

Sept. 22, 1942.

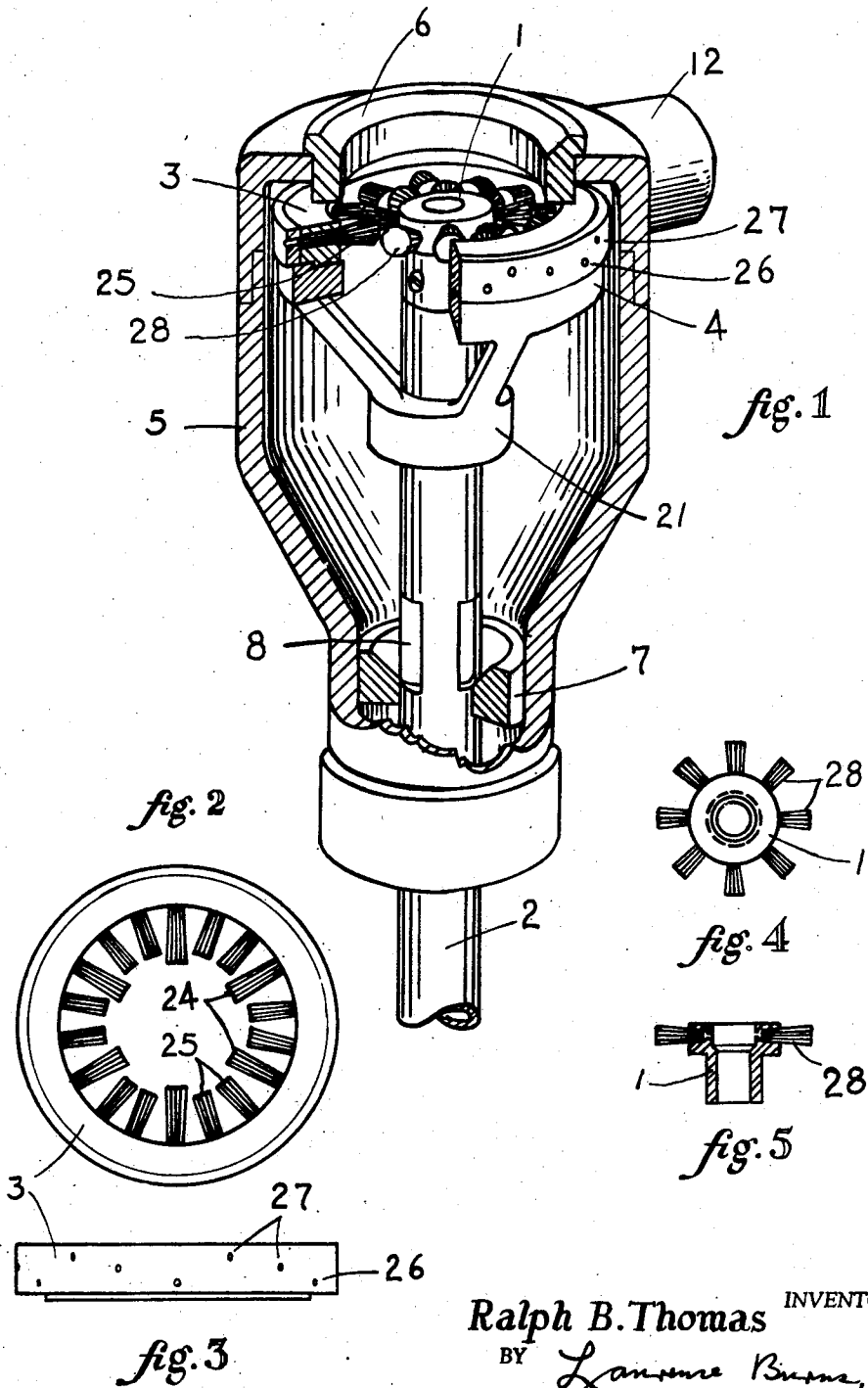
R. B. THOMAS

2,296,801

BULB NECK WIPING DEVICE FOR LAMPS

Filed Dec. 18, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

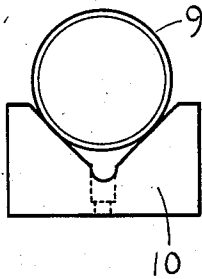


fig. 6

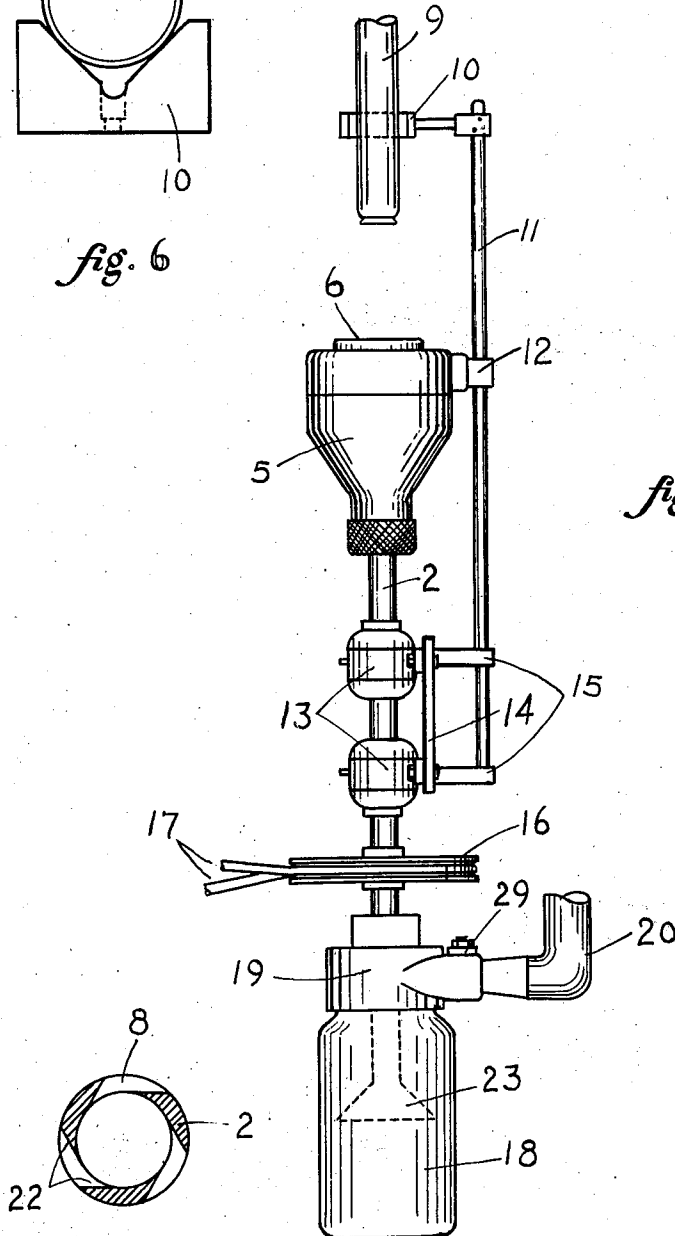


fig. 7

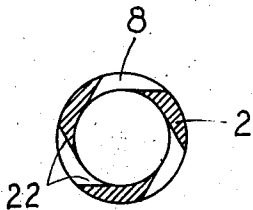


fig. 8

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UNITED STATES PATENT OFFICE

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BULB NECK WIPING DEVICE FOR LAMPS

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3 Claims. (Cl. 15-7)

This invention relates to fluorescent lamps and more particularly to a means for cleaning the neck of the lamp bulb after the bulb has been coated with a luminescent material.

An object of this invention is to free the neck of a bulb, of the type used in the manufacture of fluorescent lamps, from all coating material.

