Sept. 29, 1925. 1,555,202

C. M. HANNIS

PROCESS FOR MAKING RUBBER BOOT LEGS

Filed March 5, 1923 2 Sheets-Sheet 1

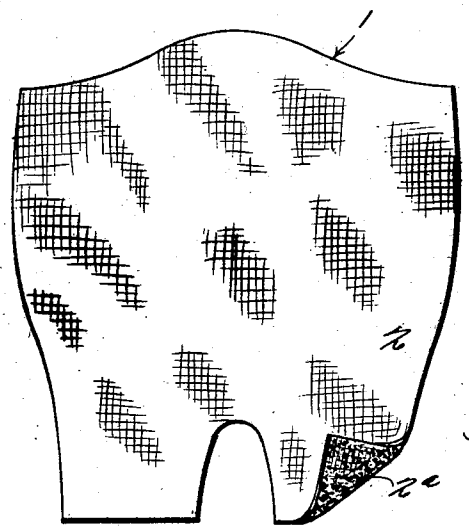


Fig. 1.

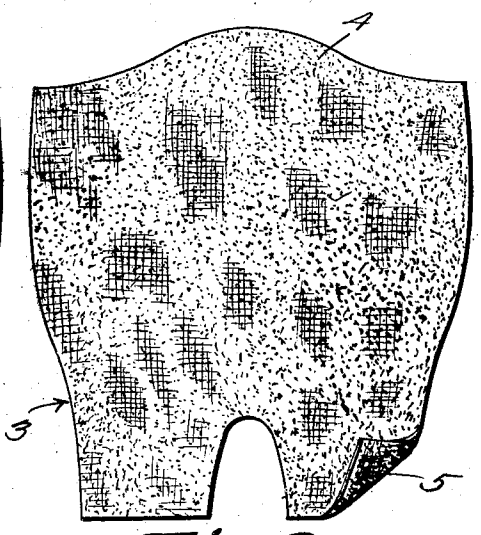


Fig. 2.

