

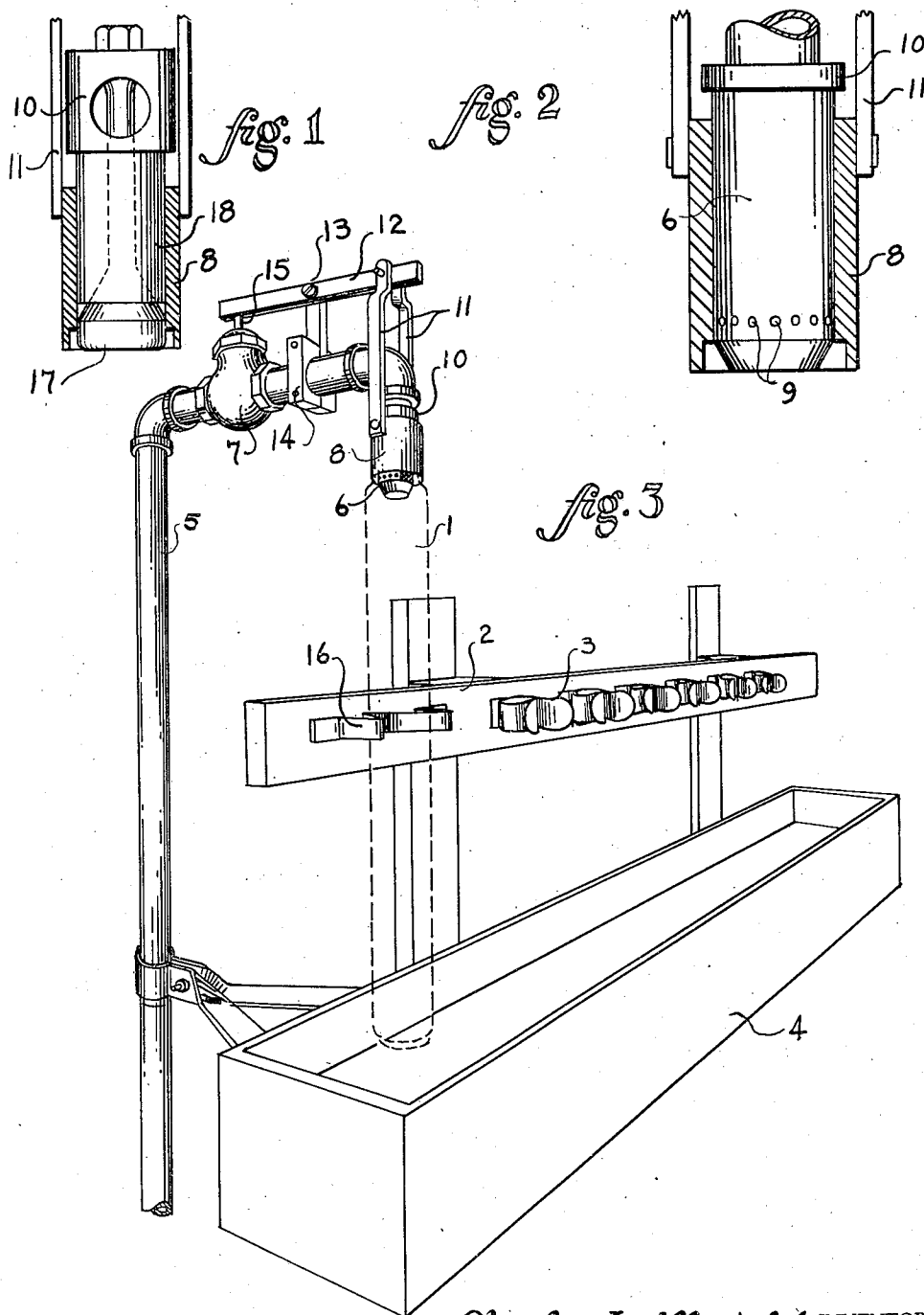
June 22, 1943.

C. L. ALBRIGHT

2,322,211

APPARATUS FOR COATING FLUORESCENT LAMPS

Filed May 3, 1941



Charles L. Albright, INVENTOR.

BY Lawrence Burns, ATTORNEY

UNITED STATES PATENT OFFICE

2,322,211

APPARATUS FOR COATING FLUORESCENT LAMPS

Charles L. Albright, Beverly, Mass., assignor to
Sylvania Electric Products Inc., a corporation
of Massachusetts

Application May 3, 1941, Serial No. 391,816

1 Claim. (Cl. 91-43)

This invention relates to the coating of a tubular glass envelope and more particularly to a means for applying a luminescent coating solution to the inner walls of a tubular glass bulb.

An object of this invention is to provide a means for spraying a luminescent coating solution on to the inner walls of a bulb.

Another object is to provide a means for so spraying which will not be susceptible to dripping after the bulb has been sufficiently sprayed.

Further objects, advantages and features will be apparent from the following specification taken in conjunction with the accompanying drawing in which:

Figure 1 is a detail of a spraying nozzle.

Figure 2 is a detail of an alternative spraying nozzle.

Figure 3 is a projection of my bulb spraying assembly.

Similar reference characters refer to similar parts in both views of the drawing.

