Nov. 27, 1934. H. HELLER, SR 1,981,954

PROCESS OF TREATING FABRICS OR CLOTHES DURING LAUNDERING OPERATIONS AND APPARATUS THEREFOR

Filed March 26, 1931 2 Sheets-Sheet 1

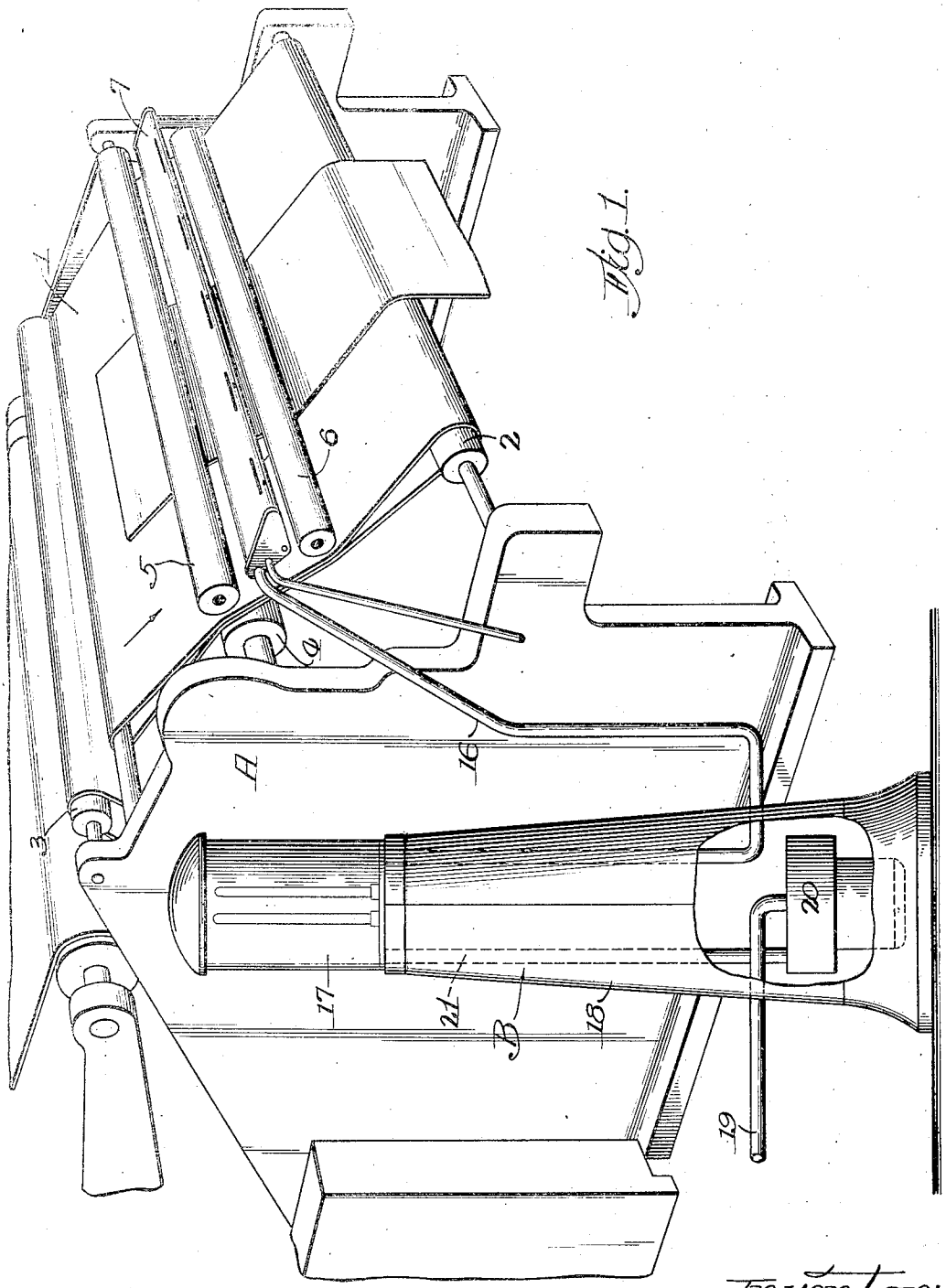

Fig. 1.