Another object is to provide a means for obtaining clear glass necks free from coating which may be sealed to the mount thus forming a sealed envelope.

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

Figure 1 is a side elevational view shown partly in section of the neck wiping means;

Figure 2 is a detail of the outside brush and its holder;

Figure 3 is a side elevational view of the large brush holder;

Figure 4 is a detail of the inside brush;

Figure 5 is a side elevational view shown in section of the inside brush assembly;

Figure 6 is a detail of the bulb rest;

Figure 7 is a front view of the neck wiper assembly.

Figure 8 is a cross section of the shaft 2 passing through the windows 8.

In the manufacture of fluorescent lamps the luminescent coating is applied to the bulb, allowed to dry, baked, and then the bulb has a mount sealed in at each end thereof. The seal thus formed is the result of the fusion of the end of the lamp to the flared portion of the mount. Experience has proved that the best and most desirable fusion is obtained when the portions of glass being fused are free of powder, dust, or other foreign matter. When a bulb is being coated, the luminescent coating very often covers the neck of the bulb, both the inner and outer edges thereof. This coating then dries and must be removed in order that the glass may be properly fused in the sealing operation. I have, therefore, invented a means for wiping the bulb neck so that it will be free from coating.

In Figure 1, the inside brush is attached to the top of the rotary shaft 2. The outside brush 3, concentric with the inside brush 1, is held in position on the outside rotary brush holder 4 which tapers in, in a cone-like manner and, like the inside brush, is also attached to the rotary shaft 2. The arms 21 which form the support for the upper portion of the brush holder 4 may be cut as fan blades in order to aid in directing the coating

powder downward. The bulb guide 6 is set in the top of the housing 5. It may be made of fibre or some similar material in order to protect the glass bulb from striking against the metal housing.

The rotary brush housing 5 tapers in at its lower extremity where it encloses the powder guide ring 7 which is concentric with the rotary shaft 2. A felt or regular standard graphite packing may be used between the shaft and the housing, not only to seal the joint but also to hold back the abrasive powder. This shaft 2 has a plurality of windows 8 cut therein at a point on a level with the point where the ring 7 touches the shaft. These windows are beveled in such a manner that the sides 22 of the windows 8 are tangent to the inside diameter of the shaft 2, as shown in Figure 8. These sides are tangent in relation to the direction of rotation which in this case is a clockwise direction. If the windows were radially cut, the powdered coating which is to be collected through these windows would tend to be blown away by the rotation of the shaft 2, rather than be drawn in by this rotation.

Figure 7 shows the neck wiping assembly. The bulb 9 is shown being guided down and into the rotary brushes along the bulb rest 10, a detail of which is shown in Figure 6. This bulb rest projects from the top of the standard 11. The brush housing 5 is suspended from this standard 11 through the arm 12. The ball bearing shaft supports 13, through which the rotary shaft 2 extends, are attached to the main support plate 14. The standard 11 is also supported by the plate 14 through the brackets 15. This main support plate 14 may be attached to any fixed object which may serve as the foundation on which the whole assembly is mounted or from which it is suspended. The shaft 2 is driven through the pulley 16 and the belt 17.

The shaft 2 extends through the pulley 16 down into the container 18 which may be capped by a mason jar cap 19. The vacuum pipe 20 projects from the jar cap 19 and leads to some suitable evacuating means. Attached to the end of the shaft inside the jar 19 is an inverted cone-like shield 23 which serves to prevent any powdered coating from being drawn out of the container through the vacuum line 20, by deflecting back into the bottom of the container 19 any powder drawn up by the pull of the vacuum pump.

