June 29 , 1926. 1,590,347

J. E. M. COOKE

METHOD OF MAKING HEELS

Filed March 5, 1924

Fig. 1.

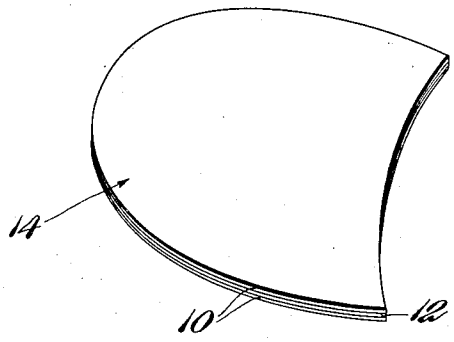


Fig. 2.

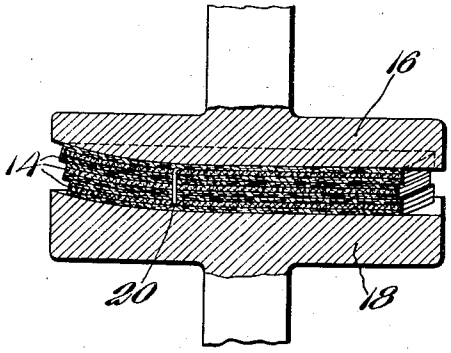


Fig. 3.

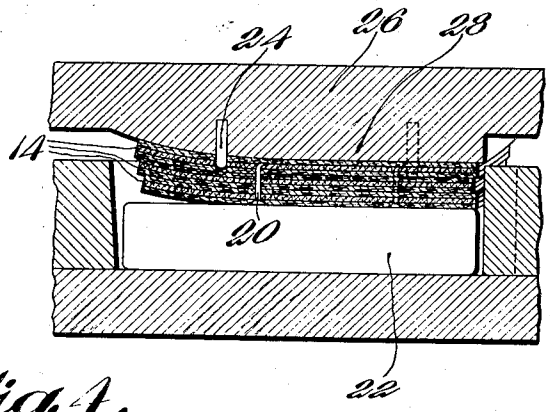
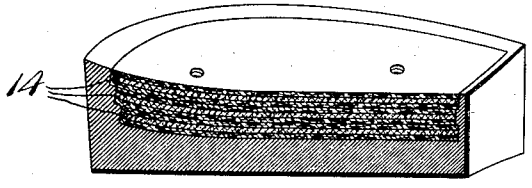


Fig. 4.



Witness

Alfred H. McGlinchey.

Inventor:

Joseph Edwin Mark Lane Cooke

by his Attorneys

Van Everen Fish Holbrook & Carey.

Patented June 29, 1926. 1,590,347

UNITED STATES PATENT OFFICE.

JOSEPH EDWIN MARKHAM COOKE, OF STAFFORD, ENGLAND.

METHOD OF MAKING HEELS.

Application filed March 5, 1924. Serial No. 697,160.

The present invention relates to a method of making heels for boots and shoes and more particularly to a method of making heels having the general appearance and characteristics of rubber heels.

The present method is particularly applicable to heels of the general type shown and described in the copending application of Cooke Serial No. 641,487, filed May 25, 1923. The heel illustrated and described in this application comprises a central core or body formed of a plurality of ply-wood lifts, the core having the general contour of a heel and surrounded on the bottom and sides by an integral covering of rubber or similar vulcanizable material molded thereon.

According to the present invention a heel shaped member consisting of a plurality of ply-wood lifts is received in a suitably shaped mold with a blank of rubber compound. Upon closing of the mold, the rubber compound is forced about the sides of the central core, which may be shaped in part through pressure exerted upon the top face by the corresponding portion of the mold. The rubber covering is vulcanized to the wooden core about the sides and bottom and caused to firmly adhere thereto, the roughened and uneven edges of the ply-wood lifts contributing in part at least to the union between the rubber covering and the core.

The built up wooden core may preferably be formed from a plurality of heel shaped plies, each of these plies being stamped or cut from a sheet of previously prepared ply-wood. In the illustrated embodiment of the invention each lift is died out of a sheet of ply-wood consisting of three plies having the grain crossed and secured by adhesive. Subsequent to the formation of the individual heel shaped lifts of ply-wood, the requisite number of lifts are assembled, preferably coated with adhesive and secured together by nails driven therethrough. Thereafter the lifts are subjected to pressure and firmly united to form the heel shaped body or core which may be partially or wholly formed to the desired curvature in longitudinal and transverse sections in the compressing operation. Thereafter the previously formed body is assembled in a heel mold with a blank of rubber composition of the desired size, the whole being subjected to heat and pressure in a manner to cause the rubber to flow about the sides of the wooden body and to be firmly united thereto, as already described. In this final operation, the rubber may flow inwardly across the top or attaching face of the wooden body, forming a thin skim coating, this coating not being of sufficient thickness, however, to interfere with the attachment of the heel or impair its desirable qualities.