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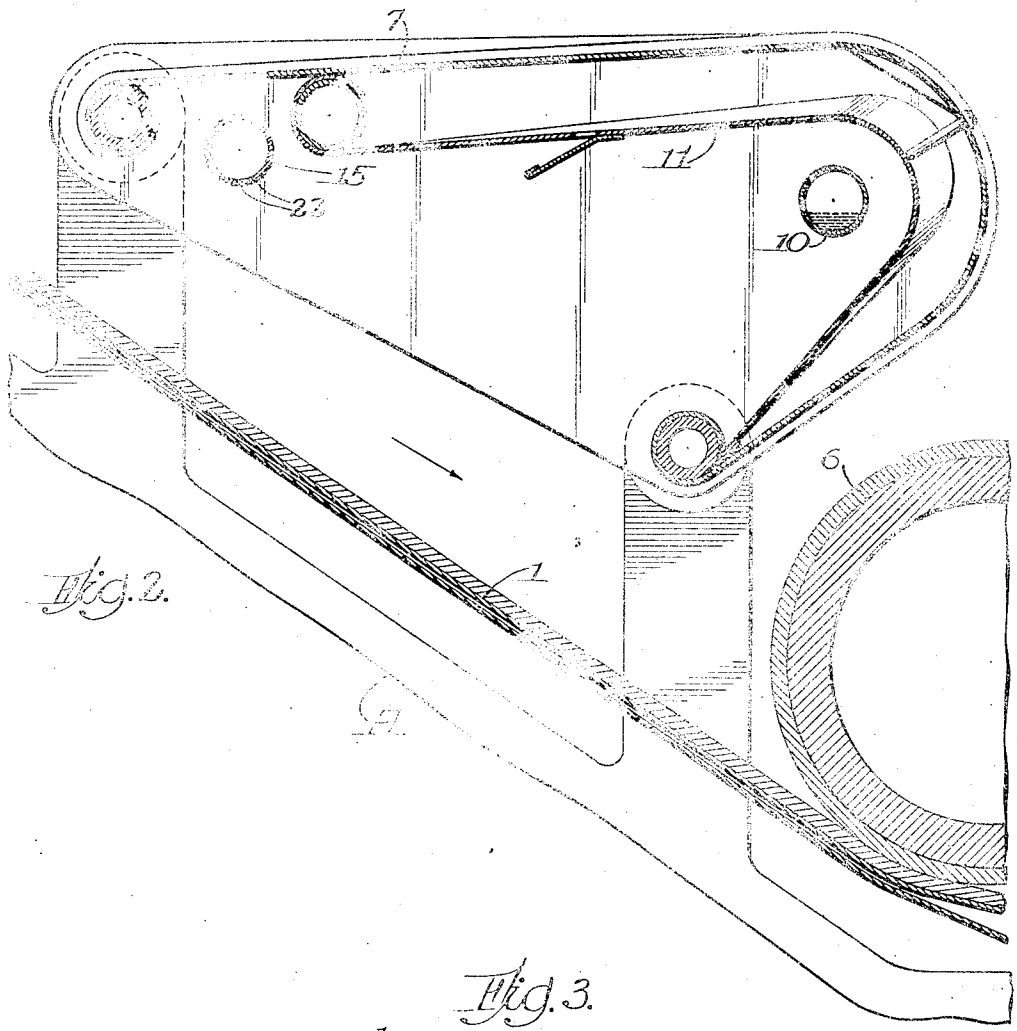
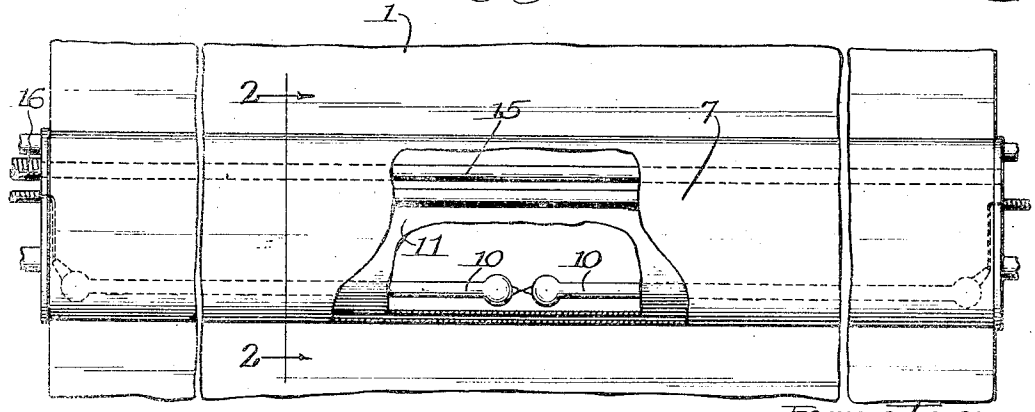


