorly of the container, an air tube connected to the bottom of the air pump and projecting exteriorly of the container, a liquid tube extending exteriorly of the container and terminating adjacent the end of the air tube, an air vent in the container adjacent the liquid tube, a handle rigidly secured to the piston rod, a cover pivotally supported on the piston rod for movement about an axis substantially transverse thereto, spring means for urging said cover into raised or open position, and means for locking the cover in closed position to close the air vent and liquid tube.

5. An atomizer of the type described comprising a container for the liquid to be atomized, an air pump in said container including a spring pressed piston and a piston rod connected to the piston and extending exteriorly of the container, an air tube connected to the bottom of the air pump and projecting exteriorly of the container, a liquid tube extending exteriorly of the container and terminating adjacent the end of the air tube, an air vent in the container adjacent the liquid tube, a handle rigidly secured to the piston rod, a cover pivotally

supported on the piston rod for rotation about an axis substantially transverse to said rod, spring means for urging said cover into raised or open position, engaging lugs on the cover of the container for locking the cover in closed position and with the piston at its lower limit of travel with the piston spring compressed, said cover sealing the vent and liquid tubes, and the lug on the cover engaging the top of the container when the handle is depressed to cause the cover to pivot enough to permit the lugs to disengage so that the cover spring may throw the cover upwardly.

6. An atomizer of the type described comprising a liquid container, a pump cylinder within said container, a piston slidably mounted in the cylinder, a spring in the cylinder for pressing the piston in one direction, a piston rod connected to the piston and extending exteriorly of the container, an air tube connected to the cylinder and extending exteriorly of the container, a liquid tube extending exteriorly of the container with its end adjacent the end of the air tube, a vent tube extending exteriorly of the container adjacent the end of the liquid tube, a handle on the piston rod, a cover transversely pivotally supported on the piston rod, a spring engaging the cover to cause it to pivot, resilient means in the cover for closing the ends of the vent tube and the liquid tube when the piston rod is depressed and the cover closed, and means on the cover and the container for locking engagement when the piston rod is moved all the way into the container.

7. An atomizer of the type described comprising a liquid container having a lug on the top thereof, a pump cylinder within said container, a piston slidably mounted in the cylinder, a spring in the cylinder for pressing the piston in one direction, a piston rod connected to the piston and extending exteriorly of the container, an air tube connected to the cylinder and extending exteriorly of the container, a liquid tube extending exteriorly of the container with its end adjacent the end of the air tube, a vent tube extending exteriorly of the container adjacent the end of the liquid tube, a handle on the piston rod, a cover transversely pivotally supported on the piston rod, a lug on said cover for engaging with the lug on the container top, a spring engaging the cover to cause it to pivot, resilient means in the cover for closing the ends of the vent tube, and the liquid tube when the piston rod is depressed and the cover closed, the lug on the cover which engages the lug on the container top acting, when the handle is depressed, to cause the cover to pivot on its support sufficiently to disengage the lugs so that the cover spring may throw the cover upwardly.

8. The combination in an atomizer of a

fluid container, an air chamber, a piston rod reciprocable in said air chamber, cooperating fluid and air nozzles located on top of said container and respectively in communication with said fluid container and air chamber, an arm rigidly secured to said piston rod, a cover for closing said nozzles pivotally supported transversely on said piston rod, a spring engaging the cover and adapted to cause it to rotate on its support, and means on the cover and container for holding the cover in closing position.

9. An atomizer comprising a fluid container, a fluid nozzle disposed on top of said container, a pump plunger projecting from the top of said container, means tending at all times to move the plunger out of the container, a nozzle closing cover movably mounted on said plunger and normally adapted to close said nozzle, means tending to move the cover into position to uncover the nozzle, engageable and releasable means on the cover and the container for holding said cover when engaged in closing position, and a connection between said plunger and cover for causing said last mentioned means to interengage and be held interengaged by the outward movement of said plunger under control of said first mentioned means.

10. An atomizer comprising a fluid container, a fluid nozzle disposed on top of said container, a pump plunger projecting from said container and operable to produce a spray of liquid from said nozzle, means tending at all times to move the plunger out of the container, a cover for closing said nozzle, means tending normally to move the cover into a position to uncover and open said nozzle, engageable and releasable hooks on the cover and container for holding the cover in closing position when interengaged, and a cooperative connection between said cover and plunger for holding said hooks interengaged upon outward movement of said plunger under the influence of said first mentioned means.

In testimony whereof I have hereunto set my hand on this 13th day of November A. D., 1930.

JAMES FRANK ROGERS.