R. B. PRICE.

APPARATUS FOR TREATING PLASTIC ARTICLES.

APPLICATION FILED FEB. 3, 1913.

1,295,596. Patented Feb. 25, 1919.

Fig. 1.

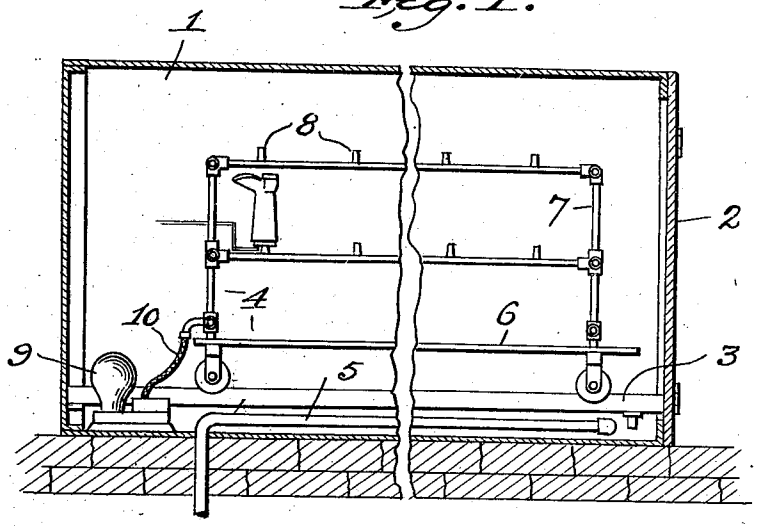


Fig. 2.

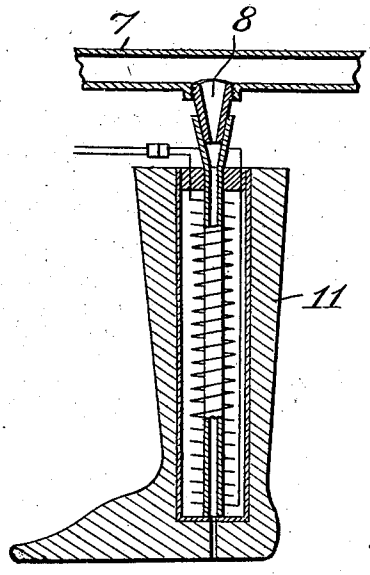
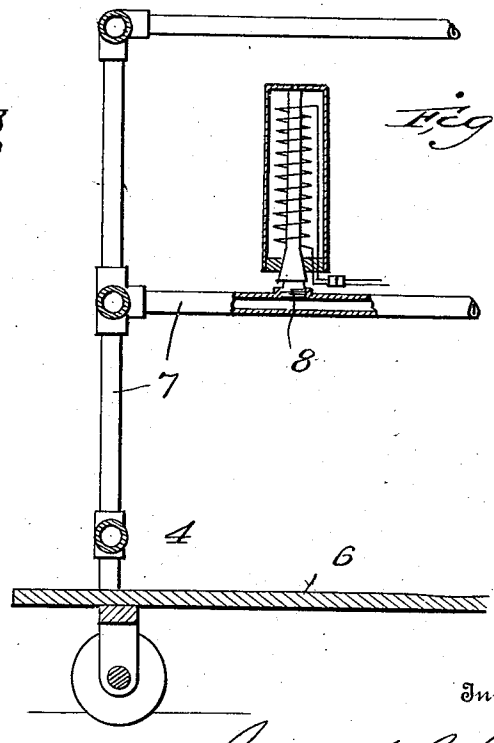


Fig. 3.



Witnesses

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RAYMOND B. PRICE, OF NEW YORK, N. Y., ASSIGNOR TO RUBBER REGENERATING COMPANY, A CORPORATION OF INDIANA.

APPARATUS FOR TREATING PLASTIC ARTICLES.

1,295,596. Specification of Letters Patent. Patented Feb. 25, 1919.

Application filed February 3, 1913. Serial No. 745,971.

To all whom it may concern:

Be it known that I, RAYMOND B. PRICE, a citizen of the United States, residing in the borough of Manhattan, city of New York, State of New York, have invented new and useful Improvements in Apparatus for Treating Plastic Articles, of which the following is a specification.

My invention relates to apparatus for treating plastic material, and has for its object in part to provide certain improvements in apparatus for vulcanizing or treating a plurality of plastic articles, such as boots and shoes, simultaneously and under certain conditions of temperature and pressure.

My invention also embodies certain other improved features as will be hereinafter more definitely set forth and claimed, reference being had to the accompanying drawing, in which:

Figure 1 is a longitudinal section of a chamber or vulcanizer embodying my improved construction.

Fig. 2 is a detail sectional view of an improved form of boot tree or form adapted for use in connection with my improved apparatus.

Fig. 3 is a detail sectional view of a modified construction of rack and boot tree or form.

Referring to the chamber or vulcanizer construction disclosed, the reference numeral 1 denotes the body of the same, which may be square or cylindrical in cross area, and which is permanently closed at one end, and is provided at its other end with a door 2 hinged in any suitable manner at one side and adapted, when closed, to hermetically seal the chamber. Said chamber in its interior may be provided with longitudinally disposed tracks 3 in its bottom, adapted to receive a car 4, if desired, and is also preferably provided at its bottom with steam pipes 5, which may also be extended up the sides of the chamber as far as may be desired.

In said drawing I have illustrated a preferred form of car to be used in said chamber, which consists of a wheeled platform 6 on which is built up a rack of hollow piping 7 communicating internally throughout, and which rack is provided throughout with suitable article receiving projections 8. While I have shown said car 4 as mounted on wheels and removable from the chamber, I may, if desired, employ a rack constructed like said car, but permanently located in said chamber 1.

