

2,356,865

Filed June 6, 1942



UNITED STATES PATENT OFFICE

2,356,865

SPRAY GUN

William C. Mason, Slingerlands, N. Y., assignor to
Amen David Abbott, Albany, N. Y.

Application June 6, 1942, Serial No. 446,046

4 Claims. (Cl. 299—140)

My invention relates to sprayers and particularly to spraying devices of the gun type which are adapted simultaneously to spray a plurality of different fluids. There are many different fluids, particularly liquids, which when mixed together produce a desirable effect especially in the coating of certain surfaces, for example, glass for use as a mirror. The reaction between some of these liquids takes place so quickly that it is impracticable to mix them together and then permit any appreciable interval of time to elapse before the mixture is applied to the object. Such mixtures can best be applied by spraying the ingredients thereof together so that the mixing and application to the object takes place practically simultaneously. The separate ingredients of such mixtures and particularly the mixtures themselves are prone to clog the passages in spraying devices which should be readily accessible for cleaning.

Devices for spraying a plurality of ingredients have heretofore been proposed in which the ingredients, or at least some of them, are conducted to the nozzle through tubes of rubber or other resilient material and in which the flow through the tubes is shut off by squeezing of the tubes by separate means cooperating with each tube. Due to various factors it is not always possible simultaneously to shut off the flow from all the tubes and, moreover, since the inherent resiliency of the tubes must be relied upon to effect a reopening thereof, they do not always satisfactorily function in this way. The usual practice has been to compress the tubes separately against a hard backing with the result that when the pressure is relieved the tube often does not spring back to its normal size. One of the objects of my invention therefore is to provide a device of this character in which resilient tubes are used to convey the various ingredients to the nozzle but in which these tubes are positioned, one upon the other, within a confined space, so that the flow through all of the tubes may be shut off by compressing them simultaneously one against the other, thus to build up a substantial thickness of resilient material which is subjected to compression. Another object is to provide a device which can be readily and quickly disassembled for cleaning. A further object is to provide a gun which can be manipulated conveniently and which can be cheaply constructed.

With these and other objects in view my invention includes the novel elements and the arrangements and combinations thereof de-

scribed below and illustrated in the accompanying drawing, in which—

Fig. 1 is a side elevation view of my gun;

Fig. 2 is a side elevation view with half of the casing removed;

Fig. 3 is a longitudinal section of the nozzle;

Fig. 4 is a section of the complete gun (both halves of the casing in place) in about the plane 4—4 of Fig. 2; and

Fig. 5 is a fragmentary section in the plane 5—5 of Fig. 4.

Referring to the drawing, my gun comprises a hollow casing 1, preferably in the form of a pistol, and comprising a handle portion 2 and a barrel portion 3. The casing is formed in two parts, 4 and 5, preferably of light metal such as cast aluminum, and the half-casings are secured together by screws, one of which is shown in dotted outline at 6 in Fig. 4, and which pass through holes 7 and 8 in the half casing 5, as shown in Fig. 2.

The nozzle 9 may comprise an integral brass casting generally cylindrical in form and within which the necessary passages can be provided simply by drilling. Thus the passage 10, through which the mixture is discharged, is formed by merely drilling the nozzle axially thereof from the front, as shown. The passage for the air or other fluid which aspirates the other ingredients into the mixing chamber 11 and ejects the mixture through the passage 10 is preferably in a straight line with the passage 10 and is formed by merely drilling the nozzle 9 axially from the rear to form the passage 12. The passages 10 and 12 are then preferably connected by drilling a smaller diameter connecting passage 13. Passages 14 and 15 through which two different ingredients are conducted to the mixing chamber 11 are formed by merely drilling the nozzle from the rear, as shown, and the mixing chamber is formed by cross-drilling the nozzle so as to form a passage intersecting both the ingredient passages 14 and 15 and the air passage 10. The open ends of the mixing chamber 11 are threaded for a short distance inwardly and are sealed by means of screws 16 and 17 which are readily removable for cleaning purposes. The rear of the nozzle up to the shoulder 18 is of somewhat smaller diameter than the front portion of the nozzle and the nozzle is secured in place merely by frictional engagement with the casing halves between which it is clamped when they are secured together, as shown at 19. The discharge end of a metal air pipe 20 and nipples

21 are merely sweated into the rear end of the nozzle.

