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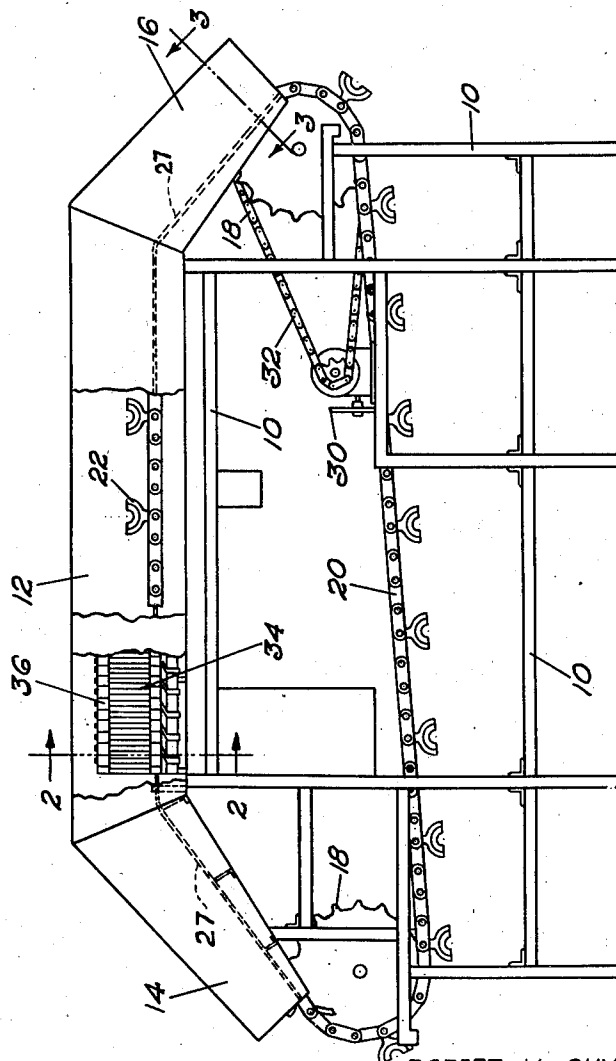
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2,336,110

