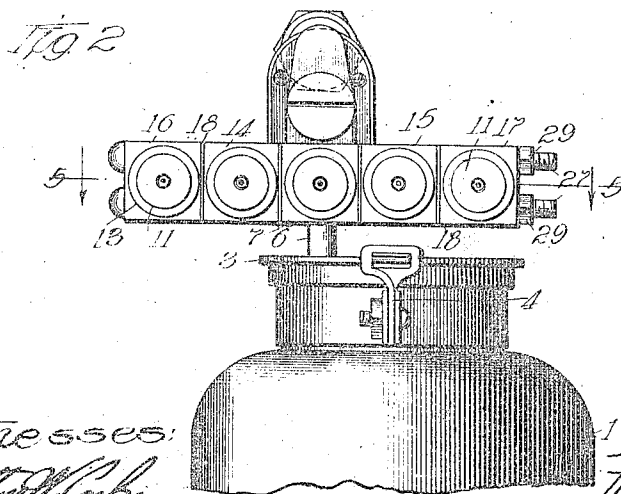
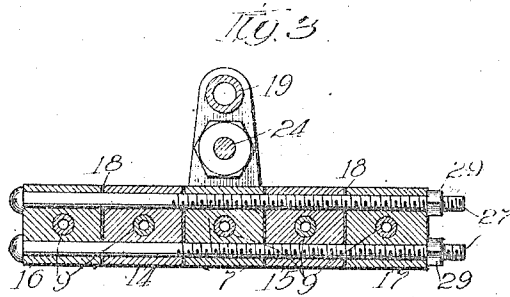
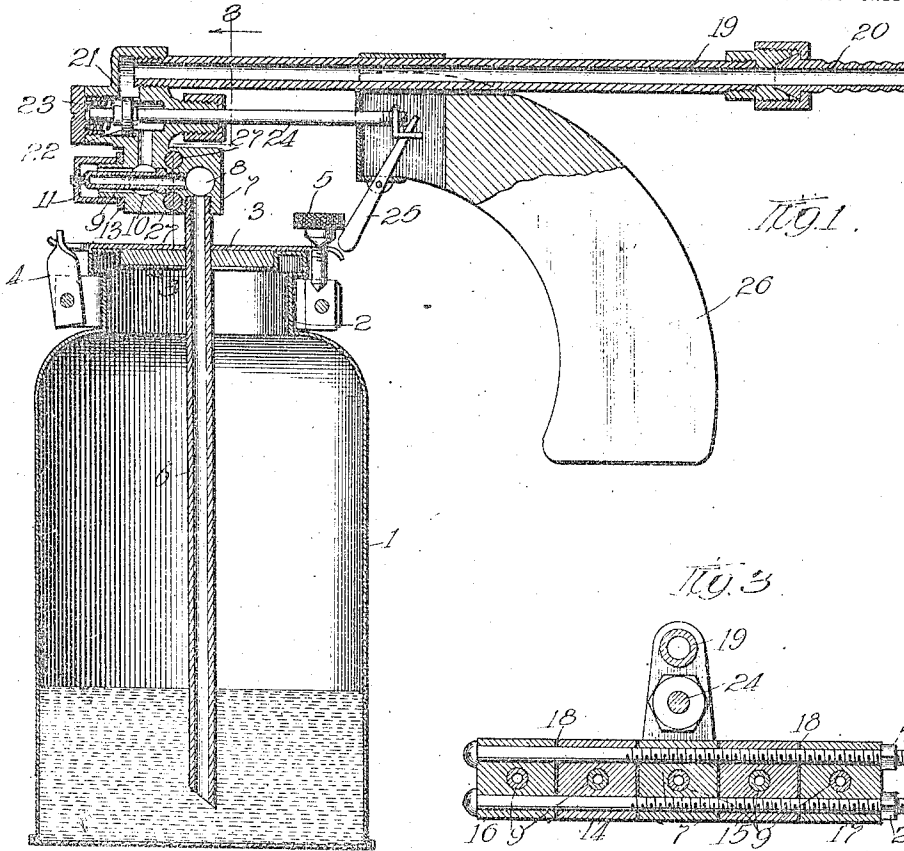


F. F. BRADLEY.
 SPRAYING APPARATUS.
 APPLICATION FILED MAR. 18, 1915.

1,180,818.

Patented Apr. 25, 1916.

2 SHEETS—SHEET 1.



Witnesses:

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 2 SHEETS—SHEET 2.