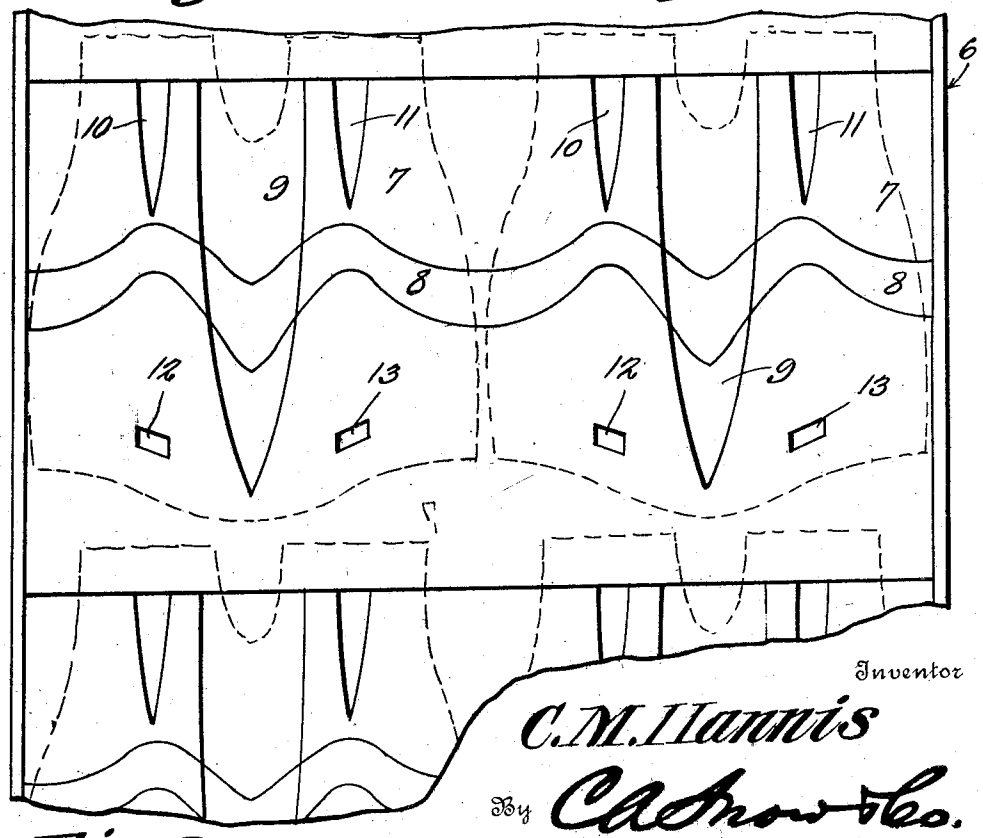


Fig. 3.

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Fig. 4.

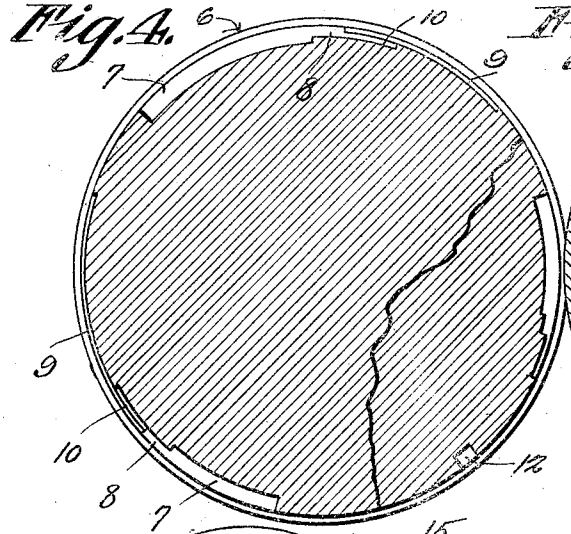
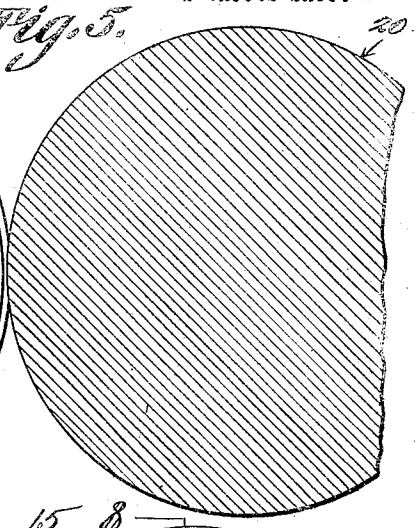


Fig. 5.



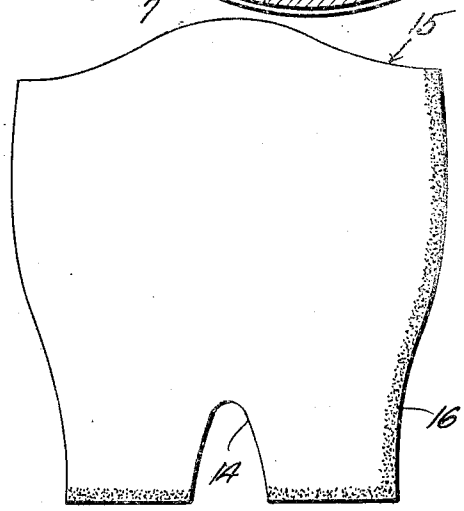


Fig. 6.

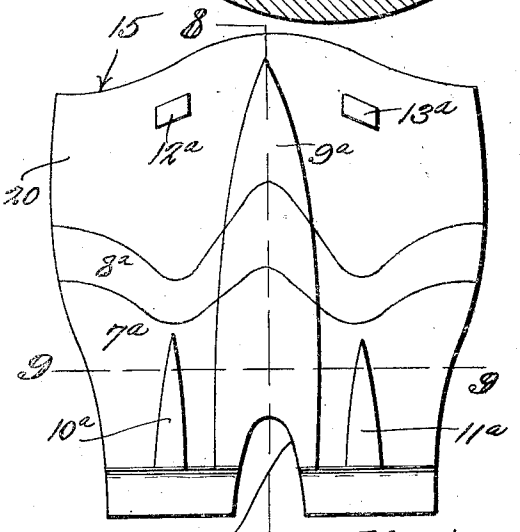


Fig. 7.



