UNITED STATES PATENT OFFICE

2,317,426

RADIANT HEAT DRYING CONSTRUCTION

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Application April 24, 1941, Serial No. 390,933

5 Claims. (Cl. 219—34)

My invention relates to drying apparatus and more particularly to a drying tunnel in which the coated articles to be dried are subjected to the action of infra-red rays from a battery of lamps arranged to form a tunnel-like structure surrounding the articles.

One of the objects of my invention is to provide a battery of lamps in which the rows of lamps may be readily adjusted to form many different cross sections of the tunnel.

A further object is to provide an improved form of gang adjustment for the lamps.

A further object is to provide an improved explosion-proof construction.

Further objects and advantages of the invention will appear from the description and claims.

In the drawings, in which several embodiments of my invention are shown,

Figure 1 is a front elevation view showing one side of the drying tunnel;

Fig. 2 is an end elevation of the structure of Fig. 1;

Fig. 3 is an end elevation showing the reflector rows in a different position from that shown in Fig. 2;

Fig. 4 is an enlarged plan view of the end portion of a bank of reflectors;

Fig. 5 is an enlarged sectional view on the line 5—5 of Fig. 4, showing the connection between adjacent banks;

Fig. 6 is a section substantially on the line 6—6 of Fig. 4;

Fig. 7 is an enlarged transverse sectional view through the wiring channel showing the manner of removing the cover;

Fig. 8 is a plan view similar to Fig. 4 but showing a gang focusing construction;

Fig. 9 is an end view of the construction shown in Fig. 8;

Fig. 10 is a horizontal sectional view showing apparatus for preventing dust from entering the lamp enclosure;

Fig. 11 is a detail view showing how wiring channel sections may be connected; and

Fig. 12 is a diagrammatic view showing how the sections are used to form a tunnel through which the articles to be dried are passed.

Referring to the drawings in detail, the construction shown comprises a pair of standards 1, a plurality of horizontally extending parallel wiring conduits 2, a plurality of lamp sockets 3 mounted in spaced relation on each conduit for supporting lamps 4 extending transversely with respect to the conduit, reflector means 5 for the lamps also mounted on each conduit, and means for pivotally connecting the conduits for relative swinging movement about an axis parallel to the conduits and adjacent contiguous edges of the reflectors of adjacent banks of reflectors, one of said conduits 2a being supported between said standards and the other rows of lamps with their conduits being supported from the conduit 2a mounted on the standards.

The means for pivotally connecting the conduits for relative swinging movement about an axis parallel to the conduits comprise a pair of brackets 8 secured, respectively, to ends of a wiring channel, a pair of quadranntal plates 1, one secured to each of these brackets, a pivot pin 6 extending through the bracket 6 of one row and the quadranntal plate 7 of another row, and a clamping screw 9, nut 10, and washer 11 (Figs. 4 and 5), located adjacent the arcuate edge of the quadranntal plate 7 and extending through the bracket 6 for clamping the adjacent rows of lamps in any desired position of pivotal adjustment. The fixed row of lamps, which in general may be the central row, may be secured to the standard by means of clamping members 12 and 13 embracing the standard, one of the clamping members 12 being secured to the bracket 6 and the other clamping member being provided with a pair of clamping screws 14 and 15 for drawing the clamping members up to grip the standard 1. One of these clamping bolts 14 may be used to provide the pivot for the adjacent row of lamps.

The reflectors may be secured to the wiring channel by means of strap brackets 16 riveted to the wiring conduit 2 and to the rims of the reflectors 5.

Fig. 12 shows an end view of a tunnel, with the rows of reflectors disposed to provide a low, wide tunnel, through which a skeleton conveyor 16a may pass, carrying the articles 16b to be subjected to the surface drying rays.

Figs. 6 and 7 show one form of wiring conduit in which the cover may be readily removed. This is accomplished by providing the edges of the wiring conduit with inwardly-extending grooves or beads 17 into which the inwardly-extending edges 18 of the flanges 18a of the cover snap. In order to remove the cover, the thin edge of the blade 19 of a screw driver may be pressed against the junction point of the edge of the inwardly-extending edges 18 with the trough of the groove 17 of the wiring channel, whereupon by giving a slight twist to the screw driver, the cover 20 will be lifted as shown in Fig. 7, one corner of the screw driver finding a purchase.
against the lower edge of the flange 18a of the cover and the other finding a purchase against the side of the groove 17 of the conduit, which groove serves to support radiant heat sources spaced laterally with respect to said conduit, reflector means for said sources mounted to move as a unit with each conduit for directing a beam-like flood of light from the reflector means on said plurality of units and parallel to said conduits and in front of the general plane of said conduits whereby the conduits separate as the convergence of the beams increases.

2. A radiant heat drying construction comprising a plurality of parallel elongated wiring conduits, a plurality of sockets mounted in spaced relation on each conduit for supporting radiant heat sources spaced laterally with respect to said conduit, reflector means for said sources mounted to move as a unit with each conduit for directing a beam-like flood of light from the reflector means on each unit, which beams converge, means for pivotally connecting said units for relative swinging movement about an axis closely adjacent the adjacent edges of the reflector means on said plurality of units and parallel to said conduits, and in front of the general plane of said conduits whereby the conduits separate as the convergence of the beams increases, and supporting means to which one of said units is secured.

3. A radiant heat drying construction comprising a plurality of parallel elongated wiring conduits, a plurality of sockets mounted in spaced relation on each conduit for supporting radiant heat sources spaced laterally with respect to said conduit, reflector means for said sources mounted to move as a unit with each conduit, and means for pivotally connecting said units for relative swinging movement about an axis parallel to said conduits whereby the conduits separate as the convergence of the beams increases, and supporting means engaging said edge portion to hold the units in adjusted relative position.

4. A radiant heat drying construction comprising a plurality of parallel elongated wiring conduits, a plurality of sockets mounted in spaced relation on each conduit for supporting radiant heat sources spaced laterally with respect to said conduit, reflector means for said sources mounted to move as a unit with each conduit for directing a beam-like flood of light from the reflector means on each unit, which beams converge, and means for pivotally connecting said units for relative swinging movement about an axis parallel to said conduits and in front of the general plane of said conduits whereby the conduits separate as the convergence of the beams increases, the edges of said reflector means extending to points closely adjacent said axis.

5. A radiant heat drying construction comprising an elongated wiring conduit member, an elongated base member adjacent and parallel to said conduit member, a plurality of sockets mounted on one of said members for supporting radiant heat sources spaced laterally with respect to said conduit member, reflector means for said sources mounted on the other of said members, and means for securing said members in different positions of transverse adjustment with respect to each other to change collectively the position of said sources with respect to said reflector means.

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