E. C. BENNETT.

FLUID DISPENSING APPARATUS.

APPLICATION FILED DEC. 17, 1912.

1,085,789.

Patented Feb. 3, 1914.

Fig. 1.

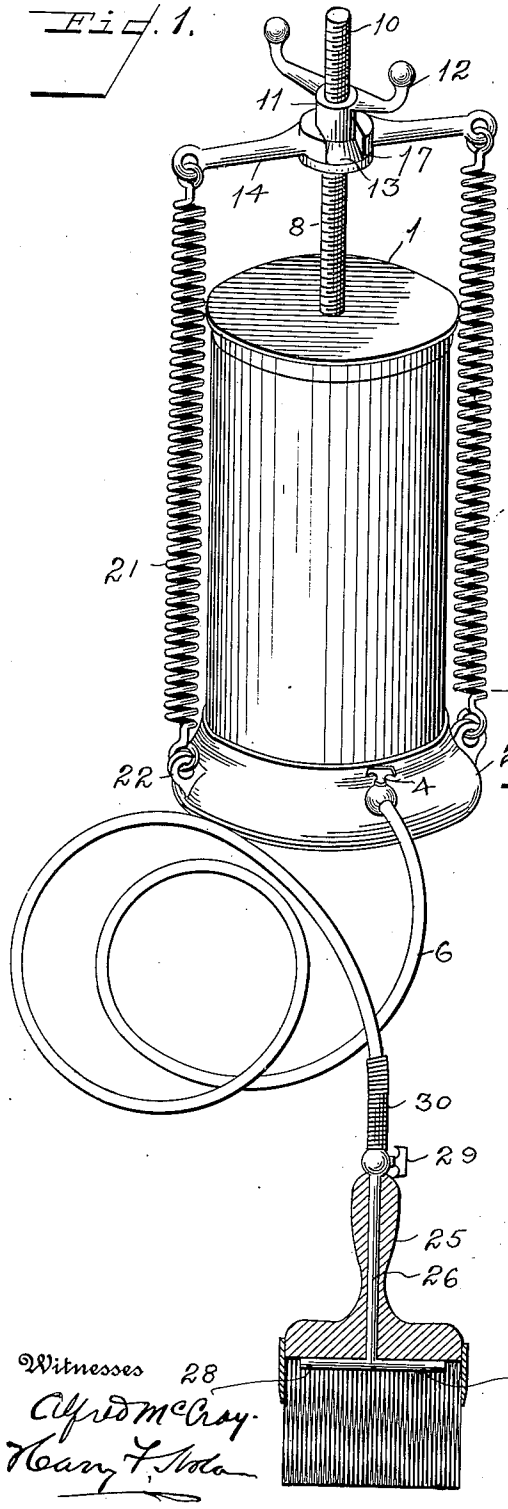


Fig. 3

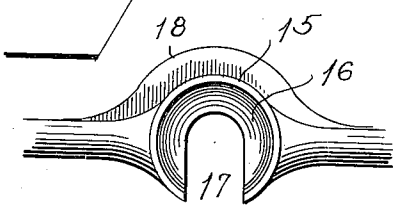


Fig. 4.

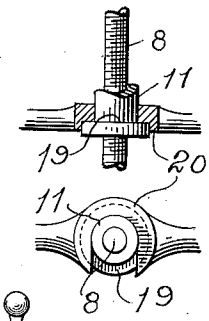
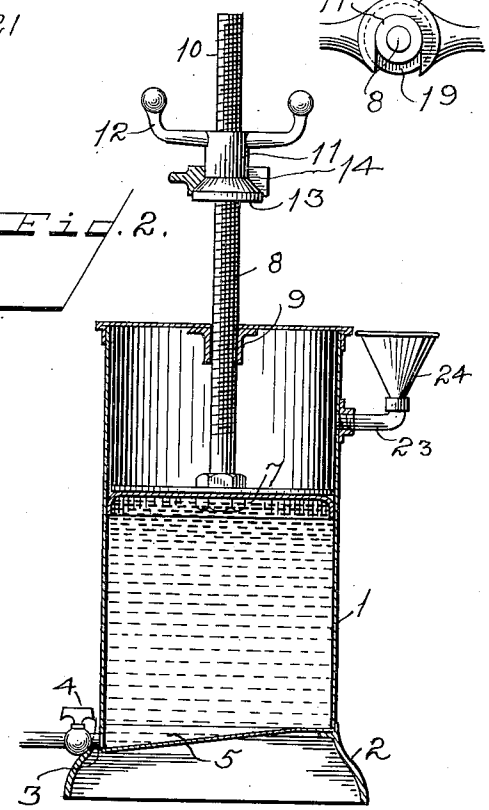


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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FLUID-DISPENSING APPARATUS.

1,085,789. Specification of Letters Patent. Patented Feb. 3, 1914.

Application filed December 17, 1912. Serial No. 737,245.

To all whom it may concern:

Be it known that I, EDGAR C. BENNETT, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Fluid-Dispensing Apparatus, of which the following is a specification.

My invention relates to fluid dispensing apparatus.

