

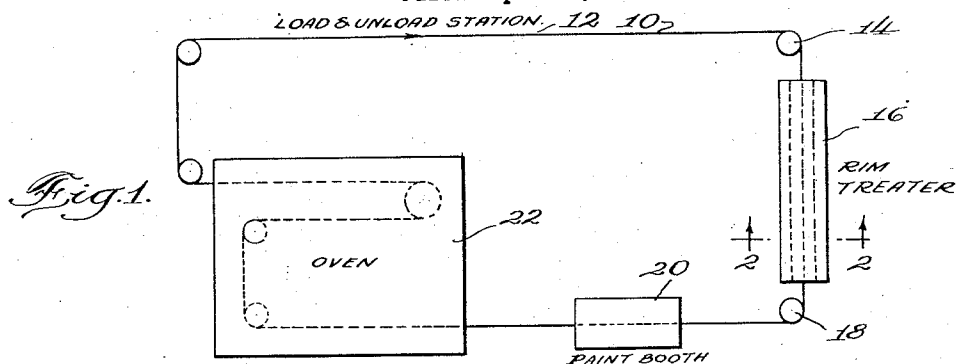
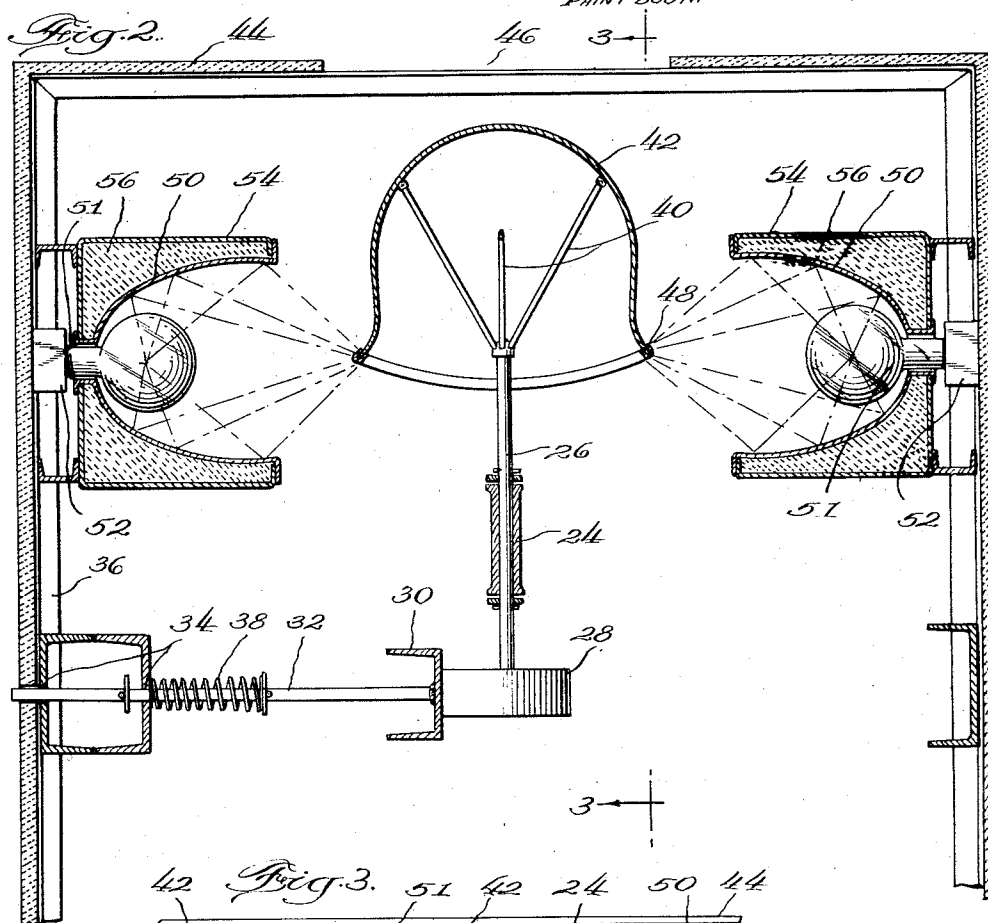
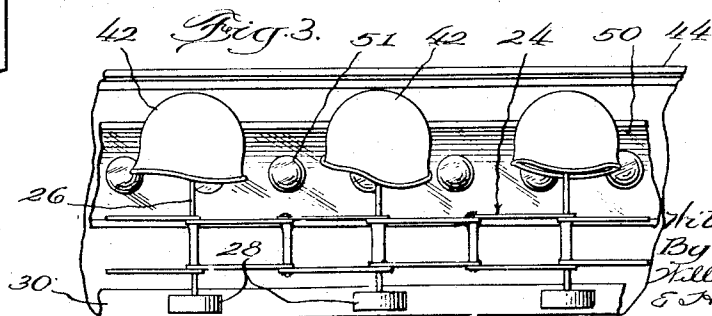
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APPARATUS FOR DRYING HELMETS AND THE LIKE