Figure 3 shows the manner in which the bulbs may be sprayed. In this figure, the bulb 1 is shown in position about to be sprayed with a coating of luminescent material. The bulb is held on the rack 2 within the guide 16. This rack is mounted on the trough 4 so that the coating solution drained from the bulb 1 may be properly and adequately conserved. The coating solution is caused to flow through line 5 which leads to the nozzle 6 through the valve 7. The means for forcing the solution up through line 5 may be similar to that described in an application of George E. Holman, Serial No. 384,765 filed March 22, 1941. The luminescent solution herein referred to may be a finely divided luminescent powder suspended in a vehicle such as amyl acetate preferably containing some nitrocellulose and a plasticizer.

Figure 2 shows the construction of the nozzle 6. It is enclosed in the sleeve 8 which fits down over the holes 9 in the nozzle. This sleeve is shown in its normally closed position with respect to the holes 9 in the nozzle 6. When a bulb is to be flushed with coating solution, the end of the bulb is placed up within this sleeve and an upward force is exerted thereon until the top of the sleeve strikes the stop 10. At this point, the top end of the bulb will have encircled the holes 9 in the nozzle 6.

As shown in Figure 3, the sleeve 8 is caused to function in conjunction with the valve 7. The sleeve is attached to the arms 11 which are in turn fixed to one end of the rod 12. This rod pivots on the stud 13 through the top of the

clamp 14 which is fastened to the extension of line 5 through valve 7. The free end of the rod 12 is in contact with the stud 15 which projects upward from the top of the valve 7. Thus when a bulb is placed up in position to be sprayed with a coating solution of luminescent material, it pushes the sleeve 8 up to the stop 10, thereby causing the end of the bulb to encircle the holes 9 in the nozzle 6. When the sleeve 8 is moved upward, it causes the forward end of the rod 12, to which it is connected through the arms 11, to move in an upward direction.

Since this rod pivots about the stud 13, the upward movement of the forward end will result in a downward movement of the rearward end. Since the rearward end is normally in contact with the stud 15, a downward movement of the rod 12 will push the stud 15 down into the valve 7. This will open the valve and allow the coating solution to flow through and coat the bulb. When the bulb is removed, the force which pushed the stud 15 down to open the valve 7 will be relieved. The stud 15 will then spring back into its original position and thus close off the flow of solution through the valve and cause the sleeve 8 to drop down and shut off the holes 9 in the nozzle 6. Thus no solution will pass through the holes 9 in the nozzle 6 unless and until the sleeve 8 which encircles the nozzle is pushed upward.

By reason of this type of nozzle construction and valve control, there is no danger of seepage or dripping from the nozzle. A very definite and positive control of the flow of the solution is thereby obtained.

Figure 1 shows another type of spraying nozzle. The means employed in causing its operation through the valve 7 are the same as that just described in reference to the nozzle in Figure 2. However, instead of having the coating solution flow out the holes 9 as in Figure 2, I have used a solution deflector plug 17 adjustably and freely fitted in the nozzle 18. The lower extension of this plug is bevelled and has a knob in the end thereof. Thus the coating solution flows down between the plug 17 and the nozzle 18, and the bevelled extremity directs the coating solution onto the walls of the bulb which has been placed up in position to encircle the bevelled extremity of the plug 17. The angle at which this bevel in the lower extremity of the plug 17 is formed should be calculated in conjunction with the pressure used in forcing the solution down through the nozzle 18 so that the solution, spraying out from the bevel, will be un-

der sufficient pressure to permit it to strike the walls of the glass envelope 1 and flow evenly downward. If the pressure, or the angle, or both is too great, the solution will strike the walls of the bulb with such force that it will have a tendency to spatter and uneven, spotty coating will result.

Another feature embodied in both of these nozzles is attained by reason of the fact that in both cases the sleeve 8 is counter-bored at its lower extremity in such a manner that during the entire coating operation the top of the bulb 1 is completely enclosed and shut off from the drafts or air currents prevailing in the immediate vicinity of the coating apparatus. This is of great importance, particularly if a quick drying solvent, such as acetone, is used as the suspending vehicle for the luminescent powder, because it has been found that if air is allowed to rush into the top of the bulb immediately after it has been coated, uniform drying of the entire bulb cannot be accomplished. Streaks and other similar conditions usually result and thus mar the

appearance of the coating. With the top of the bulb completely enclosed, the air within the bulb, and especially near the top thereof, becomes saturated with the suspension vehicle, and by holding the bulb in position for an instant after the sleeve 8 has cut off the flow of solution, these streaks and other similar conditions are obviated.

What I claim is:

- 10 Means for directing a flow of luminescent solution on to the inner walls of an elongated glass bulb, said means comprising: a solution deflector plug comprising an elongated tubular shaft flaring out at one end and terminating in a cylindrical portion; a hollow tubular member concentric with said plug; a sleeve concentric with said hollow tubular member and moveable thereon, said sleeve being counter-bored at its lower extremity to a point slightly below the top of the
- 15 cylindrical portion of said deflector plug; and a luminescent solution supply valve actuated by said moveable sleeve concentric with said nozzle.

CHARLES L. ALBRIGHT.