The object of the invention is to simplify the structure as well as the means and mode of operation of such devices whereby they will not only be cheapened in construction but will be more efficient in use, automatic in operation, easily and quickly adjusted and unlikely to get out of repair.

A further object of the invention is to provide improved means for forcibly expelling the fluid, and for varying the pressure with which the fluid is discharged, and to place the discharging apparatus under tension with minimum exertion of the operator.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof and the mode of operation or their equivalents as hereinafter described and set forth in the claims.

In the drawings, Figure 1 is a perspective view of the assembled apparatus equipped with an applicator for applying the paint. Fig. 2 is a vertical sectional view of the assembled apparatus. Fig. 3 is a detail bottom plan view of the yoke. Fig. 4 is a detail view of a modification of the yoke and its connection.

Like parts are indicated by similar characters of reference throughout the several views.

While the fluid discharging apparatus forming the subject matter hereof has been herein shown and described as a stationary apparatus which may however be carried from place to place, it is obvious that an apparatus embodying similar features of construction but of smaller size might be carried on the back of the operator in the manner of a knapsack. It is equally obvious that a similar apparatus but of larger size might be mounted upon wheels for convenient transportation from place to place without interfering in any way with the principles of construction or mode of operation.

In constructing the apparatus, there is employed a reservoir 1 preferably, though not necessarily, cylindrical in form for the spray solution, paint or other liquid to be discharged. The reservoir 1 is mounted upon a suitable base 2. A discharge conduit 3 leads from the reservoir 1 and is provided with a cut off valve 4. The discharge conduit 3 preferably, though not necessarily, communicates with the interior of the reservoir through an inclined channel or groove 5 in the bottom of the reservoir. A flexible conduit or hose connection 6 leads from the discharge conduit 3 to the applicator as hereinafter mentioned. If desired the discharge conduit 3 may be divided into several branches, each of which may be connected with an applicator thus enabling several operators to use the same apparatus.

Mounted to reciprocate within the reservoir 1 is a piston 7 the rod or stem 8 of which projects through a suitable bearing sleeve 9 upon the cover of the reservoir and is screw threaded on its outer portion as shown at 10. For convenience and rapidity of adjustment the screw thread of the piston rod 8 is preferably made of great pitch. Screw threaded upon the piston rod 8 is an adjusting nut or sleeve 11 provided with radially disposed arms 12 by which the sleeve may conveniently be rotated. At its lower end the sleeve 11 is provided with an inclined or convex flange or collar 13.

Engaging the flange 13 of the nut or sleeve 11 is a transverse detachable yoke 14 having at its central portion an enlargement 15 formed with a concave under surface 16 corresponding to the convex inclined surface of the flange or collar 13. The enlarged central portion of the yoke 14 is provided with a laterally disposed slot 17 of sufficient size for the nut or sleeve 11 to enter therein. The construction is such that when the sleeve 11 is engaged within the slot 17 of the yoke 14 and the yoke is lowered longitudinally upon the sleeve 11 until the concave face 16 thereof engages the convex flange 13 the yoke cannot be readily disengaged by a lateral movement without first elevating the yoke above the plane of the convex flange 13.

For the purpose of strengthening the central portion of the yoke a rib 18 is pref-

erably provided. While the convex concave formation of the sleeve flange 13 and yoke 14 thus described is the preferred form, it is obvious that this construction may be modified. For instance the contour of the parts might be reversed and the annular flange 13 of the nut or sleeve 11 might be formed with a concave depression in the upper face thereof to be engaged by a corresponding protruding portion upon the yoke 14. It is equally obvious that the collar 13 might be formed with flat parallel faces as shown at 19, in the modification, Fig. 4, the yoke being formed with a pendant flange 20 engaging about the periphery of the collar 19. In this construction the flange 20 would prevent the lateral displacement of the yoke until elevated above the plane of the flange 19. Any such construction which would prevent the accidental lateral displacement of the yoke while permitting a revoluble movement of the nut or sleeve 11 independent of the yoke would serve the purpose.

Engaged with the opposite ends of the yoke 14 are helical retracting springs 21 which are connected at their opposite ends to ears or lugs 22 upon the base 2. The tendency of the springs 21 when placed under tension is to reciprocate the piston 7 downward within the reservoir 1.

Communicating with the reservoir 1 at a point above the highest plane of operation of the piston 7 is an inlet conduit 23 communicating with a funnel 24 through which the liquid may be introduced to the reservoir. For convenience the funnel 24 is preferably detachable from the reservoir and it may be provided with any suitable filter or screen in the usual manner.

