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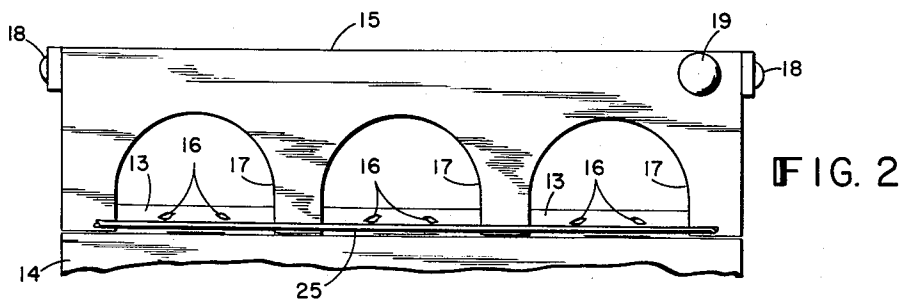
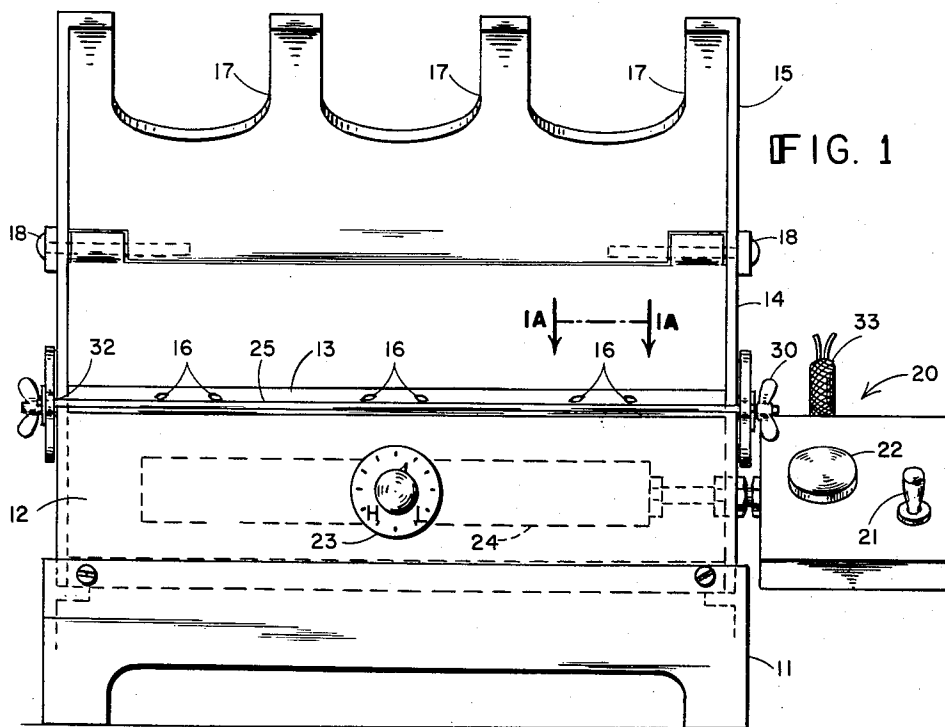
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2,929,082

