

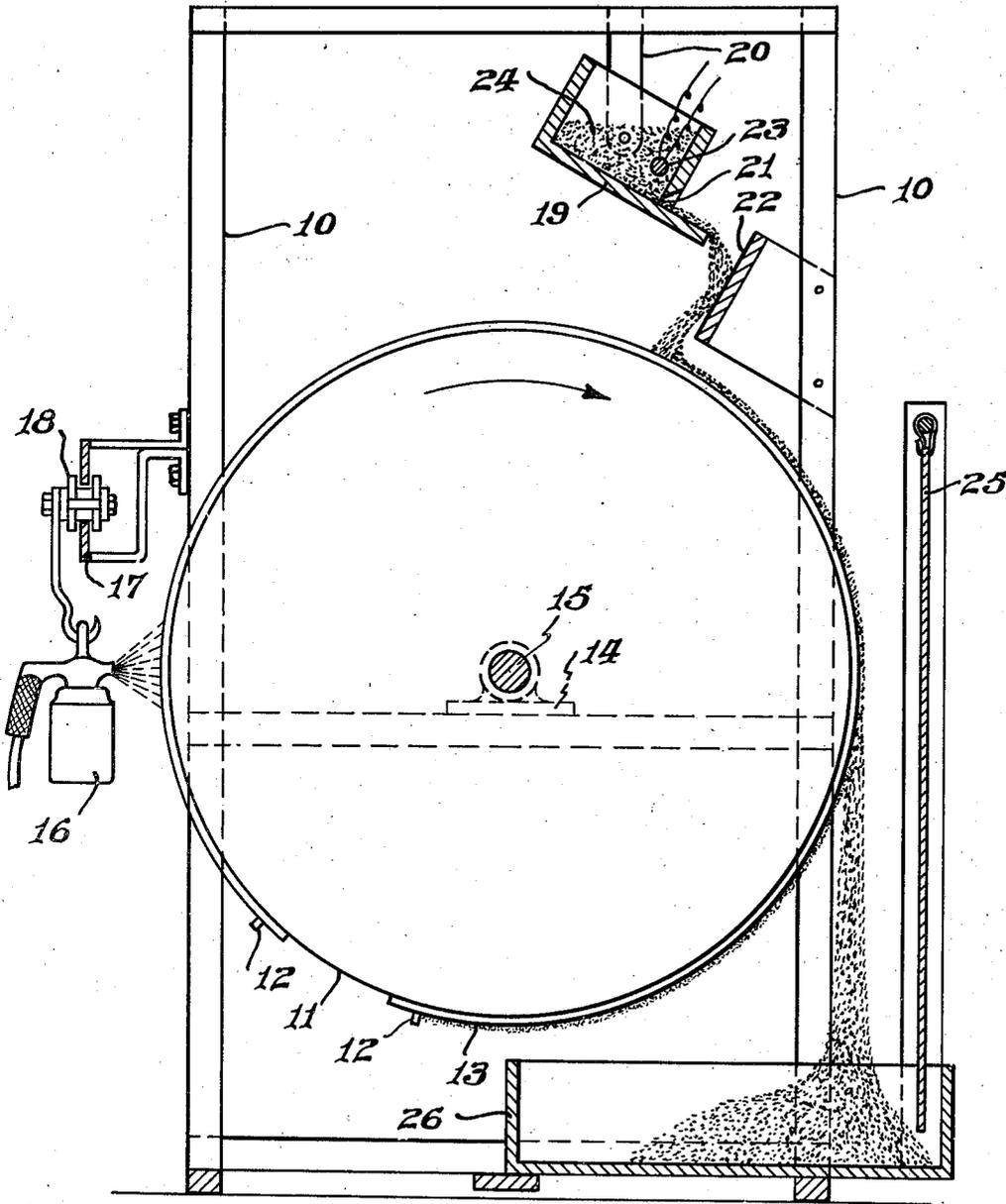
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BEADING PROJECTION SCREENS

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BEADING PROJECTION SCREENS

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2 Claims. (Cl. 91-18)

1

This invention relates to an improved method of and apparatus for applying glass beads to projection screens, particularly the type of projection screens used in conjunction with the projection of motion pictures with sound.

The invention involves the provision of a rotatable drum which is adapted to support the screen during the operations thereon in conjunction with means for applying adhesive and a novel device for distributing the beads over the adhesive surface of the screen.

One object of the invention is to provide an improved apparatus for applying beads to projection screens.

Another object of the invention is to provide an improved method of and apparatus for applying beads to the adhesive surface of a screen.

Another object of the invention is to provide an improved apparatus for distributing adhesive uniformly over the surface of the screen.

Another object of the invention is to provide an improved apparatus for distributing beads evenly over the surface of a projection screen.

Another object of the invention is to provide an improved method and apparatus for embedding the beads to a uniform depth with the adhesive or reflecting surface material on the face of the screen.

Another object of the invention is to allow the use of the smallest size beads, that is, beads having a smaller diameter than those in common use.

Another object of the invention is to provide a method and apparatus for holding the screen in a uniform plane or shape during the entire operation of applying adhesive, applying beads, and removing excess beads.