The air pipe 20 which is thus made substantially integral with the nozzle extends rearwardly through the interior of the barrel portion of the casing and curves downwardly through the hollow handle portion, as shown. At the bottom of the handle the threaded nipple 22 is sweated or otherwise secured to the pipe 20 and serves as a connecting means for the air line. Rubber tubes 23 and 24 have their ends forced over the nipples 21, as shown in Fig. 2 and extend rearwardly and downwardly through the casing to emerge therefrom at the bottom, as shown at 25. In their passage through the hollow casing the tubes 23 and 24 pass through a restricted space 26 formed by the lug or projection 27 on the inside of half casing 4 and the lug or projection 28 on the half casing 5. Within this space which is only sufficiently wider than the tubes themselves to permit their lateral expansion when compressed to closed position, the tube 23 is immediately above the tube 24 and in contact therewith. Resting upon the top of the tube 23 is the flat member or cam follower 29 which is pivotally mounted on the pin 30 cast integral with the half casing 5. Cooperating with the member 29 is a cam 31 which is pivotally mounted on the screw 6 which passes through the hole 8 in the half casing 5. The cam is provided with an arm 32 which projects outside of the gun, as shown, in a convenient position to be actuated by the thumb or finger of the operator. When pulled downwardly to the position 32', shown by the dotted lines in Fig. 1, the cam pushes the follower 29 downwardly and compresses the tubes against each other to effect a closure thereof. This cam is so designed that when it is pulled downwardly to the position 32' it will not return itself to the tube-open position but must be moved there manually to relieve the closing pressure on the tubes. The casing casting is provided with an eye 33 thereon whereby the gun may be hung on a nail or hook.

In order to compensate for slight variations in size of the tubes 23 and 24, I provide an adjusting means comprising the screw 34 cooperating with the plate 35 whereby the depth of the space 26 may be varied. By turning the screw 34 inwardly the plate 35 may be raised from the lug 28 on the half casing 5. In order to prevent displacement of the plate 28 the ends thereof are turned downwardly and overlie the end of the lug 28.

From the foregoing it will be apparent that my gun may be readily disassembled merely by moving the two screws which hold the casing halves together whereupon the tubes 23 and 24 may be pulled from the nipples 21 on the nozzle and the screws 16 and 17 removed from the ends of the mixing chamber so that all the passages in the nozzle are readily accessible for cleaning. By placing the tubes one on top of the other and compressing them together and against each other instead of separately a resilient cushion of substantial thickness is built up under the cam fol-

lower so that the frequent compression of the tubes is less injurious to the rubber; the compressing means may be of very simple construction; and the simultaneous opening and closing of the tubes become quite positive.

What I claim is:

1. A spray pistol for simultaneously spraying a plurality of fluids comprising a handle portion, a barrel portion, a nozzle on said barrel portion, a plurality of resilient tubes within said handle for conducting a plurality of fluids to said nozzle; said tubes at least in one zone in said handle being confined in closely adjacent relation to each other; a cam for compressing said tubes against each other in said zone to shut off the flow of fluid therethrough, and a lever for manually actuating said cam.

2. A spray gun for simultaneously spraying a plurality of fluids comprising a nozzle, a plurality of resilient tubes in said gun for conducting a plurality of fluids to said nozzle; said tubes at least in one zone thereof being closely confined in said gun in contiguous relation to each other, a movable element adjacent one of said tubes in said zone, and manually actuated means for moving said element forcibly against said adjacent tube to compress the same and the other tubes to shut off the flow of fluid therethrough.

3. A spray gun for simultaneously spraying a plurality of fluids and comprising a hollow casing having a hand grip portion and a barrel portion; said casing being divided longitudinally thereof into two parts and screws securing said parts together in assembled relation, a nozzle secured in the end of said barrel portion by frictional engagement with contiguous portions of said casing when assembled, a plurality of resilient tubes in said casing for conducting fluids to said nozzle; said tubes at least in one zone thereof within said casing being positioned in confined, side-by-side relation; and manually actuated means for simultaneously compressing said tubes against each other in said confined zone for shutting off the flow of fluid therethrough.

4. A spray gun for simultaneously spraying a plurality of fluids and comprising a hollow casing having a hand grip portion and a barrel portion; said casing being divided longitudinally thereof into two parts and screws securing said parts together in assembled relation, a nozzle secured in the end of said barrel portion by frictional engagement with contiguous portions of said casing when assembled, a plurality of resilient tubes in said casing for conducting fluids to said nozzle; said tubes at least in one zone thereof within said casing being positioned in confined, side-by-side relation; a cam follower adjacent one of said tubes, and a manually actuated cam cooperating with said follower for forcing it against the adjacent tube and said tubes against each other to shut off the flow of fluid therethrough.

WILLIAM C. MASON.