Fig 4

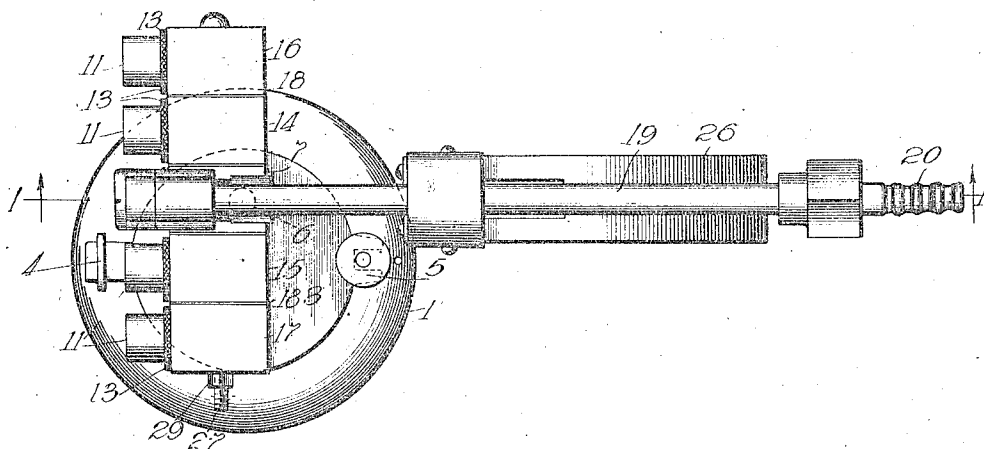


Fig 5

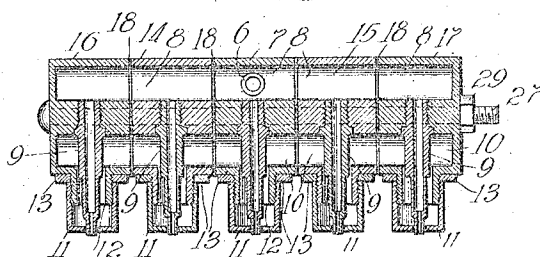
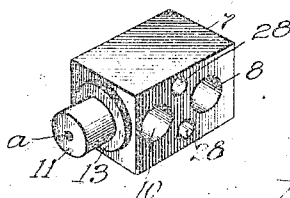


Fig 6



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UNITED STATES PATENT OFFICE.

FRANKLIN F. BRADLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO BRADLEY & VROOMAN COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SPRAYING APPARATUS.

1,130,818.

Specification of Letters Patent.

Patented Apr. 25, 1916.

Application filed March 18, 1915. Serial No. 15,214.

To all whom it may concern:

Be it known that I, FRANKLIN F. BRADLEY, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Spraying Apparatus, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to apparatus for subdividing or spraying liquid and has for its general object the provision of a device of this character that employs a plurality of nozzles which may readily be varied in number to alter the number of sprays which the device may produce.

In carrying out my invention there are provided a number of nozzle units and means for holding them in assembly, the number of units assembled being varied according to the number of sprays to be formed.

The invention is of particular service when used for the application of paint, varnish or lacquer to surfaces that are to be painted, though the invention is not to be limited to any particular use to which it may be put.

I will explain my invention more fully by reference to the accompanying drawings showing the preferred embodiment thereof and in which—

Figure 1 is a vertical sectional elevation taken generally on line 1 1 of Fig. 4; Fig. 2 is a front view of the structure; Fig. 3 is a view of a part of the structure on line 3 3 of Fig. 1; Fig. 4 is a plan view of the structure; Fig. 5 is a view on line 5 5 of Fig. 2; and Fig. 6 is a perspective view of one of the nozzle units.

Like parts are indicated by similar characters of reference throughout the different figures.

The liquid to be sprayed is disposed within any suitable container, the container 1 herein shown being portable and having a neck 2 which is closed by a lid 3. The lid is connected with the container or bottle neck 2 at 4, on one side of the bottle, and may be held in a closed position by the fastening device 5 swingingly secured to the opposite side of the bottle. The piping or duct 6 through which the liquid to be sprayed is passed is desirably in fixed rela-

tion with the cover so as to have a predetermined position with respect to the bottom of the bottle. The upper end of the piping or duct 6 is connected with a nozzle unit 7 which has a liquid passage 8 and a nozzle tube 9 whose bore is in communication with the passage 8. The nozzle unit 7 also has an air passage 10 which is in communication with the interior of a forward cap 11 carried by this nozzle unit, the forward end of the nozzle tube 9 being reduced and projecting through an opening *a* in the forward end of the cap 11, this opening being sufficiently large to afford an annular spacing between the cap and the forward end of the nozzle tube. The nozzle unit desirably has a forwardly projecting tubular extension 12 with which the cap 11 has threaded connection whereby the cap may be adjusted longitudinally of the nozzle tube. The adjustment which is effected between the cap and nozzle tube is secured by the clamping ring 13 which is in threaded connection with the tubular extension and engages the inner end of the cap 11. The passages 8 and 10 are respectively merged by being continued through the nozzle units 14 and 15, and terminate in the nozzle units 16 and 17. All of the nozzle units have many similar features of construction, similar parts being given similar characters of reference.