STEAM BOX FOR SHOE MANUFACTURING

Filed March 17, 1958

3 Sheets-Sheet 1



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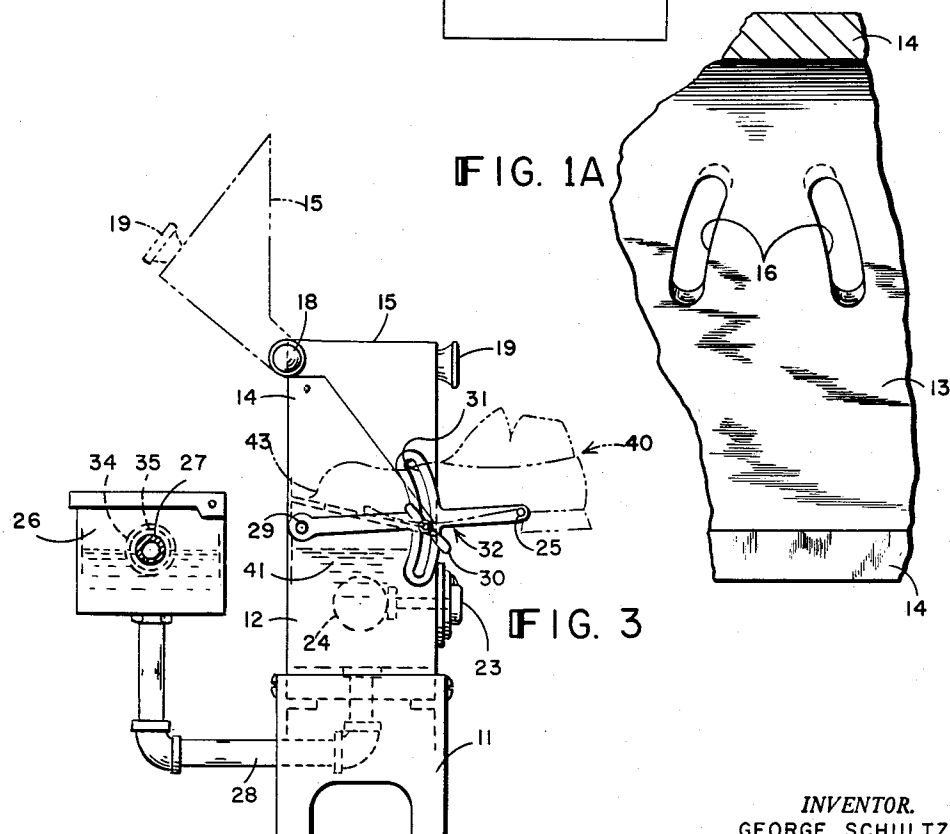
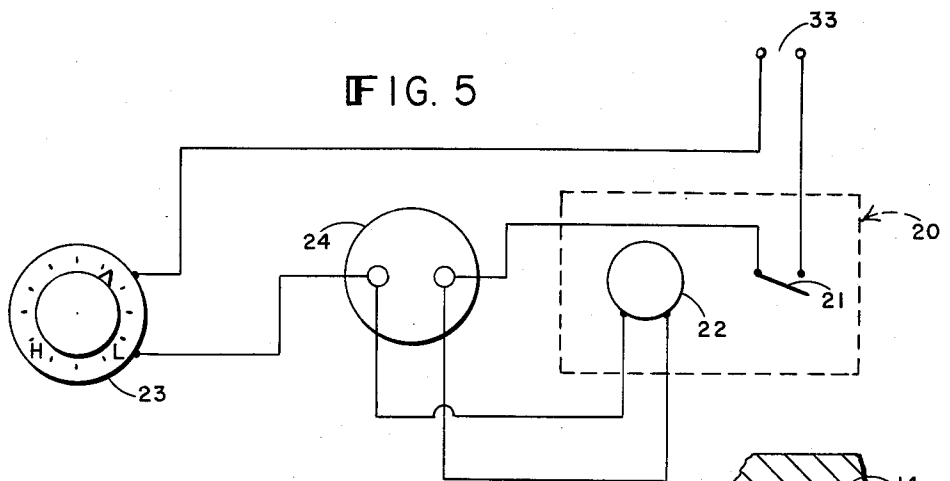
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STEAM BOX FOR SHOE MANUFACTURING

