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APPARATUS FOR THE SPRAYING OF LIQUIDS

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Fig. 1.

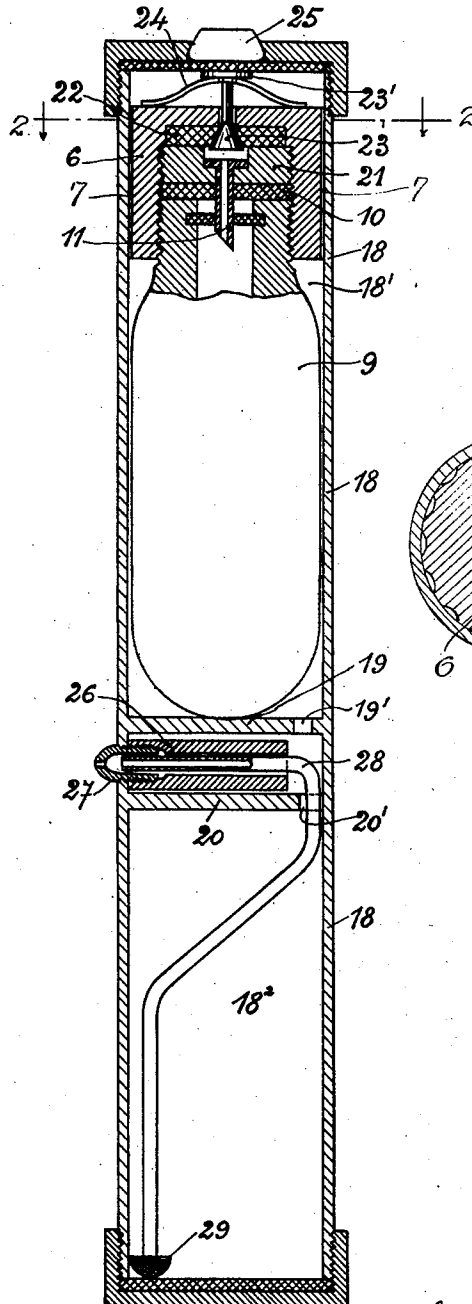
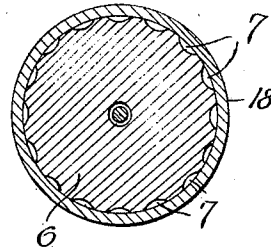


Fig. 2.



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APPARATUS FOR THE SPRAYING OF LIQUIDS

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My invention relates to improvements in or relating to apparatus for the spraying of liquids.

Heretofore these apparatus generally comprised an indiarubber bulb which has a very short life by reason of the rubber being rapidly deteriorated through its contact with air or with perfumed alcohol. Other known apparatus comprise the use of a pressure piston, a reciprocating motion thereof acting either directly upon the liquid to be sprayed or upon the air in the container. Lastly, there exists also a type of apparatus based upon the use of a strong inner gaseous pressure acting permanently upon the liquid.

The present improvements relate to an apparatus in which the ejection of the liquid to be sprayed is produced through the action of a compressed gas or of a liquefied gas contained in an inner removable case.

The objects of my improvements are essentially:

Firstly, to provide an apparatus in which the compressed gas contained in an inner case communicates with the inside of the liquid container during the ejection only, the liquid container remaining under no inner pressure other than atmospheric pressure during the rest of the time.

Secondly, to provide an apparatus in which compressed gas is expanded by appropriate means before acting upon the liquid in order to prevent dangerous high pressures inside the container during the working period.

Thirdly, to provide a compressed gas spraying apparatus in which the gas acts simultaneously to eject the liquid and to divide and atomize the ejected jet in order to produce a dry spraying, that is to say leaving no trace upon the objects upon which the spray is directed.

Fourthly, to provide a spraying apparatus working with compressed gas and using removable cases which may be easily taken out and replaced as well as quickly interchanged with other similar cases.

Lastly, my invention consists also in the details of construction of my improved spraying apparatus which will be hereafter more fully described.

Other objects of my invention will appear as this description proceeds, reference being had to the accompanying drawings in which:

Fig. 1 shows a longitudinal section of one form of execution of the apparatus.

Fig. 2 is a sectional view taken along the plane of the line 2—2 of Fig. 1.