Fig. 9.

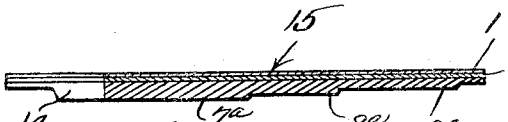


Fig. 8.

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Patented Sept. 29, 1925. 1,555,202

UNITED STATES PATENT OFFICE.

CHARLES M. HANNIS, OF HUDSON, MASSACHUSETTS.

PROCESS FOR MAKING RUBBER-BOOT LEGS.

Application filed March 5, 1923. Serial No. 622,910.

To all whom it may concern:

Be it known that I, CHARLES M. HANNIS, a citizen of the United States, residing at Hudson, in the county of Middlesex and State of Massachusetts, have invented a new and useful Process for Making Rubber-Boot Legs, of which the following is a specification.

This invention relates to a process of making rubber boots and shoes, and more particularly to making the legs of rubber boots.

The object of the invention is to provide a method or process which will simplify construction, increase production, and greatly economize in time and labor and in floor space required for making the article.

In the accompanying drawings:—

Figure 1 represents a plan view of the lining member used in making the boot leg, one corner being turned up to show the rear face thereof.

Fig. 2 is a similar view of the leg covering member or interlining.

Fig. 3 is a plan view of a portion of one of the calender rolls employed in the manufacture of the boot leg.

Fig. 4 is a transverse section of the roll.

Fig. 5 is a similar view of the cooperating roll used in connection with the calender.

Fig. 6 is a rear elevation of the boot leg constructed in accordance with this improved method and ready to be sent to the boot maker.

Fig. 7 is a front elevation thereof.

Fig. 8 is a longitudinal section taken on the line 8—8 of Fig. 7, and

Fig. 9 is a transverse section taken on the line 9—9 of Fig. 7.

The method of manufacturing rubber boot legs constituting this invention consists in running the lining stock from which the pattern 1 is ordinarily cut through a calender and frictioning it giving it what is termed a "skim" coat of rubber 2 on one side, which side is placed outward, the other side 2^a being uncoated.

Next the interlining or cloth leg covering 3 which has been frictioned on both sides in the usual manner as shown at 4 and 5, is placed on the outer frictioned face of the lining 1 and the two are run through a calender and pressed into a solid piece of stock.

The combined lining and interlining or leg cover member are then ready for the rubber stock to be run onto it and which constitutes the outer water-proof face of the boot leg. This is accomplished by using a calender roll such as that shown at 6 in Figs. 3 and 4, which has the pattern formed in intaglio. This calender roll 6 is preferably about 16½ inches in diameter and as shown has formed on the perimeter thereof the parts to form three pairs of boot legs, one pair of which is shown clearly in Fig. 3, the dotted line shown in this figure representing the outlines of the boot legs to be formed, one of which is shown in front elevation in Fig. 7 and in rear elevation in Fig. 6.

The intaglio pattern of the roll 6 comprises depressions 7 and 8 which extend the full length of the roll and which are of a width corresponding to the height of the ankle reinforcements to be employed in making the boot leg. The rubber is run into these recesses to form the thickened ankle portion or reinforcements 7^a and 8^a shown in Fig. 7, the portion 8^a being higher than that 7^a and not so thick (see Fig. 8).

A pair of tapered circumferentially extending recesses 9 are contained in the pair of patterns shown in Fig. 3, each of which is exactly alike and which are designed to receive rubber to form the thickened front stays 9^a one of which is employed on each boot leg. At each side of the recesses 9 are two similarly shaped smaller recesses 10 and 11 to receive the rubber which forms the thickened spike-like side members 10^a and 11^a.