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3 Sheets-Sheet 2



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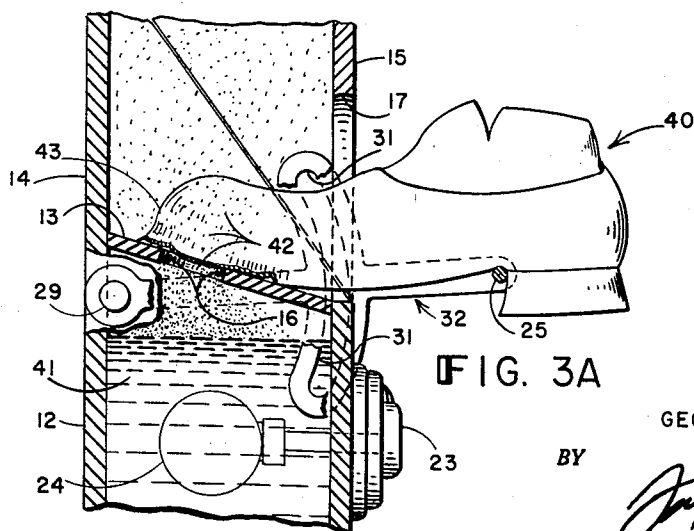
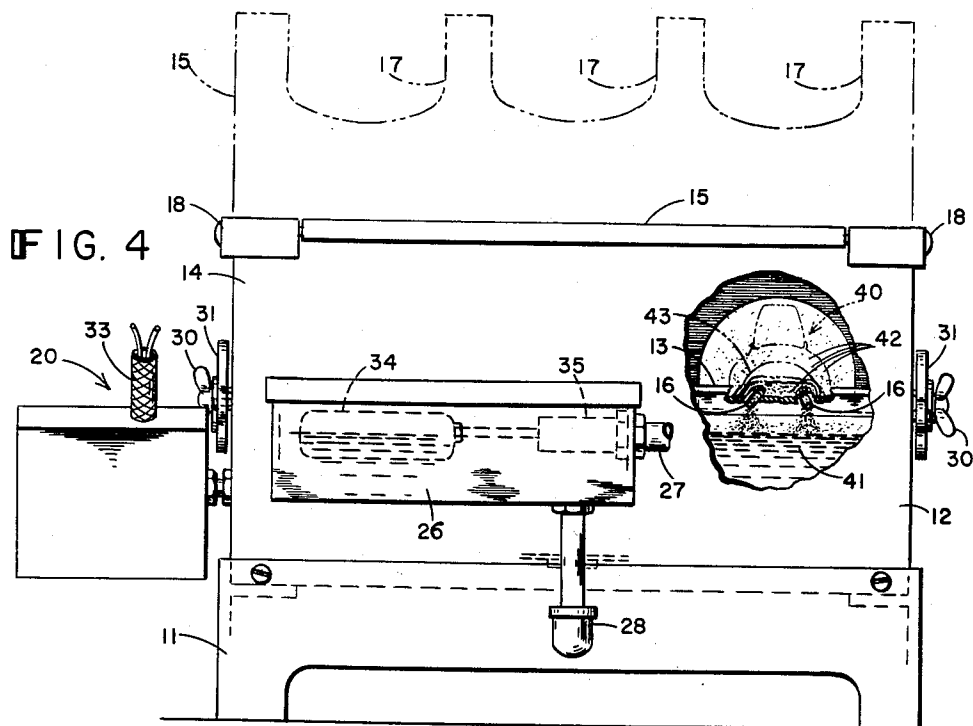
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STEAM BOX FOR SHOE MANUFACTURING

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3 Sheets-Sheet 3



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2,929,082

STEAM BOX FOR SHOE MANUFACTURING

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4 Claims. (Cl. 12—1)

This invention relates to a novel steam box useful in shoe manufacturing. In particular, it relates to a steam box adapted to soften the leather at the toe section of a shoe prior to the toe lasting operation.

The toe lasting operation conventionally requires the leather to be pulled over and nailed and then smoothed by the toe-lasting machine. This machine normally applies great pressure to the vamp.