Referring to the drawings, the apparatus comprises a body 18 preferably cylindrical, tightly closed at both ends by covers pressing strongly upon packing rings. Said body 18 is divided into two principal compartments 18¹, 18² limited by partition walls 19, 20. In the upper compartment 18¹ is placed a case 9 having a smaller diameter than the inner diameter of the body 18 and filled with liquid carbonic acid or other appropriate compressed or liquefied gas, said case resting on the partition wall 19. A cap 6 which is screwed upon the end of the case 9 is provided with an inner ring 21 having for its object to lock a plastic packing 10 upon the case. Upon the ring 21 is placed a rubber ring having a central conical bore closed by means of a valve 23 which can descend without obturating the orifice of the hollow needle 11 placed underneath in the ring 21. The valve 23 comprises a head 23¹ under which a spring blade acts with sufficient pressure to cause the valve to contact with its seat. In this position the head 23¹ will normally engage the upper joint which closes the body 18. On the other side of said joint a push-button 25 retained by the cover allows for downward movement of the valve when pressure is exerted upon its head. The cap 6 is formed about its periphery with longitudinal grooves 7 which establish fluid communication between the space above the cap and the interior of the body member 18 around the case 9.

In the space formed between the partition walls 19, 20 each provided with an opening 19¹, 20¹ respectively, is placed a tubular part 26 having a spout 27 provided with a small hole and conveniently fixed to the wall of body 18. A tube 28 is engaged loosely in the tubular part 26 it passes through the opening 20¹ in the partition wall 20 and extends through the compartment 18² to the

bottom of same. As its lower end the tube 28 is preferably provided with a strainer 29 of fine wire gauze for instance.

The apparatus is actuated by simply pressing on the push button 25. This pressure causes the opening of the valve and thus allows the passage of the gas which expands down between the cap 6 and container 21 into chamber 18', then through opening 19' and partition 19, whereupon it reaches the tubular part 26, then passes through opening 20' in partition 20 into the container 18², wherein it acts upon the liquid and causes it to rise in the tube 28. As it escapes from the latter the liquid is atomized by the gas around the tube 28 which passes through the tubular part 26. The spray may be sent in all directions under the horizontal plane. The release of the push-button will cause the immediate interruption of the spraying.

It will be obvious that in the apparatus described the taking out and the replacing of the case may be effected very rapidly and that the filling-in of the liquid can be effected without any difficulty.

It will also be apparent that the compressed gas coming from the case 9 does not act upon the liquid in the container before having been considerably expanded and during the whole operation all excess of pressure is avoided in the container. It is also to be noted that the taking off of compressed gas from the case takes place only during the spraying and that the gas thus taken off is completely utilized for the spraying so that when the apparatus is not in use the inner receptacle is not under pressure. Lastly it will be seen that the spraying of the jet ensures an atomizing such that the jet coming out of the apparatus is positively dry.

While I have described the details of construction of preferred embodiment of my invention, it is to be clearly understood that my invention is not limited to these details of construction but is capable of other adaptations and modifications within the scope of the appended claims.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is:—

1. An apparatus for spraying liquids which comprises a tubular body member, a transverse partition in said body member dividing it into two principal compartments, one adapted to contain the liquid to be sprayed and the other having fitted therein a compressed gas container which provides a clearance space between the container and the inner wall of said compartment, a check valve controlling the escape of gas from the container, a cap provided with an imperforate elastic sealing member closing the end of the body member, means operable upon the elastic sealing member from the exterior of the cap for unseating the check valve to

permit gas from the container to enter the body member, a discharge nozzle connecting with the liquid holding compartment through an opening in the partition and a tube extending from the discharge nozzle through the partition to below the surface of the liquid in the compartment.

2. An apparatus for spraying liquids which comprises a tubular body member, a partition in said body member dividing it into a gas containing compartment and a liquid containing compartment, a compressed gas case in the gas container compartment providing a clearance space between the case and the inner wall of said compartment, a cap at the end of said gas case in proximity to the end of the body member, said cap having a hollow perforating needle and a check valve controlling the escape of gas through said hollow perforating needle to the body member, a second cap provided with an imperforate elastic sealing member closing the end of the body member, means operable from the exterior of the second cap through the elastic sealing member for unseating the check valve to permit gas from the case to enter the body member, a discharge nozzle in the body member in open communication with the liquid containing compartment through an opening in the partition and a tube extending from the discharge nozzle through the opening in the partition to near the bottom of the liquid containing compartment.

In witness whereof, I have hereunto signed my name.

RENÉE MARIE-LOUISE LEMOINE, née TROUILLET.

CERTIFICATE OF CORRECTION.**Patent No. 1,742,604.****Granted January 7, 1930, to****RENEE MARIE-LOUISE LEMOINE, NEE TROUILLET.**

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 18, after the word "plane" and before the period insert the words "by appropriately tilting the apparatus"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of February, A. D. 1930.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.