June 5, 1928.

1,672,331

R. D. MAILEY

VARNISH TREATING APPARATUS

Original Filed July 11, 1923 2 Sheets-Sheet 1

Fig. 1

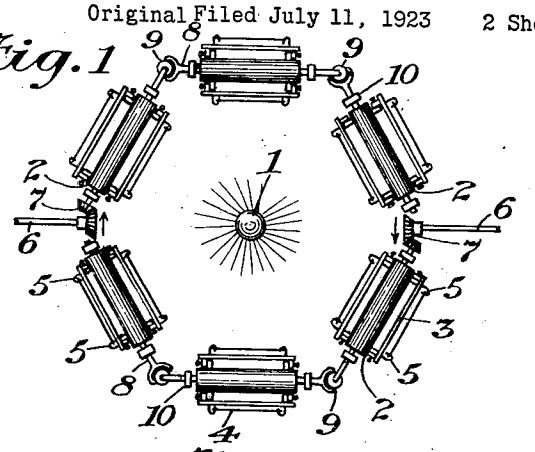


Fig. 2

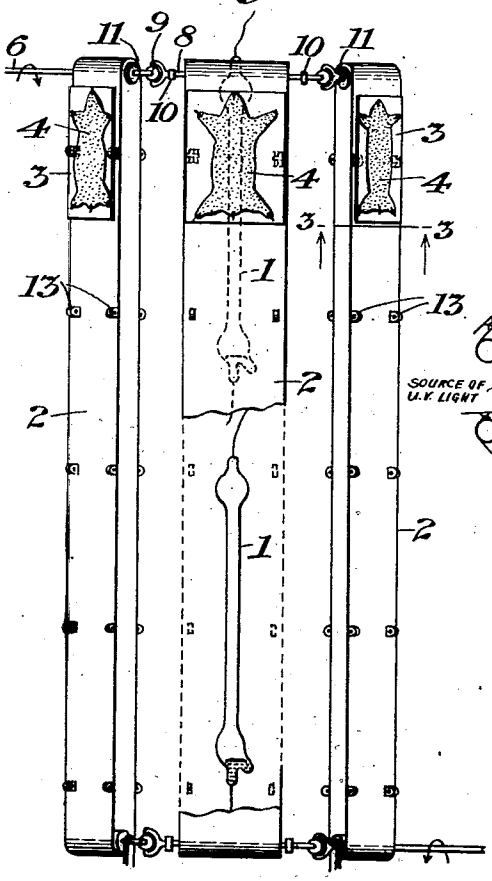


Fig. 7.