In order to allow the leather to be pulled over and smoothed it is necessary to steam the leather so as to obtain sufficient flexibility for these operations. The prior art devices for steaming consist of closed boxes with pigeon holes and an open steam supply in the box. With delicate leathers, such steaming often causes stains on the vamp and leaves marks from the toe jack portion of the toe lasting machine.

The principal object of this invention is to provide a novel steam box which permits controllable steaming of the toe leather but does not allow vapor to impinge on the top of the vamp, thus avoiding vamp stains and toe jack marks.

Further objects and a fuller understanding of the invention will hereinafter appear from the following description of a preferred embodiment illustrative of the invention and shown in the accompanying drawings in which Fig. 1 is a front view of the steam box with the cover open.

Fig. 1A is a plan view of a portion of the slanting partition between the steaming compartment and the steam chamber showing the steam vents.

Fig. 2 is a front view of the cover in a closed position.

Fig. 3 is an end view of the box.

Fig. 3A is a transverse vertical section of the box showing a shoe in steaming position.

Fig. 4 is a rear view of the box with a portion partly broken away showing a shoe in steaming position.

Fig. 5 is a circuit diagram of electrical connections.

My shoe steam box consists of a lower steam producing chamber, an upper shoe steaming compartment, steam producing and control means, shoe supporting means, a regulated water supply, a power supply and electric control means. Between the compartment and the chamber there is a forwardly slanting partition in which there are cut various pairs of arcuate slots which serve as steam vents. Attached to the box is a water tank wherein the water supply is maintained at the same level as the water in the steam producing chamber. This level is controlled by a ball cock float valve. The steam required is generated by a thermostatically controlled immersion heater positioned below the water level in the chamber. The steaming compartment has a hinged truncated cover having cut out portions on its front face. Each of these cut-outs is in front of a pair of the steam vents. A longitudinal bar positioned in front of the cut outs and spaced from them serves as a support for the shoes. This bar can be raised or lowered as it is fixed on both ends to radial arms having slotted guiding quadrants with associated locking means.

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Referring to the drawings the shoe steam box therein shown is provided with a supporting base 11 upon which is positioned a lower steam producing chamber 12 enclosing an electric immersion heater 24 positioned in the lower section of said chamber below a predetermined water level and connected to an externally mounted adjustable thermostat 23 positioned on the front face of said chamber and set at predetermined high and low temperature levels. The chamber 12 has a forwardly slanting top 13 used as a steam plate and in which there are cut pairs or arcuate steam vents 16. The top 13 thus acts as a partition between chamber 12 and compartment 14 and by means of the vents 16 provides steam connections between said upper and lower portions.

Above chamber 12 there is positioned a covered upper shoe steaming compartment 14 with a truncated cover 15 having a depending front face and being connected to compartment 14 by hinges 18 positioned on its rear upper edge adjacent to its top surface. The cover 15 has cut out portions 17 on its front face which are positioned laterally from said steam vents when said cover is closed. Into each of these openings 17 a shoe 40 with vamp 42 and toe portion 43 may be inserted. Cover 15 is provided with a heat insulated handle 19. A pipe connection to water supply 27 feeds water into tank 26 which is supported by piping 28 which feeds water into chamber 12.

Connected to water supply 27 is an internally positioned adjustable valve 35 controlled by float 34, which maintains the water 41 at a predetermined level in chamber 12.

External shoe supporting means comprising a longitudinal bar 25 is positioned parallel to the face of said compartment and is connected at each end to radial arms 32 pivoted at points 29. Arms 32 are provided with slotted guiding quadrants 31 having locking wing nuts 30 and provide means for vertically adjusting said bar with respect to said partition.

The immersion heater 24 is connected to a switch box 20 fed by a power supply 33 and controlled by a switch 21 and an associated pilot lamp 22. Switch 21, immersion 24 and thermostat 23 are connected in series across power supply 33. Pilot lamp 22 is connected in parallel with immersion heater 24.

