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 APPARATUS FOR TREATING COATED FABRICS.
 APPLICATION FILED MAY 7, 1917.

1,268,941.

Patented June 11, 1918.

Fig. 1.

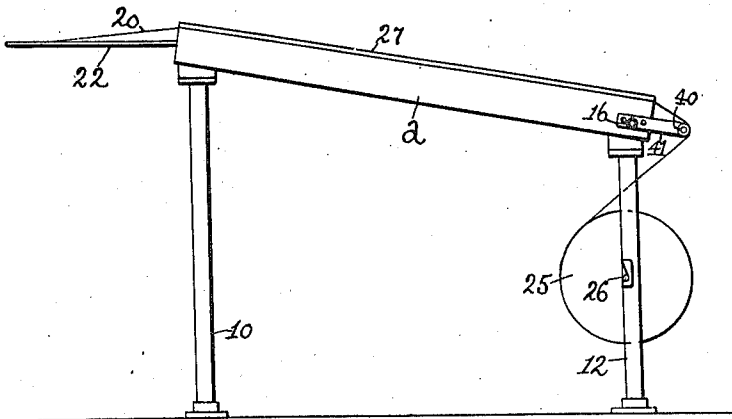


Fig. 2.

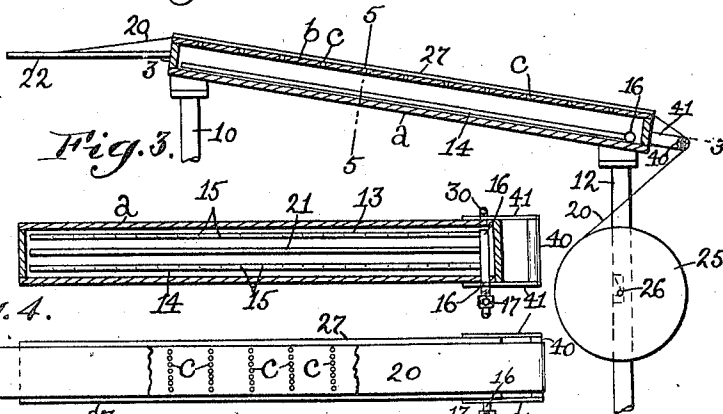


Fig. 3.

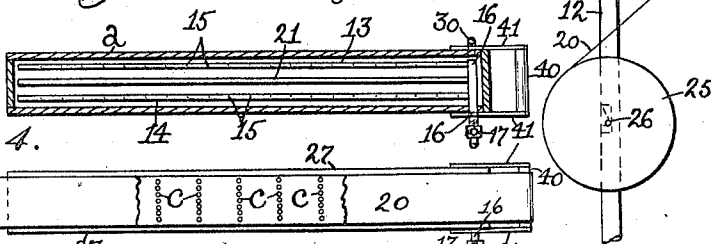


Fig. 4.

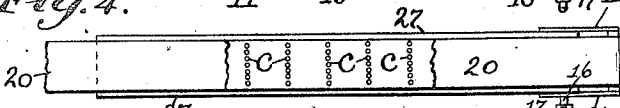


Fig. 5.

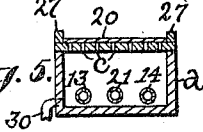
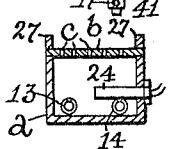


Fig. 6.



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APPARATUS FOR TREATING COATED FABRICS.

1,268,941.

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Application filed May 7, 1917. Serial No. 186,862.

To all whom it may concern:

Be it known that we, WILLIAM P. EGAN and JOHN J. SHEEHAN, citizens of the United States, residing in Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Apparatus for Treating Coated Fabrics, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to an apparatus for treating a strip or length of canvas or other fibrous material provided on one surface with a coating of adhesive material, whereby a predetermined length of the coated fabric is subjected on its fabric side to moist steam so as to moisten the fibrous layer in the desired or proper manner with a minimum amount or quantity of steam, and also is subjected to heat in the presence of said moist steam and in sufficient quantity to effectively increase the heat of the moist steam so as to soften the gum or other adhesive coating without impairing the effectiveness of the moist steam upon the fibrous layer, whereby an apparatus is obtained, which is hygienic in that the quantity of moist steam employed is so small as to be practically confined in the apparatus and thereby excluded from the work room in which the apparatus is located, which is economical to operate on account of the minimum consumption of steam, which is effective in operation, which is light and capable of being easily transported and which is inexpensive to construct.