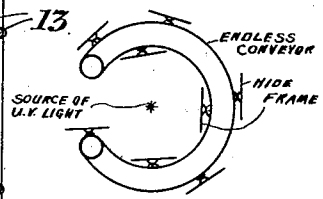


Fig. 3



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Fig. 5

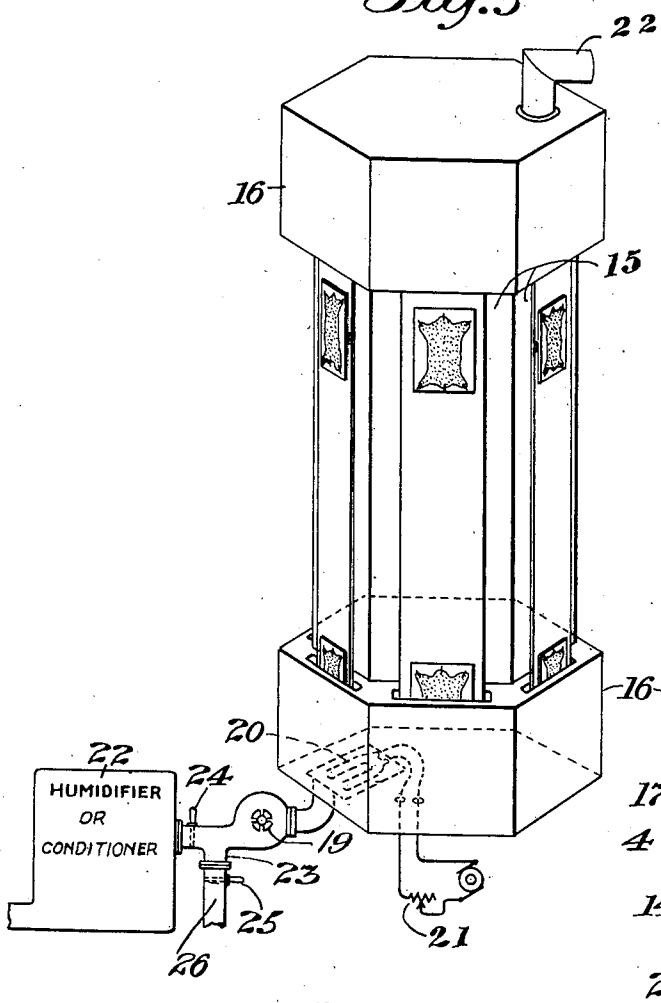


Fig. 6

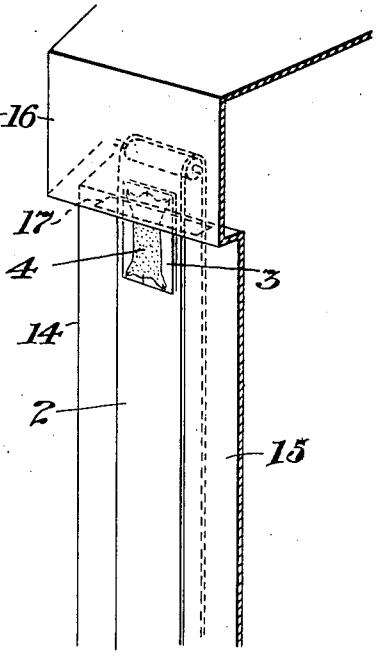
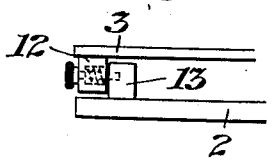


Fig. 4



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Patented June 5, 1928. 1,672,331

UNITED STATES PATENT OFFICE.

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VARNISH-TREATING APPARATUS.

Application filed July 11, 1923, Serial No. 650,876. Renewed November 3, 1926.

My invention relates to apparatus for the treatment and handling of freshly varnished surfaces, such as animal hides, fabrics, woods, metals, paper and the application of heat and light thereto for the purpose of drying the varnish. While the apparatus utilized in the practice of my invention is of particular value for the handling of prepared hides it is equally useful for general use such as for the handling of varnished surfaces of fabrics and the like for the drying of the varnish.

The apparatus of my invention comprises a conveyor arranged about a source of ultra-violet light. On the conveyor are means for holding varnished surfaces of stretched hides or fabrics, for example, or for holding frames on which they are stretched. The endless conveyor is caused to travel so as to expose successive hides to the source of ultra-violet light. The frames holding the hides are attached to the conveyor at the inwardly moving end and are detached as they come out at the other end of the conveyor. The speed at which the conveyor is caused to move is regulated to suit the time required for drying the varnish. A housing built about the conveyor is used in some instances in order that the nature of the atmosphere about the skins can be controlled as well as its temperature and humidity.

The enclosure of the source of ultra-violet light by the conveyor allows of the utilization of practically all of the light without the use of reflectors.

In the embodiment of my invention as shown in the drawings the conveyor consists of a number of endless belts arranged about the light source in a multi-sided unit. These are arranged and made to travel along the axis of the lamps. But my invention is not limited to this form. The conveyor in one form consists of a single belt or block link chain made to travel around the axis of the lamp which carries hide frame attachment connections.

The object of my invention is to provide means for drying varnished hides quickly and in large quantities.

Another object of my invention is to provide means for controlling the nature, humidity and temperature of the atmosphere about the varnished hides while being dried.

In the drawings Fig. 1 is a plan view of the arrangement of a conveyor about the source of ultra-violet light, with stretching frames attached to it. Fig. 2 is an elevation view showing the same arrangement, one belt of the conveyor being shown in part broken away to show a mercury arc lamp as the source of ultra-violet light in this apparatus; Fig. 3 is a section view along line 3—3 of Fig. 2, showing a stretching frame attached to one of the conveyor belts; Fig. 4 is a detail view showing the means of attaching a hide frame to a belt; Fig. 5 is an elevation view of the conveyor casing showing the parts of the conveyor belts on the outside of the casing, and showing diagrammatically air conditioning and regulating means. Fig. 6 is an elevation view of a section of the casing showing the relation of a belt thereto. Fig. 7 is a diagrammatic representation of an embodiment of my invention comprising a single belt or block link chain made to travel around the axis of a source of ultra-violet light and which carries hide frames and disengageable attachment connection therefor.

In the drawing parts 1 are sources of ultra-violet light, such as fused quartz mercury vapor arc lamps. About the lamps are arranged the endless belts 2 which travel over the rollers 11 which are mounted on the shafts 8. The shafts 6 connected to a source of motive power are connected to the roller shafts 8 by means of the bevel gears 7. The adjacent ends of these shafts 8 are connected by the universal joints 9 and the shafts themselves are mounted in bearings 10.