Disposed in the bottom of said chamber is a pumping or exhausting apparatus 9, which may be operated in any suitable manner, such as by an electric current, by steam or otherwise, and which is connected to the car or rack in order to control the pressure within the same, said connection being, when a fixed rack is employed, by means of a pipe 10 permanently connecting the two, and when a removable rack is employed by means of a suitable detachable flexible pipe connection, or union.

In connection with said apparatus so disclosed I employ an improved construction of form for the article to be treated, the same being shown in Fig. 2 as a boot tree or form 11. This form is intended to be detachably connected with one of the receiving projections 8 in such manner that the interior of said projections shall communicate with a duct leading to the exterior surface of the form near its lower end. Said form is also to be provided with internal heating means which may be an electric resistance coil or piping for the reception of steam or hot air, or any other form of heat application. Where an electric resistance coil is employed, which is the form shown in Fig. 2, I prefer to construct the same to be removable from the last or form, in order that the same coil may be used with different lasts or forms. Furthermore, I may permanently connect to each receiving projection 8 one of the electric resistance coils, so that a boot tree or form may be mounted upon said frame by means of, and so as to inclose, said coils or other electric resistance device, as shown in Fig. 3, there being provided centrally through said coil a duct which will communicate through the last or form with the exterior of the surface thereof near the lower end, as shown in Fig. 2.

I have shown but a single duct establish-

ing communication between the exterior surface of the last or form and the interior of the piping of the rack, for the reason that in the manufacture of rubber boots as at present constructed such construction will accomplish a most thorough exhaustion of air in the fabric of the boot, by reason of the fact that the porous fabric lining exerts a wick-like action in accomplishing the removal of the air. I do not wish to be limited, however, to a single duct, as any number of the same may be employed in the form as will be necessary to accomplish the desired exhaustion of air between the form and the article built thereon.

In operation the forms or trees having the article to be treated built thereon are applied to the receiving projections 8 and the exhausting apparatus 9 put in operation, whereby entrapped air will be exhausted from between said articles and their forms, causing said articles to closely hug the forms. The usual setting heat being applied to the chamber 1 through the pipes 5, the treatment of the articles may be completed in the usual manner.

It will be understood that when a removable rack is employed the forms may be applied thereto while said rack is outside of the chamber 1, and the said rack then wheeled into said chamber and connected with the exhausting apparatus. While I have shown the exhausting apparatus 9 located within the chamber 1, I do not wish to limit myself to such construction, as said exhausting apparatus may be located outside of the chamber 1 and communicate with the interior thereof by means of a pipe tapped through said chamber.

Nor do I wish to be limited to the internal pressure control of the articles being treated through the piping of the rack or car, as such control may be provided through a separate series of pipes extending between the forms or trees and exhausting or compressing apparatus or leading to atmosphere.

It will be understood that I contemplate subjecting the articles to the setting heat provided by the electric or other heaters within the forms alone or in conjunction with the heating of the chamber by means of the steam pipes 5, or I may provide such heat by means of said steam pipes 5 alone. And I also contemplate, when the articles to be treated are located in the chamber 1 to be treated, the employment of any desired controllable pressure within said chamber, which will operate in conjunction with the differential pressure exerted upon the interior of the articles to controllably set the same upon their forms.

While I have shown my improved lasts or forms with their internal heating means as disposed within the chamber 1, it will be understood that I contemplate the treating of the articles upon the forms or lasts by means of the heat supplied by said internal heating means alone, thus dispensing with the use of the chamber 1.

In the control of the temperature to which the articles are subjected I also contemplate chilling the articles after the setting operation is completed, for the purpose, for instance, of facilitating the removal of the articles from their forms and for other purposes.

It being clearly understood that I contemplate the application of a vacuum either before or during the application of heat; it will be further understood that a great advantage is derived, with respect to many articles, by the preliminary withdrawal of any naphtha, oil, tar, moisture or other gases or vapors at a relatively low temperature and before said fluids, gases or vapors have had opportunity to effect any injury either to the shape or the quality of the material being treated.

It will be understood that the use of my improved internally heated form is not limited to a chamber containing air or other gas, as the same may be used in a mold of sand, soapstone or the like or of any suitable fluid or fusion, and that, too, without the application of heat to the mold itself or to the material in the mold, and with or without pressure.

I also contemplate that forms with the articles built thereon, and with or without the internal heat and pressure control, may be embedded in molds of sand, soapstone, fluid or fusion, which latter may be heated in any suitable manner, as by the application of external heat thereto, or by the disposal therein of electric resistance coils or heating pipes, and with or without pressure.

I also contemplate the use of my improved vulcanizing chamber with any character of last or form, whether heated internally or not.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a chamber and a form receiving rack therein, of a plurality of electric heating coils mounted upon said rack and adapted to be disposed within the forms when the latter are positioned upon the rack.

2. The combination with a chamber and a form receiving rack therein, of a plurality of electric heating coils mounted upon said rack and adapted to be disposed within the forms when the latter are positioned upon said rack, and means for establishing communication between the space between the forms and the articles built thereon and the external atmosphere.

3. The combination with a chamber and a form receiving rack therein, of a plurality of electric heating coils mounted upon said rack

and adapted to be disposed within the forms when the latter are positioned upon said rack, and means for establishing communication between the space between the forms and the articles built thereon and the external atmosphere, said means passing through said electric heating coils.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

RAYMOND B. PRICE.

Witnesses:
A. M. DISCH,
A. M. MORNINGSTAR.