To this end we employ a steam chest or chamber which is closed at its sides and ends and is provided with a perforated or foraminous top wall over which the coated fabric is passed with the fibrous layer in contact with said top wall and preferably covering the perforations thereof.

The steam chest or chamber is provided with one or more steam pipes, which are extended lengthwise of the chamber for substantially the length of the same and are closed at their ends and provided with perforations, preferably located in the upper surface of said pipes and for the best result made small or fine.

The perforated steam pipes are connected with a supply pipe for moist steam, which is provided with a valve by which the quan-

tity of live or moist steam discharged into the chamber can be regulated to moisten the fibrous layer of the coated fabric in the desired or proper manner, to render it pliable or flexible and enable it to be manipulated so as to conform to the shape of the article to which it is applied.

The steam chest or chamber is also provided with a heat radiator to increase the heat in the moist steam sufficiently to heat the adhesive coating so as to render it soft or tacky, without increasing the amount or quantity of steam in the steam chest or chamber, and without impairing the effectiveness of the moist steam upon the fibrous layer.

The heat radiator may be an additional pipe within the steam chamber, which is connected with the steam supply pipe to receive steam therefrom and which is imperforate or substantially so, to enable this pipe to act as a radiator of heat and to prevent passage of any substantial volume of moist steam into the steam chamber.

The fabric treated with this apparatus is especially adapted to be applied to an insole of leather or other material and particularly to an insole having a lip and used in welted boots and shoes.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of an apparatus embodying this invention.

Fig. 2, a longitudinal vertical section of the apparatus shown in Fig. 1.

Fig. 3, a horizontal section on the line 3—3, Fig. 2.

Fig. 4, a plan view of the apparatus shown in Fig. 1 with a portion of the fabric broken away.

Fig. 5, a cross section on the line 5—5, Fig. 2, and

Fig. 6, a section of the steam chamber provided with a modified form of radiator.

Referring to the drawing *a* represents an oblong metal box which is closed at its sides and ends and is provided with a top wall *b* having perforations *c*. The box *a* may be supported in any suitable manner and is herein shown as supported at its opposite ends by uprights or posts 10, 12, which may and preferably will be of suitable length to have the box *a* supported in an inclined position. The box *a* constitutes a steam chest or

chamber and is provided with preferably a plurality of perforated pipes 13, 14, located near the bottom of the chamber and extended from the lower end thereof to near the upper end thereof. The pipes 13, 14, are preferably located near the sides of the chamber to obtain a more even distribution of steam which is admitted into the chamber through perforations 15 preferably in the upper surfaces of said pipes.

The pipes 13, 14, may be designated the steam supply pipes for the chest or chamber *a*, and are connected with a source of steam supply for moist steam by a pipe 16 provided with a valve 17, by means of which the amount or quantity of moist steam admitted into the chest or chamber *a* may be regulated as desired. The steam admitted into the chamber contains more or less moisture which passes through the perforations *c* in the top wall of the chamber *a* and acts on the fibrous layer of the coated fabric 20, which is passed over said top wall and normally covers the perforations therein. The moist steam serves to render the fibrous layer flexible or pliable, but when economically used does not contain sufficient heat to properly soften the gum or adhesive coating on the upper side of the fabric within proper time limits, and for this latter purpose, the chamber *a* is provided with one or more heat radiators, to increase the heat units in the moist steam without increasing the volume of steam and without impairing the effectiveness of the moist steam upon the fibrous layer of the coated fabric. The heat radiator may be made in various forms, and in the present instance is shown as a pipe 21, which is connected with the steam supply pipe 16 and is inclined upwardly from the lower end of the chamber *a* toward the upper end thereof, and said pipe is closed or substantially closed against the passage of moist steam into the chamber, so that the moist steam within the chamber is heated by heat which radiates from the pipe 21. In the present instance, the pipe 21 is represented as free from perforations, but it is not desired to restrict the invention to a pipe free from perforations, as good results would be obtained with a pipe having only one or a few perforations, in which case the pipe would be what is above termed as substantially closed. The pipe 21 extends substantially the length of the chamber *a* and is preferably located between the perforated pipes 13, 14. The additional heat derived from the radiator increases the heat of the moist steam within the chamber *a* to a sufficient extent to enable the gum or coating layer on the fabric 20 to be rendered tacky or softened to the proper or desired degree, to insure its adhesion to the insole or other material to which the coated fabric is applied upon a suitable bench or table 22,