By studying the assembly shown in Figure 7 with the section shown in Figure 1, the manner in which my device operates may be observed. When a bulb is to have the neck thereof cleaned of coating, it is guided through the bulb guide 6 and

held flush with the bulb rest 10. The bulb 9 is guided down into the rotary brush housing 5 far enough to locate the inside brush 1 within the neck of the bulb. The longer brushes 24 of the outside brush 2 serve as a stop for the bottom of the bulb when the bulb 9 is guided into the top of the housing 5. They project from the bottom portion of the wall of the brush holder through the holes 26 provided therefor as shown in Figure 3. The shorter brushes 25 project from the holes 27 which are located above the holes for the larger brushes. Hence, the larger brushes are located below the smaller ones and therefore not only serve as a stop for properly locating the neck of the bulb between the inside and outside brushes but also serve to clean the bottom edge of the bulb while the smaller brushes are cleaning the outside wall of the neck and the inside brushes are cleaning the inside wall of the neck. The clearing of the bottom of the bulb is of vital importance for this more than any other portion of the neck is the portion to be fused.

These brushes which clean the neck of the bulb are actuated through their common rotary shaft 2. The coating will drop down from the brushes down into the powder guide ring 7. If the arms 21 of the brush holder 4 are fan blades cut in a manner as to throw the powder out as it drops down from the brushes, the drawing away of the powder will be aided considerably.

The fact that this powder guide ring 7 is angularly disposed plus the fact that the walls 22 of the windows 8 are bevel-edged also aids considerably in drawing the powder away. This type of ring and window will cause substantially all of the coating powder to be drawn into the shaft 2.

Some suitable evacuating means may be converted to the vacuum pipe 20. This evacuation tends to accelerate the drop of the powder down into the container 18. The strength of the pump evacuating the shaft is not sufficient to draw off powder from the container 18 nor to blow any powder from the walls of the bulb but just enough to keep the shaft 2 substantially evacuated.

In Figure 4, the brush 1 comprises a series of small clusters of bristles 28. In Figure 7, the assembly for collecting the coating powder is firmly held in position through the bracket 29 which may be connected to the main support plate 14 or attached to some fixed object suitable to hold stationary the container 18, its cap 19 and the vacuum line 20 while the shaft 2 is rotating.

What I claim is:

1. A machine for cleaning the end of a lamp bulb, said machine comprising: a funneled housing; a hollow cylindrical rotatable shaft internally concentric with the mouth of said funneled housing, said shaft extending upwardly from the lower extremity of the tapered portion of said housing, the lower extremity of said shaft, adjacent the tapered portion of said housing at the point at which said housing is in contact relationship with said shaft, having a plurality of elongated openings therein, said openings being of rectangular configuration on the outer circumference of said shaft, and having their longitudinal sides extending tangential to the inner circumference of said shaft; and a plurality of brushes disposed about the top of said shaft.

2. In apparatus for cleaning the ends of a lamp bulb, the combination: an elongated rotatable shaft; a plurality of brushes extending outwardly from an end of said shaft; a brush holder support mounted on said shaft beneath said brushes; an annular brush holder mounted on said support, said brush holder being externally concentric with said shaft; a plurality of brushes mounted on the inside wall of said brush holder and extending inwardly toward said first-mentioned brushes and in substantially the same horizontal plane therewith; another group of brushes mounted on the inside wall of said brush holder and extending inwardly toward said shaft, said brushes being on a slightly lower horizontal plane than said first mentioned brushes, and having their inner extremities extending subjacent to said first mentioned brushes.

3. The combination of claim 1 in which the plurality of brushes disposed about the top of said shaft comprise: a plurality of brushes extending outwardly from an end of said shaft; a brush holder support mounted on said shaft beneath said brushes; an annular brush holder mounted on said support, said brush holder being externally concentric with said shaft; a plurality of brushes mounted on the inside wall of said brush holder and extending inwardly toward said first-mentioned brushes and in substantially the same horizontal plane therewith; another group of brushes mounted on the inside wall of said brush holder and extending inwardly toward said shaft, said brushes being on a slightly lower horizontal plane than said first mentioned brushes, and having their inner extremities extending subjacent to said first mentioned brushes.

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