Any suitable nozzle or applicator may be employed with the apparatus. For use as a spraying device the applicator will preferably comprise a section of pipe terminating in a suitable spray nozzle adapted to distribute the liquid in a fine spray. In Fig. 1 there has been shown an applicator comprising a paint brush 25 of ordinary construction. The handle of the brush 25 has been provided with a longitudinally disposed channel through which extends one arm 26 of a T shaped conduit, the transverse arm 27 of which is located within the body of bristles forming the brush and is perforated as shown at 28. The conduit 26 communicates with the flexible conduit or hose 6 and for convenience of the operator is preferably provided adjacent to the handle of the brush with a cut off valve 29. To prevent the breaking of the flexible conduit 6 by being abruptly bent adjacent to the applicator there is provided a protective helical coil 30 which permits a limited flexing movement of the conduit adjacent to the applicator but prevents any abrupt bending thereof. A band 31 preferably of rubber or some other flexible material but which might be constructed of metal encircles the body of the brush 25 and projects toward the extremities of the bristles a limited distance beyond their juncture point with the handle and beyond the transverse perforated conduit 27. This band forms in the applicator an auxiliary reservoir to prevent the loss of paint and to momentarily retain the discharge between strokes of the brush.

In the operation of the apparatus after the contents of the reservoir 1 have been discharged the piston 7 with the nut or sleeve 11 and yoke 14 carried upon the stem 8 of the piston will be found in their lowermost position. The yoke 14 is disconnected from the sleeve 11 by lifting the yoke upward to disengage it from the flange 13 and then shifting it laterally to disengage the nut or sleeve 11 from the slot 17. If the tension of the retracting springs 21 is found to be too great to permit the ready disengagement of the yoke and sleeve, the sleeve 11 may be screwed downward upon the piston stem 8 by means of the arms 12 until the tension of the retracting springs 21 is relaxed. The yoke 14 having been disengaged from the piston the latter is raised to the upward limit of its stroke where it will occupy a position above the plane of the inlet conduit 24. With the piston in this position an additional supply of fluid may be introduced into the reservoir through the funnel 25. The yoke 14 is then reëngaged with the sleeve 11 upon the piston stem 8. If it is found that the tension of the springs 21 is too great to permit the engagement of the yoke with the sleeve when the piston is resting on top of the contents of the reservoir the nut or sleeve 11 may be screwed downward upon the stem 8 to a position where the yoke may be readily engaged therewith. The springs 21 are then placed under tension to exert a discharging pressure upon the fluid within the reservoir by screwing the sleeve 11 upward upon the stem 8. The pressure with which the fluid is discharged from the reservoir will be regulated by the height to which the sleeve 11 is adjusted above the top of the reservoir. As the contents of the reservoir are exhausted and the discharge pressure thereof reduced, the nut or sleeve 11 may be adjusted upward upon the stem 8 from time to time to maintain the desired operating pressure. By this means the entire contents of the reservoir will be rendered available.

From the above description it will be apparent that there is thus produced a device of the character described possessing the particular features of advantage before enumerated as desirable but which obviously is susceptible of modification in its form,

proportion, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

Having thus described my invention, I claim;

1. In a fluid dispensing apparatus, a reservoir having a discharge conduit leading therefrom, a movable piston within the reservoir and bearing upon the contents thereof, a screw threaded stem for said piston, an adjusting nut on said screw threaded stem, a yoke journaled on said nut, whereby the nut may be revolubly adjusted on the stem independent of the yoke, actuating springs attached to the yoke and adapted to move the piston within the reservoir, the tension of which is varied by the adjustment of the adjusting nut upon the piston stem, substantially as specified.

2. In a fluid dispensing apparatus, a reservoir having a discharge conduit leading therefrom, a movable piston within the reservoir and bearing upon the contents thereof, a screw threaded stem for the piston, an adjusting nut upon said stem, a yoke having a recess therein, within which the nut projects and wherein the nut is revoluble, independent of the yoke, and retracting means engaged by the yoke to move the piston, the tension of which is varied by the adjustment of the nut, substantially as specified.

3. In a fluid dispensing apparatus, a reservoir having a discharge conduit leading therefrom, a movable piston within the reservoir and bearing upon the contents thereof, a screw threaded stem for said piston, an adjusting nut on said screw threaded stem, a yoke adapted to engage the nut having a laterally disposed slot therein permitting it to be engaged with and disengaged from the adjusting nut by a lateral movement, and piston retracting means engaged by the yoke, substantially as specified.

4. In a fluid dispensing apparatus, a reservoir having a discharge conduit leading therefrom, a movable piston within the reservoir and bearing upon the contents thereof, a screw threaded stem for the piston, an adjusting nut on the screw threaded stem, a yoke adapted to be engaged with the nut, said yoke having a slot therein within which the nut engages, corresponding interengaging faces upon the yoke and nut adapted to prevent the lateral displacement of the yoke prior to a longitudinal movement thereof in relation to the piston stem, and piston retracting means engaged by the yoke, substantially as specified.

5. In a fluid dispensing apparatus, a reservoir having a discharge conduit leading therefrom, a movable piston within the reservoir and bearing upon the contents thereof, a screw threaded stem for the piston, an adjusting nut thereon, a yoke adapted to be detachably engaged with the nut, interengaging means between the yoke and nut adapted to retain the engagement of the nut and yoke while permitting a revoluble movement of the nut independent of the yoke, substantially as specified.

In testimony whereof, I have hereunto set my hand this 23rd day of November, 1912.

EDGAR C. BENNETT.

Witnesses:

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F. L. WALKER.