without impairing the effectiveness of the moist steam to wet the fibrous layer and render it soft and pliable.

In Fig. 3, the radiator is shown as a pipe 21, but it is not desired to limit the invention in this respect, as the chamber *a* and the moist steam therein may be heated by other forms of radiators, such, for instance, as shown in Fig. 6, wherein the radiator is illustrated as a substantially small electrical unit or heater 24, which may be such as now commonly found on the market.

The coated fabric 20 may be drawn by the operator over the perforated top wall of the chamber *a*, and may be taken from a roll 25 wound upon a shaft 26 which is detachably supported by the upright posts or legs 12 in any suitable or well understood manner. The fabric 20 on its passage over the top wall of the chamber *a* may be guided by suitable devices, herein represented as ribs or pieces 27 attached to said top wall, but these may be omitted if desired.

In operation, the coated fabric is laid upon the perforated wall of the steam chest with the fibrous layer in contact with the said wall, and the valve 17 is opened to admit steam into the pipes 13, 14, and into the radiator pipe 21, with the result that only a small volume or amount of steam is necessary to properly moisten the fibrous layer, thereby avoiding waste of surplus steam into the operating room, which is highly objectionable to the operators from the view point of hygiene and comfort, while at the same time the moist steam within the steam chamber *a* is provided with additional heat to properly soften the gum or adhesive coating without impairing the effectiveness of the moist steam upon the fibrous layer. The steam chamber *a* may be provided with a suitable drip pipe 30 for water of condensation.

By inclining the radiator pipe 21 upwardly, any water of condensation which may be formed in the said pipe is free to gravitate back into the supply pipe 16 from which it is forced out through the perforated pipes 13, 14, into the chamber *a*.

The coated fabric on its passage from the roll 25 may and preferably will pass over a guide roller 40 supported by arms 41 attached to the chamber *a*.

It will also be observed, that the apparatus comprises only a single steam chamber and can be made very light and inexpensive to build and operate.

We have herein shown one construction of apparatus embodying the invention, but it is not desired to limit the invention to the particular construction shown.

Claims.

1. In an apparatus of the character described, in combination, a steam chamber provided with a perforated wall with which

a coated fabric coöperates to be moistened and heated by steam passing through said perforated wall, and having an inlet for moist steam, and a heat radiator separate from the walls of said steam chamber and located in said steam chamber to increase the heat therein without impairing the effectiveness of the moist steam on the fibrous layer of a coated fabric movable over said perforated wall.

2. In an apparatus of the character described, in combination, a steam chamber provided with a perforated wall, and with an inlet for moist steam, and an upwardly inclined steam pipe within the said chamber and substantially closed to the passage of steam through it into said chamber and having its inlet end below its upper end.

3. In an apparatus of the character described, in combination, a steam chamber provided with a perforated wall, with which a coated fabric coöperates to be moistened and heated by steam passing through said perforated wall, a steam inlet pipe extended

into said chamber and provided with perforations for the passage of moist steam through the pipe into said chamber, and a heat radiator separate from the walls of said chamber and located in said chamber and capable of radiating heat therein to increase the heat within said chamber without impairing the effectiveness of the moist steam upon the fibrous layer of a coated fabric movable over said perforated wall.

4. In an apparatus of the character described, in combination, a steam chamber provided with a perforated wall, a plurality of perforated steam inlet pipes extended within said chamber for substantially the length of the same, and an upwardly inclined steam pipe located between said perforated pipes and substantially closed to the passage of steam through it and having its inlet end below its upper end.

In testimony whereof, we have signed our names to this specification.

WILLIAM P. EGAN.
JOHN J. SHEEHAN.