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APPARATUS FOR DRYING HELMETS AND
THE LIKE

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1 Claim. (Cl. 34—105)

The present invention relates to a method and apparatus for coating helmets and the like. More particularly, it provides a method and apparatus for use during the process of painting army type protective helmets, which reduces the finishing cost by greatly reducing the number of rejected helmets.

In the manufacture of army helmets a sheet of steel is shaped to the desired contour, thus leaving a raw comparatively sharp edge at the rim of the helmet. This rim is then enclosed within a metal bead of U-shaped section which covers the rim and provides a smooth finished edge for the rim. The helmet as thus constructed, is passed through a degreasing operation which removes all oil and surface dirt from the helmet. The helmet is then dried, spray painted, and is then passed through an oven to bake the coating material.

The finishing of army helmets in the above essentially conventional manner has resulted in an enormous number of rejected articles which have had to be cleaned and repainted. The reason for this rejection is that during the degreasing step a minute quantity of water may find its way in between the edge of the helmet and the bead, the quantity of water thus trapped may vary from nothing to a considerable amount, depending partially at least upon how closely the bead fits the edge of the helmet at all points. All drying methods used in the past for the purpose of drying the helmet after the degreasing operation have not completely removed the water from the bead and thus, after the helmet has been painted and has been passed into a drying oven, the high temperature within the drying oven vaporizes the water. This causes a small puff of steam which destroys the coating at and adjacent the juncture between the bead and the main body portion of the helmet. Thus, frequently what appears to be a perfect helmet before it passes into the oven may issue from the oven with one or more large blisters in the paint, thereby requiring that the helmet be rejected and repainted.

It is the principal object of the present invention to provide a novel method and suitable apparatus for substantially completely eliminating the above recited difficulty.

Another object of the present invention is to provide a novel method and apparatus for removing whatever minute quantity of water may be trapped between the bead and the edge of an army helmet.

Yet another object of the present invention is

to provide a novel method and apparatus for insuring that painted and baked army helmets will not have bubbles and other imperfections at the juncture between the helmet proper and the bead enclosing its edge.

Still another object of the present invention is to provide a novel method and novel apparatus for insuring a perfect paint coating upon articles having a raw edge enclosed within a metal bead.

Yet another object of the present invention is to accomplish all of the above automatically and at low cost.

Other objects and advantages will appear from the following description of a preferred embodiment of my invention which is illustrated in the accompanying drawing. In the drawing, wherein similar characters of reference indicate similar parts throughout the several views;

Fig. 1 is a diagrammatic layout of a finishing system embodying the present invention for paint coating army helmets or similar articles;

Fig. 2 is a transverse sectional view through a portion of the apparatus shown in Fig. 1. This view may be considered as taken in the direction of the arrows substantially along the line 2—2 of Fig. 1; and

Fig. 3 is a longitudinal sectional view of a portion of the apparatus shown in Fig. 1. This view may be considered as taken substantially along the line 3—3 of Fig. 2.

In Fig. 1 of the drawing the painting layout for army helmets is illustrated diagrammatically. In this view a conveyor 10 of the chain type is shown as passing from a load and unload station 12, around a sprocket 14, through a rim treater 16, around another sprocket 18, through a paint booth 20 where the finish is spray-applied, through an oven 22 where the paint is baked or otherwise dried, and finally back to the load and unload station. The helmets are loaded upon a conveyor at the load and unload station 12 in a comparatively dry condition, that is, they are externally dry although the amount of moisture within the bead is unknown. The helmets as removed from the conveyor at the load and unload station are completely finished so far as the coating operation is concerned.