In operation, after water supply has been turned on, resulting in a predetermined water level in tank 26 and steam producing chamber 12, switch 21 is thrown energizing immersion heater 24 and lighting lamp 22. The thermostat 23, adjusted for high and low positions controls the temperature of the water 41 and produces the volume of steam required. It is preferable, as illustrated in the drawings, that the sensing element of the thermostat not only be immersed in the water but also in contact with the immersion heater. This permits very sensitive control of the volume of the steam required. For example, where only a small amount of hot vapor is required as in the case of softening the finish of delicate leather to prevent cracking, a high setting of 190° F. can be used. Where a large volume of steam is needed as in the case of penetration of stiff leathers, an appropriate setting above 212° F. can be used. The sensing element, being in contact with the heater is responsive to the heat of the heater as well as that of the water to give an averaging effect, whereby a setting below 212° F. substantially reflects the temperature of the water but a setting above 212° F. correlates with the output of steam. It also serves as a safety shut-off in the event of a lack of water in the tank to prevent burning out of the immersion heater.

After the proper settings are made the cover 15 is closed and the shoe supporting bar 25 is adjusted to the desired height by tightening nuts 30 in position on slotted guiding quadrants 31. The switch is then thrown and

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after the appropriate steam production starts the toe portion of the shoe 40 is inserted for the appropriate amount of time into hole 17 with the bottom of the last resting on partition 13 over steam vents 16, the arch resting on supporting bar 25.

With the use of this invention, I have found that the desired amount of steam can be provided to the toe portion of the shoe without spotting or discoloration or toe jack marks on the most delicate of leathers.

While the preferred embodiment of my invention has been described in detail, it will be understood that I do not wish to be limited to the particular construction set forth, since various changes in the form, material, proportions, and arrangement of parts, and in the details of construction may be resorted to without departing from the spirit and scope of the invention, or destroying any of the advantages contained in the same, heretofore described and defined in the following claims.

I claim:

1. A shoe steaming enclosure comprising a lower steam producing chamber, an upper shoe steaming chamber, steam producing and control means, shoe supporting means, and electric control means; said steam producing chamber enclosing in its lower portion an electric immersion heater regulated and controlled by an externally adjustable thermostat, and having a forwardly slanted top containing at least one pair of arcuate steam vents; said shoe steaming compartment being positioned above and adjacent to said steam producing chamber with steam connections thereto by means of said vents; said steaming compartment having a hinged truncated cover containing cut out portions on its front face, each of said cut out portions being positioned to provide access to each pair of said steam vents with said cover in a closed position; said steam producing and control means comprising a water tank positioned adjacent to said steam producing chamber and directly piped to it, said tank being fed by a water supply regulated by means of a float valve positioned within said water tank and adjusted to provide a

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similar specified water level in both said water tank and steam producing chamber.

2. Claim 1, wherein the thermostat has adjustable high and low settings and has its sensing element spaced below said predetermined level in said chamber and in contact with said heater.

3. A shoe steaming enclosure comprising a lower steam producing chamber, an upper shoe steaming chamber, steam producing means, and shoe supporting means; said steam producing chamber being separated from said steaming chamber by a forwardly slanted top wall containing at least one pair of arcuate steam vents; said shoe steaming chamber having said wall as its bottom wall and having a hinged truncated cover containing cut-out portions on its front face, each of said cut-out portions being positioned to provide access to each pair of said steam vents with said cover in a closed position; said steam producing means comprising regulating means providing a fixed level of water within said steam producing chamber and controllable electric heating means for providing a water temperature having a maximum of approximately 190 F. to 212° F., said shoe steaming enclosure being characterized in that the vapor produced in the lower chamber goes directly through said arcuate slots to said upper chamber.

4. The device of claim 3 wherein said shoe supporting means comprises a longitudinal arm attached on each end to radial arms pivoted externally to the ends of said steam producing chamber, each of said radial arms having a slotted slide quadrant and associated locking means.

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