A. HÉLIOT.

HOSIERY FINISHING MACHINE.

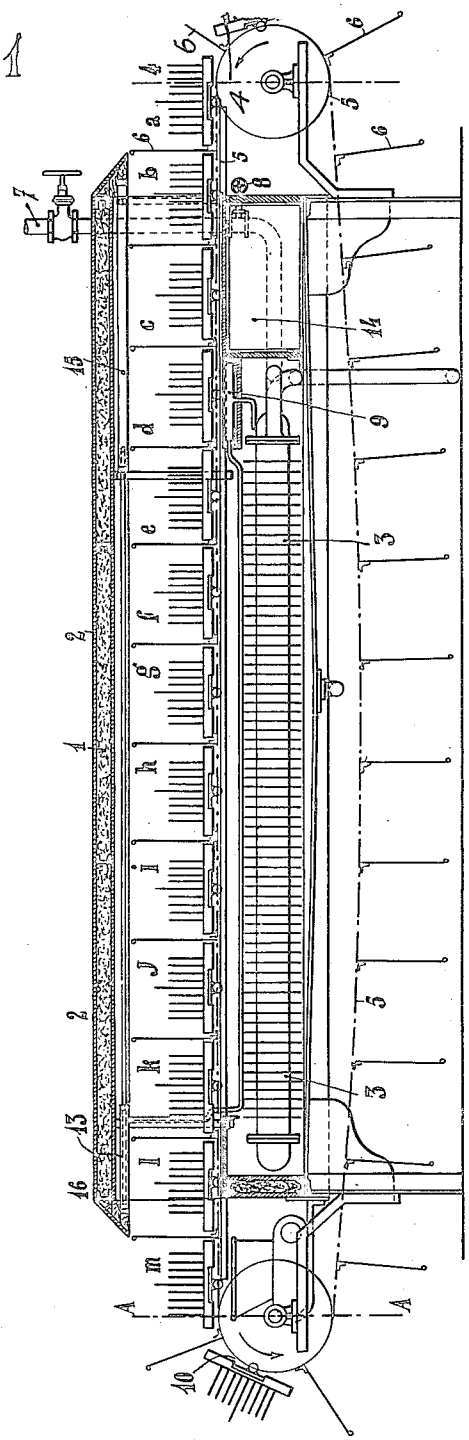
APPLICATION FILED MAY 25, 1921.

1,436,037.

Patented Nov. 21, 1922.

2 SHEETS—SHEET 1.

Fig. 1



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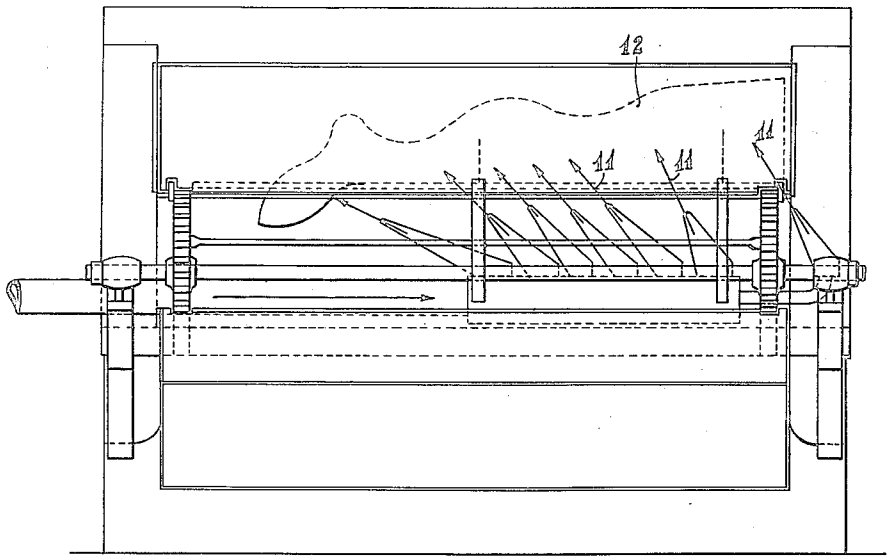
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2 SHEETS—SHEET 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

AUGUSTE HÉLIOT, OF TROYES, FRANCE.

HOSIERY-FINISHING MACHINE.

Application filed May 25, 1921. Serial No. 472,434.

To all whom it may concern:

Be it known that I, AUGUSTE HÉLIOT, a citizen of the French Republic, residing at Troyes, Aube, France, have invented certain new and useful Improvements in Hosiery-Finishing Machines, of which the following is a specification.

Hitherto machines for finishing hosiery such as stockings and socks were generally constituted by chambers formed of masonry or of sheet metal boxes, in which the temperature was raised by means of radiators. The goods placed on suitable wooden forms or blocks were introduced into the heated chambers and owing to the elevated temperature therein became fixed in the shape of the form or block, within a period varying according to the temperature obtaining. The blocks were then withdrawn from the apparatus by the operator and placed upon an adjacent table on which the finished goods were removed from the blocks and replaced by goods to be treated and passed through the apparatus and so on.

This manipulation of blocks necessitated frequently opening doors or drawers provided in the chambers or boxes which resulted in a loss of heat from the said chamber or boxes and at the same time necessitated work on the part of the operator and reduced his output. Loss of heat was further increased by radiation from the walls of the apparatus which were not insulating. Moreover, notwithstanding the improved results obtained by the use of metal blocks, they could not be used, as the operator could not manipulate them easily in view of their high temperature.