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE

1,981,954

PROCESS OF TREATING FABRICS OR CLOTHES DURING LAUNDERING OPERATIONS AND APPARATUS THEREFOR

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Application March 26, 1931, Serial No. 525,354

4 Claims. (Cl. 250—34)

My invention relates to the treatment of fabrics or clothes during the laundry processes in such manner that the clothes will have the characteristics or properties of sterilization, cleanliness and odor such as imparted to them when subjected to exposure of natural sunshine and fresh air by hanging them out-of-doors.

My object is to subject the clothes to ultra-violet radiation and ozone from artificial sources thereof, under controlled conditions, during one or more of the steps of the process of laundering the clothes, and in the proper degree to sterilize the clothes and impart to them the odor of fresh air and cleanliness.

A further object is to provide suitable apparatus by which this process is made adaptable to the equipment and conditions in commercial laundries.

Other objects of my invention will appear hereinafter.

The treatment of clothes, in accordance with my invention, may be accomplished during any or all of the stages of the laundering operations, but I prefer to carry out the application of my process in connection with that stage of the laundry operations generally known as the mangling or ironing operation, which is one of the last stages before the clothes are wrapped or packed for delivery. For this purpose, the accompanying drawings illustrate my improved apparatus constructed and arranged so that it can be attached to or associated with the power mangle through which the clothes are pressed.

Referring to these drawings,

Fig. 1 is a view in perspective of a portion of a laundry power mangle through which the clothes are passed, showing the application of my improved apparatus thereto for the treatment of the clothes;

Fig. 2 is an enlarged transverse section of the ultra-violet ray and ozone projector in relative position to the mangle; and

Fig. 3 is a plan view of the structure shown in Fig. 2, with parts of the canopy broken away to disclose the interior thereof.

The laundry mangle A, shown in the drawings, is of a type which is in common use and includes a broad traveling conveyor belt 1 which travels around rollers 2, 3 and 4, and constitutes the delivery side of the mangle. The belt is angularly disposed in position to receive the clothes over the top roller 3 and carry them down in flat ironed condition to the lower end of the belt in position to be removed from the machine by the operator.

In the present structure, I arrange to treat the fabric or clothes as they are carried along with this delivery belt. A power mangle of this type has a pair of upper rollers 5 and 6, disposed above the belt, and the clothes pass under these rollers between the rollers and the belt. These rollers are spaced apart, however, and in this space I position a hood, canopy or cover 7 which is disposed transversely of the line of movement of the clothes so that they will pass beneath the cover. This cover serves as a protection to the apparatus and prevents the light from the lamps affecting the operator. The cover or canopy 7 is mounted in any suitable manner at its ends on the frame of the mangle, so as to hold it in definite relation to the belt.

The canopy is, as shown more clearly in Figs. 2 and 3, substantially triangular in cross section, with its entire side open and presented to the belt. Within this canopy, I provide a source of ultra-violet radiation which may be of any suitable type for the purpose. I prefer to use the type of lamps known as mercury vapor gaseous conduction lamps which are generally in the form of elongated glass or quartz tubes 10. These tubes are disposed longitudinally of the canopy within the apex thereof, so as to distribute uniformly the ultra-violet radiation throughout substantially the width of the mangle belt. As shown in Figs. 2 and 3, two of these tubes are arranged in alignment and are supported in position in any suitable manner. The reflector 11, which may be of parabola section, is disposed longitudinally within the canopy in position to reflect the ultra-violet radiation toward the belt. This reflector may be of any type best adapted to the purpose. Polished aluminum is generally regarded as presenting the best reflecting surface for this purpose.