As shown in Figs. 3 and 4 the frame 3 is detachably attached to the conveyor belt 2 by means of the spring pins 12 which register in holes in the bosses 13.

In Figs. 5 and 6 is shown the casing 14 whose panels 15 form an enclosure about the inward portions of the conveyor belts. At the top and bottom of the casing are the housings 16 abutting outwardly to enclose the driving mechanism and to provide space for the hide frames 3 as they make the turn with the belts 2 over the rollers 11. The openings 17 in the shelves 18 between the housings and panels provide for the passage of the belts into and out of the casing and being of small area do not materially affect the regulation of the atmosphere within. The blower 19 mounted at the bottom of the casing is used, if desired, to blow conditioned or unconditioned air through the casing. Connected to the intake of the blower

is the air conditioner and between them is the intake pipe 26 through which unconditioned air can be drawn. The dampers 24 and 25 serve to cut off the conditioner or intake pipe 23 respectively or to regulate the amount of air flowing therefrom. Heat, if necessary, is supplied to the casing by means of the electric heater 20 which is connected to a source of current which is regulated by means of the rheostat 21.

The operation of my device is as follows. For exposing varnished surfaces, hides, for example, to the ultra-violet light from the fused quartz mercury arc lamps the frames holding them are attached by quickly detachable means to the moving belts 2 which carry them past the mercury arc lamps 1 at a rate of speed dependent upon the strength of the light, upon the nature of the varnish, and upon the condition of the atmosphere inside the casing 14. After the hides have passed through the casing and as they come out of it at the lower end of the casing they are with their frames detached from the conveyor and are replaced by other hides on which the varnish has not yet been dried. In this manner a continuous succession of hides are treated with a saving of both time and working space. To control the drying conditions to meet various needs the temperature and humidity of the casing atmosphere are controlled as is the nature of the atmosphere itself. Heat is supplied from the electric resistance heater 20 which is positioned in some suitable place such as at the air intake point of the casing as shown in the drawing and which is controlled by the rheostat 21. Air circulation is produced by means of the blower 19 and regulated by means of dampers 24 and 25 in the conditioned air and non-conditioned air intakes respectively. The proper degree of humidity is produced in the casing by admitting conditioned air from the conditioner 22 and by controlling the heating and ventilating of it. When the humidity of the air is suitable for the treatment of the varnished article the conditioner would not be used, the damper 24 would be closed and air from the surrounding or outside atmosphere would be admitted through the intake pipe 23. Likewise when the temperature of the air is right the heater need not be used. In certain localities where the moisture and temperature of the air is always suitable the casing and its auxiliary apparatus can be dispensed with and the apparatus be used without it as shown in Figs 1 and 2. The nature of the atmosphere may likewise be modified, when desired, by using nitrogen, hydrogen, carbon dioxide, or other gases of lower or higher oxidizing power than the air, and supplied to the device either through the conditioner or through the air intake pipe.

I claim as my invention:

1. In combination, a source of light rich in ultra-voilet rays, a conveyor unit substantially surrounding said source on all sides, and comprising sub-units of endless belts, means on said conveyor for holding articles to be treated by said light, and means for causing said belts to travel past said light source whereby said articles are exposed to the influence of said light.

2. In combination, a source of light rich in ultra-violet rays, a conveyor unit substantially surrounding said source on all sides and comprising sub-units of endless belts running substantially parallel to the axis of the light source, means on said conveyor for holding articles to be treated by said light, and means for causing said belts to travel past said light source whereby said articles are exposed to the influence of said light.

3. In combination, a source of light rich in ultra-violet rays comprising fused quartz mercury arc apparatus, a conveyor unit substantially surrounding said source on all sides and comprising sub-units of endless belts running parallel to said apparatus, means on said conveyor for holding articles to be treated by said light, and means for causing said belts to travel past said light source whereby said articles are subjected to the influence of said light.

4. In combination, a fused quartz mercury arc lamp, endless belts arranged longitudinally about and substantially surrounding said lamp, means for propelling said belts, means for attaching to the belts articles to be treated by the light, a casing for said light and articles being treated surrounding the inner lengths of said belts, heating means in said casing, a ventilating fan having its exhaust connected to said casing at its bottom, an air conditioner and an atmospheric air intake attached to the intake of said fan, and means for controlling the air from said conditioner and from said atmospheric air intake respectively.

Signed at Hoboken in the county of Hudson and State of New Jersey this 10th day of July, A. D. 1923.

ROY D. MAILEY.