The apparatus according to the invention makes it possible to carry out in one machine three essential operations constituting the fininishing: viz, steaming the hosiery, drying same at a high temperature and cooling on the block.

It also renders possible the use of metal blocks which impart to the goods a better appearance and a shape which is more permanent.

It prevents the admission of cold air into the apparatus, and therefore condensation which is very injurious to the goods.

It prevents loss of heat by radiation and makes it possible to dispense with a separate table. All these advantages together makes it possible to obtain a much higher output.

An apparatus according to the invention is illustrated by way of example in the accompanying drawing in which—

Figure 1 is a longitudinal section of the complete apparatus, and

Figure 2 a section on line A—A of Figure 1 showing the means for cooling the blocks when leaving the apparatus.

The apparatus comprises a rectangular box 1 closed on all sides and open at the two ends for the passage of the goods. The box comprises any suitable number of members 2 connected together and consisting of double walls of fibro-cement, between which is packed mineral wool (or any other non-conducting material) which constitutes an excellent insulating medium and prevents almost entirely any loss of heat by radiation. The insulating members are secured to a frame made of channel iron and the upper members form a table for the operator and renders unnecessary an independent table which has hitherto been indispensable with the known apparatus. In the lower part of the apparatus is a battery of ribbed radiators 3 which imparts the constant high temperature (120–130° C.) required for finishing the goods.

The goods are placed on metal (or wooden) blocks supported edgewise and in the direction of the width by racks 4 which can receive about 12 of them. These racks 4 are secured to two endless chains 5 supported on pinions automatically driven by means of belts and gear wheels. Each rack 4 is arranged between two metal panels 6 also secured to the two chains and adapted to always keep the heating chamber closed to prevent loss of heat and admission of cold air which causes condensation, which stains the articles under treatment.

7 is a steam inlet, 8 the steam connection of a vapourizer, 9 the vapourizer, 10 a blowing apparatus for cooling the blocks. 11, Figure 2, are nozzles projecting in different directions for blowing cold air on to the blocks 12, 13, Figure 1, is a heating plate, 14 and 16 are neutral chambers, 15 is a heating plate.

The apparatus is operated in the following manner:—

The goods are placed on the rack *a* and are advanced into the interior of the apparatus to a distance equal to that comprised between two panels 6, as already stated, by the operation of a lever arranged

within reach of the attendant and not shown; the rack *a* takes up the position *b* and remains there whilst the attendant is placing say 12 blocks on the new rack which has been advanced to a position in front of him. The filled rack is then advanced into the heating chamber, then the next one is filled and advanced, and so on.

In the positions *b* and *c*, the goods are in a neutral chamber 14 closed at the top and at the bottom, where they are not exposed to any action. On arriving in the position *d*, the good are above a steaming box 9 limited by two of the panels 6 in which the goods are moistened by steam. The goods of course remain in this chamber the time taken up in loading a rack. The steaming is regulated at will by the attendant by means of the cock 8 placed within his reach.

At the top of the vapourizing and neutral chambers is a heating plate 15 which prevents the formation of drops by condensation which would be liable to stain the goods.

In the positions *e*, *f*, *g*, *h*, *i*, *j*, *k* the goods are exposed to the high temperature of the radiators for the period taken up in placing seven dozen articles on the blocks. The chamber (from *e* to *k*) is closed at the top by a sheet metal plate forming a hot ceiling which prevents condensation. On reaching the position 1, the goods enter another neutral chamber 16 also provided with a heating plate 13 for preventing condensation. On reaching the position *m*, the goods pass out of the heater and are rapidly cooled by a current of air forced by means of a blower 10 through a suitable number of nozzles 11 of variable inclination. The cold air impinges against the goods over their entire surface during the time taken up in blocking a new dozen.

The cooling operation whilst facilitating the manipulation of metal blocks imparts a permanency to the crease in the goods which is maintained notwithstanding the amount of subsequent handling of the goods. This latter result is of the utmost importance for the hosiery industry, and has never yet been attained by the various systems at present in use.

It is obvious that the dimensions of the apparatus, the number of neutral steaming or heating chambers provided and the dimensions etc., may be varied according to requirements.

What I claim as my invention and desire to secure by Letters Patent is:—

1. An apparatus for finishing hosiery, including a tunnel, a series of chambers within said tunnel, said chambers including a series of imperforate panels, a conveyor therefor, racks also, carried by the conveyor, each panel completely closing the tunnel.

2. An apparatus for finishing hosiery, including a tunnel, a conveyor passing through said tunnel, racks and panels carried by said conveyor, said racks being adapted to support hosiery, said panels completely closing said tunnel to form a series of chambers, said racks and panels being independently mounted on said conveyor.

3. An apparatus for finishing hosiery comprising a tunnel divided into a number of chambers, including a neutral chamber, a steaming chamber, and a drying chamber, the neutral chamber being provided at the upper part with a heating plate, the steaming chamber being provided at its base with a vapourizer, and the drying chamber having a radiator and means to convey an article through said chambers.

4. Apparatus for finishing hosiery, comprising a tunnel, endless chains extending therethrough carrying hosiery racks, and carrying between said racks a series of panels the area of which is equal to the cross sectional area of the tunnel, which panels divide the tunnel into a number of chambers when passing through said tunnel.

5. In a hosiery finishing apparatus means for cooling the goods on the blocks as soon as they leave the steaming and heating tunnel, comprising a number of air nozzles and an air compressor.

In testimony whereof I affix my signature.

AUGUSTE HÉLIOT.