Another object of my invention is to provide a method and means for immediately removing the excess beads almost instantly after they have been deposited on the screen.

Another object of the invention is to provide an improved method of and apparatus for causing beads to adhere more securely to the surface of the screen than has heretofore been possible.

Other and incidental objects of the invention will be apparent from a reading of the following specification and an inspection of the accompanying drawing, in which:

The single figure of drawing is an end view, partly in section, of my improved apparatus and serves to illustrate the manner of performance of the method.

In the apparatus illustrated, the frame 10 supports the drum 11, which may be a hollow sheet metal drum, through the bearings 14 and the

2

trunnions 15. The drum should be sufficiently large in both length and diameter to support the largest screen to be treated without folding or overlapping. The drum 11 is provided with appropriate means 12 for securing the screen 13 thereto under sufficient tension to keep it smooth.

An appropriate spray-gun 16 is provided for applying the adhesive, which is preferably an appropriate clear paint or clear lacquer or paint or lacquer pigmented with titanium dioxide. The type of vehicle used depends upon the speed with which the operation is to be performed, the flexibility required in the finished screen, and similar factors. The spray gun 16 may be supported upon the track 17 by an appropriate carriage 18 for manipulation in either of the several fashions hereinafter described.

An appropriate trough or hopper 19 is provided above the drum 11. The trough 19 may be supported from the frame 10 by appropriate brackets 20. An appropriate slot is provided at 21 to permit the beads 24 to flow from the trough. This slit may be of fixed dimensions, or it may be made adjustable. For example, the front side of the trough 19 may be made to slide up or down to adjust the size of the opening, or other equivalent means may be provided.

A heater 23 is provided within the trough 19, preferably extending the entire length thereof. This heater is illustrated as being of the electric type, although it will be apparent that a steam heater or other equivalent device may be used. The heater serves a double purpose. Due to the slightly hygroscopic nature of the surface of the glass beads used they have a tendency to stick together, sometimes momentarily clogging the outlet of the trough 19, and sometimes emerging through the slot in bunches. Both of these effects are eliminated by heating the beads and, in addition, the heated beads adhere more firmly to the surface of the screen. The improved adherence of the beads is apparently due to several different effects: The dry surface of the beads accepts the adhesive more readily than if it had a layer of adsorbed moisture, the warm beads soften the adhesive when they strike it and thereby become more firmly lodged therein, and the warmth of the beads causes the surrounding adhesive to dry quite rapidly thereby preventing their displacement.

If so desired, the beads may be heated separately, but the heater in the trough presents advantages, particularly in damp weather.

A baffle board 22 is provided, appropriately supported on the frame 10. This baffle board is

located at such an angle that the beads emerging from the slot 21 strike it and bounce off onto the surface of the screen. This serves two purposes. If there are any clumps of beads they are broken up by the impact, and the beads are caused to strike the screen surface practically perpendicularly at a higher velocity than if they were merely poured thereon from the trough.

The beads which do not adhere to the screen fall into the trough 26, whence they may be removed and replaced in the trough 19. Some beads will, of course, tend to bounce, and these are caught by the screen 25, which may be of any appropriate material, such as cloth, for example, and caused to fall into the trough 26.

In the operation of beading a screen the screen is first stretched on the drum and secured at 12 as above described. The adhesive paint is then applied by the spray gun 16. Starting at one end of the screen the paint may be applied in a single stripe longitudinally of the drum, the drum then rotated the proper amount, a second stripe applied, and so on until the entire screen is covered. Alternatively, the drum may be rotated continuously while the spray-gun is moved slowly along. Either of these methods will provide a sufficiently uniform coating if properly used, but I prefer the method first described for the reason that the portion of the drum not protected by the screen does not become smeared with adhesive and the uniformity of the coating is less affected by air currents.

After the adhesive coating has been applied and, if necessary, been permitted to dry to an appropriate tacky consistency, the beads are applied. The application of the beads is started

with the initial edge of the screen near the baffle 22 and the drum is slowly rotated in a clockwise direction as the beads flow from the trough 19. In their flow the beads roll over the extending lip of the trough 19 during which time any clumps of beads tend to break up, and they are then bounced from the baffle 22 onto the screen 13 in the form of a uniform spray. After the entire screen has been covered it may be removed from the drum and hung in an appropriate location for further drying.

Having now described my invention, I claim:

1. Apparatus for delivering beads in a uniform spray to an adhesive-surfaced projection screen comprising a trough for supplying the beads, said trough having an extending lip and a slot adjacent thereto to flow the beads over said lip, and a baffle mounted in spaced relation with respect to said trough at an angle to the path of beads flowing from said lip for redirecting said beads in a uniform spray to the projection screen.

2. Apparatus for making beaded projection screens including a drum having an axis of rotation, means for supporting the screen upon the outer surface of said drum, spray means for applying an adhesive coating to the screen supported on the drum, a trough having a slot and an extending lip for uniformly supplying beads along a path substantially parallel to a tangent to the drum, a baffle mounted in a plane substantially normal to said tangent in the path of said beads for redistributing said beads and directing them into a path substantially radial to said drum, and means for rotating said drum.

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