APPARATUS FOR SURFACE DRYING OF WOOD BLOCKS

Filed March 6, 1939

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

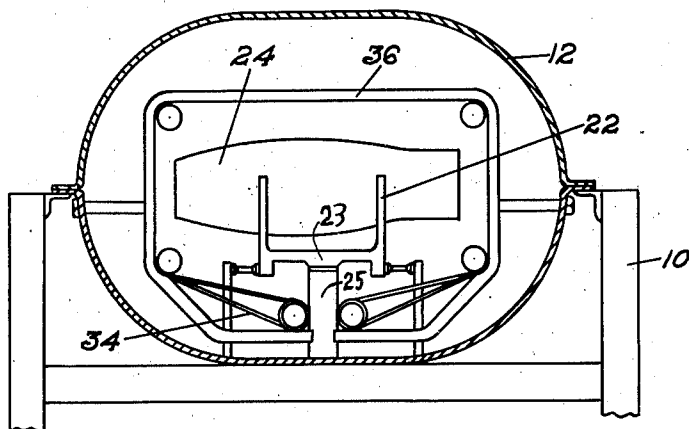


FIG. 2

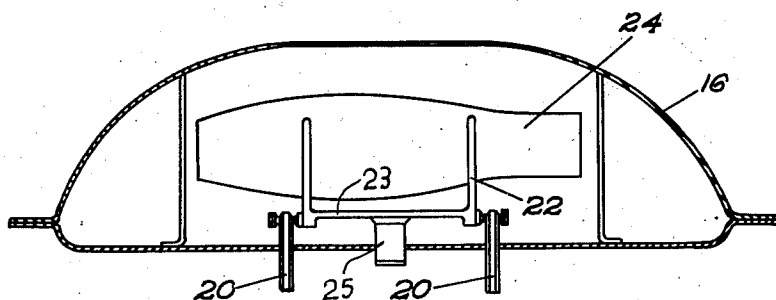


FIG. 3

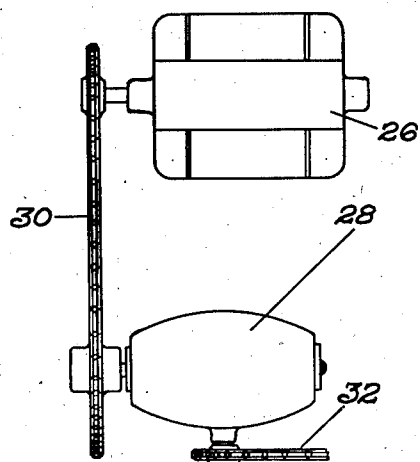


FIG. 4

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APPARATUS FOR SURFACE DRYING OF
WOOD BLOCKS

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Application March 6, 1939, Serial No. 259,948

3 Claims. (Cl. 34—107)

This invention relates to a machine for the extremely quick drying of the surface of a block of wood while not actually drying or heating up the interior of the block.

An important object of this invention is the provision of means whereby the surfaces of wood blocks may be quickly and thoroughly dried preparatory to the application of a layer of a protective resinous paint or the like to certain portions of the block, this method of preparing blocks for kiln drying being fully described in United States Letters Patent to McKenzie, Number 2,120,368, dated June 14, 1938.

It has been found that in the coating of certain portions of wooden blocks or billets of wood with protective material, preparatory to kiln drying, that this material will not quickly and satisfactorily adhere to the desired portions of the blocks if the blocks are in a damp or moist condition, and of course this particular condition is always present in any freshly cut blocks before they are kiln dried.

Therefore it is desirable to have at least the surface of the blocks in a thoroughly dry state, as thereby the protective coating of resinous paint or the like will adhere more quickly and thoroughly to the heart and bark faces, which are thus adapted to be protected, with a view to preventing subsequent checking, cracking, or splitting during the drying operation.

It has further been found by experience that a quick surface drying of blocks of this type is important for various reasons, particularly speed in operation, satisfactory coating, and reduction of cost as far as fuel consumed in drying is concerned.

The machine described in this specification solves these problems in a very satisfactory manner.

It is an object of this invention to provide apparatus for drying the surface of a block of wood or other material without unduly raising the temperature or too quickly drying out the interior of the material.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawings and following specification.

The invention, in a preferred form, is illustrated in the drawings and hereinafter more fully described.

In the drawings—

Figure 1 is a side elevation of the improved drying machine of this invention, parts being broken

away to show the interior construction, and other parts being omitted for purposes of clarity.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1 looking in the direction indicated by the arrows and showing a wooden block in position.

Figure 3 is a sectional view on the line 3—3 of Figure 1 looking in the direction indicated by the arrows, and on a somewhat larger scale than Figure 2.

Figure 4 is a plan view of the motor and associated parts.

The mechanism shown in the drawings is particularly designed for handling and drying blocks of wood intended to be made into bowling pins, and when presented for treatment in the surface dryer they have already been shaped approximately to their final form, as seen in Figures 2 and 3.

The reference numeral 10 indicates generally the supporting frame for the improved pin block dryer of this invention, the frame having at its top portion a tubular hood or tunnel 12 preferably made of stainless steel or some material which will reflect heat to a suitable extent, and this hood is somewhat elliptical in cross-section, as shown in Figure 2. The hood includes an inlet portion 14 and an outlet end 16, these portions being more flattened than elliptical, as indicated in Figure 3. These end portions of the tunnel are downwardly inclined and their open ends are below the level of the bottom of the main tunnel so that the flow of air through the tunnel is opposed or retarded, and there is a tendency for the heat to be retained therein.

Mounted on suitable sprockets 18 is a conveyor chain 20 which has affixed thereon at intervals a plurality of sets or pairs of supports or brackets 22 which are adapted to retain blocks or billets of wood 24, as best shown in Figures 2 and 3. These supports, which are shown as upwardly open forks or cradles, are connected together in pairs by cross-bars 23 which ride along a centrally disposed supporting rail 25 having downwardly inclined end portions 27 extending through the terminal sections 14 and 16 of the hood or tunnel; the inclined rails 27 and the cross-bars 23 thus serve to dispense with additional guide wheels for the conveyor chains at the ends of the main portion of the tunnel. The chain is driven by a motor 26 through a speed reduction element 28 and auxiliary chains 30 and 32.