Suitable layers of packing 18 are interposed between engaging faces of adjacent nozzle units, these layers of packing having openings in alinement with the passages 8 and 10. The upper end of the duct 6 is thus in serial relation to each of the nozzle tubes 9, these nozzle tubes being shown abreast so that the liquid issuing from the duct 6 will divide itself into parallel streams in issuing through the nozzle tubes. The nozzle passage 10 is adapted to receive air under pressure, the air, when flowing, dividing into parallel streams that pass forwardly through the tubular extensions 12 and the bores of the caps surrounding these extensions. Parallel streams of air, in issuing through the openings *a* in the forward ends of the caps 11, will effect the passage of liquid through the pipe 6 and the various nozzle tubes 9 in a manner well known by those skilled in the art. Air under pressure is conveyed to the passage 10 through a pipe 19 that may be connected with a tank of

compressed air by a flexible hose attached to the pipe 19 at 20. The pipe 19 is connected at its forward end with the air chamber 21 carried by the nozzle unit 7. The interior of this air chamber 21 is connected with the air passage 10 by a duct in which a valve 22 may be moved for the purpose of establishing and breaking communication between the air chamber 21 and the air passage 10.

In the embodiment of the invention illustrated, the valve 22 is closed by a spring 23 when the spring is free to act. The valve 22 is carried by a plunger rod 24 operable by a finger lever 25 to open the valve 22 against the force of the spring 23 and of the compressed air. When the valve 22 is thus opened air will rush forwardly through the openings *a* in the nozzle units consequently inducing the upward flow of liquid through the pipe 6 and the plurality of nozzle tubes 9. A handle 26 is secured to the pipe 19 and the finger lever 25 is secured to the handle, the handle being shaped readily to permit the index finger of the user to engage the finger lever to move the rod 24 forwardly and thereby opening the valve 22 to cause the flow of air and, consequently, the flow of liquid. The number of nozzle outlets may be increased by adding units similar to units 14 and 15 and properly disposed packing strips 18. The number of nozzle units may readily be reduced to three by removing the nozzle units 14 and 15. Any suitable means for clamping the nozzle units in coöperative assembly may be employed, the means shown including two long bolts 27 which pass through bolt holes 28 provided in the various nozzle units, the fixed heads of the bolts being shown in engagement with the nozzle units 16 while the bolt nuts 29 serve firmly to clamp the assembled nozzle units together so that the passages 8 and 10 are sealed except where the liquid and the air is to flow in the normal operation of the device. In the form of the invention illustrated the central nozzle unit and the end nozzle units are separated by intervening nozzle units that are interchangeable for the purpose of replacement and repair. The end nozzle units are also interchangeable by turning them up side down.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but Having thus described my invention I

claim as new and desire to secure by Letters Patent the following:—

1. A spraying device including a plurality of separable nozzle units each having a passage for liquid, these liquid conveying passages of the nozzle units being merged into a continuous passage, each nozzle unit having a nozzle tube in communication with the liquid conveying passage of such unit, and an air passage upon the exterior of the nozzle tube for conveying air under pressure and discharging at the discharge end of the nozzle tube, the air conveying passages of the nozzle units being merged into a continuous passage.

2. A spraying device including a plurality of separable nozzle units each having a passage for liquid, these liquid conveying passages of the nozzle units being merged into a continuous passage, each nozzle unit having a nozzle tube in communication with the liquid conveying passage of such unit, and an air passage upon the exterior of the nozzle tube for conveying air under pressure and discharging at the discharge end of the nozzle tube.

3. In a spraying apparatus, the combination with a liquid container; of a nozzle structure that includes a plurality of separable nozzle units having liquid conveying passages that are merged into a passage that has communication with the container.

4. In a spraying apparatus, the combination with a liquid container; of a nozzle structure that includes a plurality of separable nozzle units having liquid conveying passages that are merged into a passage that has communication with the container, said nozzle units also having air passages for conveying air under pressure to effect the flow of liquid.

5. In a spraying apparatus, the combination with a liquid container; of a nozzle structure that includes a plurality of separable nozzle units having liquid conveying passages that are merged into a passage that has communication with the container, said nozzle units also having air passages for conveying air under pressure to effect the flow of liquid these latter air passages being merged into a single passage for connection with a source of compressed air.

In witness whereof, I hereunto subscribe my name this 9th day of March, A. D. 1915.

FRANKLIN F. BRADLEY.

Witnesses:

E. M. ROSENTHAL,
F. A. MAW.