The tube lamps are suitably connected electrically to a source of power, and controlled by a switch in any desired manner. The ultra-violet lamps are thus disposed with their axes substantially parallel to the plane of the mangle belt and are preferably arranged at a distance of six or seven inches from said belt, this distance being practically as close as the operation of the mangle will permit.

I have found that when the clothes are thus passed through the zone of ultra-violet radiation from these lamps at the speed at which they are carried by the belt, the effect is to thoroughly sterilize the clothes and is the equivalent of a much longer period of exposure to natural sunlight and thus accomplishes beneficial effects

equal to the exposure to sunlight without slowing down or interfering with the speed of operation of the mangle.

Within the canopy, I provide a tube or pipe 15 which is preferably positioned within the forward edge of the canopy and disposed in parallel relation to and at a fixed distance above the mangle belt. This tube preferably extends the length of the canopy and is mounted in the end walls thereof, and which is connected at one end by the conduit 16 to a source of supply of ozone.

In the drawings I have illustrated an ozone generator B, to which the conduit is connected. The ozone generator may be of any suitable type for the purpose. That which is shown has an ozone generating compartment 17 at its upper end, formed by a glass-walled container mounted on a suitable standard 18. The conduit 16 is extended upwardly within the standard 18 and communicates with the ozone compartment. Atmospheric air is taken into the structure through the inlet conduit 19 which is connected to a suitable blower 20. The delivery side of the blower is connected by the interior conduit 21 to the ozone generating compartment 17. Air is thus drawn in by the blower circulating through the ozone compartment 17 and delivered by the conduit 16 to the tube 15 within the canopy. This tube has a series of fine nozzle openings 22 at its under side, directed toward the clothes on the mangle belt. The structure is arranged so as to project or spray a series of fine jets of ozone directly against the clothes with sufficient force so as to envelope the surface of the clothes and project the ozone through the fabric. The clothes passing through this zone of ozone are thus treated effectively without interfering or slowing down the operation of the mangle. The treatment of ozone imparts to the clothes an odor of freshness and cleanliness equivalent to that which they derive by exposure out-of-doors to fresh air. The projected ozone acts as a cooling medium or gas to neutralize or offset any tendency of the ultra-violet light rays to overheat or scorch the fabric being treated.

Treatment of the clothes to ultra-violet radiation and ozone removes the odor of soap and other odors which are generally prevalent in clothes which have been passed through the usual commercial laundry operations, and greatly enhances the value of the work done by the laundry by enabling the laundry to produce a washed and ironed product having the properties of odor and cleanliness equivalent to that imparted to them when they are subjected to sunlight and out-door fresh air.

I claim:

1. Apparatus of the character described including: an elongated hood, means for attaching said hood to a sheet material handling appliance, an elongated reflector supported by said hood inside of the same and spaced therefrom, an elongated ultra-voilet light generator supported inside of said reflector, a discharge pipe adapted to conduct a cooling gas supported beneath said hood and cooperating with the ultra-violet light generator, and apertures in said pipe adapted to direct a cooling gas issuing therefrom in a direction towards the sheet material.

2. Apparatus of the character described including: an elongated hood, means for attaching said hood to a fabric handling appliance, an elongated reflector supported from said hood inside of the same and spaced therefrom, an ultra-violet light supported inside of the reflector, and means for ejecting a cooling gas toward said fabric, said means being supported inside of the hood and cooperating with said ultra-violet light.

3. An apparatus for treating material comprising an elongated hood, means for attaching said apparatus to the material handling apparatus, a reflector disposed within the confines of said hood, a source of ultra-violet light mounted within the confines of said hood and cooperating with said reflector for directing light rays against the material, a conduit for conducting a cooling gas mounted within the confines of said hood in spaced relating to said ultra-violet light source and within the range of light rays emanating from said source, and apertures in said conduit to direct said cooling gas towards the material to be treated to impinge thereagainst and cool the same to counteract the heating effect of said ultra-violet rays.

4. Apparatus of the character described including an elongated hood, an elongated reflector supported from said hood inside of the same, an ultra-violet generator supported inside of said reflector and elongated gas conducting means cooperating with said hood and ultra-violet generator for ejecting a cooling gas along a path at least partially within the confines of the hood into contact with the substance to be treated by the ultra-violet light from said generator.

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