Substantially rectangular laterally spaced recesses 13 are suitably positioned to provide, when filled with rubber, the lugs 12^a and 13^a for attachment of the pulling loops.

It will thus be seen that when the rubber which forms the outer surface of the boot leg is run onto the roll 6, in the intaglio pattern thereon and the combined lining 1 and interlining 3 are run through the calender with this reinforced rubber coating or sheet so formed, a one piece rubber coated fabric is produced ready for the cutting out of the boot leg into the form shown in Fig. 7, the cut out portion 14 being designed for connection with a foot which forms no part of this invention and hence will not be shown or described.

It is to be understood that the rubber outer layer of the boot leg is formed on the calendar roll 6 in sheets each containing

patterns for three pairs of legs (see Fig. 3). These sheets are then superposed on the sheets composed of the lining 1 and interlining 3 which had previously been calendered into a single sheet, and are rolled onto said combined lining sheets to form a unitary structure with a rubber coating 20 on the outer face and the lining member 1 on the inner face with the interlining 3 between them and all forming a single sheet which is rolled onto a drum (not shown) with cloth between and goes to the cutter in this form. The cutter cuts out the legs 15 along the dotted line 15ª shown in Fig. 3. These cut out legs 15 are then placed in a book and sent to the boot maker who lays them in piles with the bottom and right hand edges of each one exposed one-fourth of an inch. On this exposed edge a thick cement shown at 16 is applied which when dried is designed for connecting the rear edges of the leg in lapped relation and to the lower edge of which the insole (not shown) is connected. The boot leg is then finished in the usual way.

From the above description it will be obvious that by placing these stock sheets together on the calender and forming the small reinforcing pieces by molding on the intaglio calender roll and rolling the whole into one piece, a better boot may be made from the same grade and quantity of rubber and in less time.

This leg may be termed a calender made boot leg in the flat and which is removed from the calender roll in a finished state.

I claim:—

1. A method of making rubber boot legs which consists in rubber coating a lining by running it through a calender; then frictioning an interlining by runing it through a calender; then running the so coated linings in superposed relation through a calender and forming a one piece sheet; then running a rubber sheet onto a roller having an intaglio pattern of desired form, and then running the rubber and united sheets together through a calender to unite them into a solid sheet 1, and then cutting out the boot legs from the sheet so formed.

2. A method of manufacturing rubber boot legs which consists in running the lining stock from which the pattern is to be cut through a calender and frictioning it to provide a skim coat of rubber on one side; then placing on the coated face of said stock an interlining having both sides frictioned; then running the two through a calender and pressing them into a solid piece of stock; then running rubber on to a calender roll having an intaglio pattern formed thereon; and then running through this calender the pressed solid piece of stock whereby a one piece rubber coated fabric is produced ready for cutting out the boot leg.

3. A method of forming rubber boot legs which consists in forming on a calender roll a sheet of rubber having patterns formed therein to produce a plurality of pairs of boot legs, each pattern having properly shaped thickened portions to form reinforced ankle members and thickened front stays with spike like reinforcements at the side of the legs; then superposing the pattern carrying sheets so formed on sheets composed of a lining and an interlining calendered into a single sheet, rolling said sheets together to form a unitary structure with a rubber coating on the outer face and a lining on the inner face; then cutting out the legs along the patterns indicated and placing them in a book to be sent to the boot maker.

4. A method of forming rubber boot legs which consists in forming on a calender roll a sheet of rubber having patterns formed therein to produce a plurality of pairs of boot legs, each pattern having properly shaped thickened portions to form reinforced ankle members and thickened front stays with spike like reinforcements at the side of the legs; then superposing the pattern carrying sheets so formed on sheets composed of a lining and an interlining calender into a single sheet, rolling said sheets together to form a unitary structure with a rubber coating on the outer face and a lining on the inner face; then cutting out the legs along the patterns indicated and placing the cut patterns in piles with the bottom and right hand edges of each one exposed one-fourth of an inch, more or less; applying a thick cement to said exposed edge and then finishing the legs in the usual way.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

CHARLES M. HANNIS.