Mounted in the hood 12 is a plurality of resistance heating elements 34 held in position by means of insulators or the like 36 and to which electric current is applied in any suitable man-

ner. These heating elements and insulators extend throughout the length of the horizontal portion 12 of the tunnel, and the heat given off by the elements can be directly controlled in any suitable manner. Furthermore the speed at which the chain 20 travels through the device can also be controlled by regulation of the motor or speed reduction element 28 thereby assuring a very accurate surface drying of wood blocks 24 both as to the amount of heat applied to the blocks and the time during which they are in the dryer.

Experiments have been conducted to find the best possible way of producing this desired result most economically and efficiently.

The best device developed and the one described in this application is a drying tunnel using the highly polished surface of stainless steel as a mirror to reflect back the heat and also to reflect back the red-ray from the heating element. With the heating elements just under a cherry red color their temperature is approximately 1300° F., and the general temperature in the tunnel is in the neighborhood of 1000° F. The contour of the tunnel is made in such a way that the reflecting power is concentrated on the ends of the pins because the maximum "bleeding" of moisture occurs at these end grain surfaces. The stainless steel is adapted to take a very high polish and thus becomes an excellent reflector so that with the tunnel of generally elliptical cross-section, as shown in Figure 2, its top and bottom surfaces are practically flat and reflect rays of the heating element directly against the side surfaces of the pin blocks, but the side surfaces of the tunnel are shaped with such curvature as to concentrate and focus the reflected rays onto the end surfaces of the blocks to provide the high-speed drying effect needed on these areas. The efficiency of the stainless steel as a reflector serves to apply to the blocks a very large percentage of the heat developed by the heating elements, so that very little heat escapes through the metallic wall of the tunnel, and no heat insulation is found necessary thereon.

Thus, as the blocks 24 travel through the tunnel with their ends quite close to the vertically extending portions of the heating elements 34, the heat emanated directly from said elements, combined with the radiation reflected by the polished walls of the tunnel, serves to flash off the moisture at or near the surface of the blocks. The discharge end of the tunnel at 16 is made quite short so that delivery of the blocks shall be rapid

to permit them to be coated promptly, and before any further "bleeding" of moisture occurs.

We are aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, as indicated by the appended claims.

We claim as our invention:

1. An article surface dryer for articles of elongated form comprising a horizontally extending tubular hood open at both ends, a conveyor mounted for travel through said hood and including brackets disposed at intervals on the conveyor and formed to support the elongated articles for travel in positions extending transversely of the direction of travel of the conveyor, heat radiating means mounted within the hood at both sides of the conveyor, said hood including side walls having polished inner surfaces curved to concentrate reflected radiation upon the ends of the articles carried on the conveyor.

2. In a surface dryer, a horizontally moving conveyor having brackets disposed at intervals on the conveyor and formed to support elongated articles to be dried for travel in positions extending transversely of the direction of travel of the conveyor, a heat radiating grid mounted at both sides of the conveyor and an enclosing tunnel of approximately elliptical cross-section encompassing the grid and having a highly polished inner surface, the top and bottom walls of said tunnel being substantially flat and the elliptical curvature of the side walls serving to concentrate reflected radiation upon limited areas adjacent the sides of the conveyor.

3. A surface dryer for elongated wooden articles comprising a horizontally extending tunnel open at both ends, a conveyor mounted for travel through said tunnel and including means supporting each article with its grain extending transversely of the direction of travel and with its end grain surfaces exposed at the sides of the conveyor, and heat radiating means positioned at both sides of the conveyor and within the tunnel to extend along both sides of the path of travel of said articles, said tunnel being of approximately elliptical cross-section including side walls having polished inner surfaces, the elliptical curvature of said surfaces serving to concentrate reflected radiation upon the said end grain surfaces of the articles carried on the conveyor.

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