Referring to Figs. 2 and 3 of the drawing, it will be seen that the conveyor, which is of more or less conventional type, comprises a link type chain 24 moving in a vertical plane. At regularly spaced intervals along this chain the pivot pins joining links of the chain are hollow and carry rotatable spindles 26 which project vertically through the chain. The lower end of each

of these spindles is provided with a wheel or pulley 28 which rolls along the surface of a rail 30 as the chain moves, thus causing the wheel and spindle to rotate. The rail 30 is resiliently held in place upon bars 32 which projects through openings 34 in a frame 36, the rail 30 being urged toward a central position against the pulley 28 by a coil spring 38.

The upper end of the spindle 26 is provided with three obliquely outwardly extending pins 40 which support the helmets 42 internally, that is, the helmets are raised by hand and lowered over the pins 40 with the ends of these pins resting against the inner surface of the helmets. Thereafter, the helmets are carried upon these pins and rotate wherever a rail 30 is provided for this purpose. Normally such rails are provided within the oven 22, within the paint booth 20 and within the rim treater 16.

The rim treater 16 consists of a generally rectangular box-like frame 36 built up in any desired manner. Preferably this frame is enclosed by insulating material 44, excepting at the ends, at the lower portion and along the center line of the top surface. Thus, air can circulate into the ends of the device and from near the floor level and can pass upwardly and out of the opening 46 in the top.

At each side of the frame on a level with the bead 48 at the lower edge of the helmet 42, longitudinally extending reflectors 50 are provided. These reflectors extend substantially from end to end of the rim treater and are preferably elliptical in shape. A plurality of infra-red bulbs 51 are located within each of these reflectors with their necks extending through the center of the reflector into sockets located in a lighting strip 52. Preferably the reflectors are enclosed on their reverse sides by a housing 54, the space between the reflector and the housing being filled with insulating material 56. This insulating material prevents heat loss and also prevents the bases of the bulbs from becoming overheated, thus preventing the cement which secures the bulb to its base from deteriorating.

The reflectors 50 are generally elliptical in shape, with the bulbs 51 located with their centers along a line passing along one of the foci of the ellipse, while the other foci of the ellipse is located substantially at the bead 48. This arrangement it will be seen insures that substantially all of the radiant energy issuing from the bulbs 51 is focused directly upon the bead 48. Therefore, as the helmets pass slowly through the rim treater, revolving as they go, the rim 48 will be subjected to intense infra-red radiant energy from the bulbs 51.

The rims 58 are therefore quickly heated well

above the boiling point of water. Any water within the bead is therefore quickly vaporized and escapes as steam. By the time the bulbs have reached the outlet end of the rim treater, no water will remain within the bead at the edge of the helmet. The whole of the helmet will be heated somewhat, thus insuring that all parts of the helmet will be dry. No attempt, however, is made to subject any of the helmet excepting the bead to direct heating.

After the helmets issue from the rim treater, they cool sufficiently and pass into the paint booth 20 where they are spray painted. They then pass from the paint booth to the oven where the temperature is again raised sufficiently to harden the finishing material. Inasmuch as all of the water has been removed from the bead prior to entrance of the helmet into the oven, no further difficulty of the type set out in an earlier portion of the specification is experienced, and the helmets issue from the oven in perfect condition.

Although the radiant energy required within the rim treater to accomplish satisfactory results will vary with different installations, for most purposes satisfactory results will be obtained with approximately 36 bulb type lamps of 250 watts each. The total energy consumed is approximately 9 k. w.

If desired, ordinary parabolic or spherical or other shaped reflectors may be used in place of the elliptical reflectors shown. If parabolic or spherical or other shaped reflectors are used, however, the radiant energy will not be so well concentrated upon the bead and, therefore, more heat will be required to remove the water from the bead. In other words, a more general heating of the helmets will result. Whether or not this general heating is desirable will depend upon whether general preheating of the helmets is indicated. For instance, it might be advisable to use spherical, parabolic, or similar reflectors if finishing time can be reduced by applying the paint to a hot surface.

Having described my invention, what I claim as new and useful and desire to secure by Letters Patent of the United States is:

An army helmet pretreater comprising means for conveying army helmets in endless succession through a treatment zone, means for rotating said helmets while within said zone, a battery of infra-red lamps located within said zone in a position adjacent to said helmet rims, and reflecting means to concentrate the radiant energy from said lamps upon the rims of said helmets passing through said zone.

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