In the accompanying drawings illustrating the essential steps in the present method, Fig. 1 represents a heel shaped lift died out of a sheet of ply-wood; Fig. 2 indicates a plurality of such lifts assembled and subjected to compression; Fig. 3 represents the assembling of the completed heel shaped body with a rubber blank; and Fig. 4 represents the completed heel.

According to the present invention, a sheet consisting of a plurality of thoroughly seasoned and dried plies of wood is utilized for the production of heel shaped lifts. Such a lift is indicated in Fig. 1 of the drawings and consists of two outer plies 10 with an intermediate ply 12 having the grain crossed with respect to the outer plies. These ply-wood sheets are sufficiently thin to permit the lift to be died out without danger of cracking or otherwise injuring the lift. After the production of the heel shaped lifts from a sheet of ply-wood, several of these previously formed lifts are assembled to produce a heel shaped body of the desired thickness. The lifts prior to assembly may be coated with adhesive and nails or other fastenings may be driven therethrough to insure a better union of the lifts. They are then preferably subjected to pressure in order to produce a solid, non-breakable heel shaped body, which can satisfactorily undergo the necessary heat and pressure in the operation of vulcanizing the rubber covering thereto. If so desired, the several ply-wood lifts may be stepped with relation to one another either by arranging the lifts in an offset relation or by making the different lifts in different sizes or shapes, or by a combination of both methods, such an arrangement being illustrated in Figs. 2 and 3 of the drawings. After the production of the heel shaped ply-wood body, the latter which has been shaped in longitudinal and transverse section is assembled in a suitably shaped mold with a blank of rubber composition of the desired size and thereafter subjected to heat and pressure. The closing of the rubber mold

with the application of heat causes the rubber to flow about the sides of the wooden body and to firmly adhere thereto in such a manner that it cannot loosen or become disengaged, even under the most arduous conditions of usage. The adherence of the rubber covering to the ply-wood core is due in considerable measure to the roughened or uneven surfaces provided by the edges of the ply-wood lifts. This unevenness is exaggerated when the lifts are staggered or offset with relation to one another.

The heel produced by this method is lighter than a solid rubber heel of the same dimensions and is not only lighter but more economical than a composite heel of rubber and leather lifts, which requires for its completion certain finishing operations not necessary with the present type of heel. Furthermore the heel loses nothing in resiliency or wearing qualities as compared with the heels of the type referred to.

Referring particularly to the drawings, it will be observed that according to Fig. 2 three ply-wood lifts indicated generally at 14 are assembled and molded between opposite members 16 and 18 to a curved form. The opposite surfaces of the lifts are preferably coated with adhesive and the various lifts may be secured together through fasteners indicated at 20. The assembling of the pre-formed lifts and uniting them under pressure in the manner described produces a ply-wood body which is light, exceptionally strong and capable of holding the fastenings without liability of cracking or splitting. The finished ply-wood body which may have uneven edges, due to stepping or offsetting the various lifts, as indicated in Figs. 2 and 3, is assembled in a heel mold with a blank of rubber compound indicated at 22. The blank is preferably received in the lower portion of the mold cavity and the ply-wood body is located above the blank and held in position by pins 24 mounted in the upper part 26 of the mold. The upper portion of the mold is provided with a convex portion 28 corresponding generally to the concave face of the ply-wood body and the lower portion of the mold is flat to form a flat tread face upon the finished heel, as indicated in Fig. 4. When the mold is closed and the rubber blank subjected to a vulcanizing heat and pressure, the rubber is caused to flow upwardly about the sides of the ply-wood body and firmly adhere thereto. During the operation of molding, a slight amount of rubber may flow inwardly between the upper face of the ply-wood body and the mold, forming a skim coating extending partially over the upper attaching face of the body. The coating, however, is not sufficient to interfere with the firm attachment of the ply-wood body to the attaching face of the shoe.

The practice of the above described method permits the manufacture of resilient heels in a relatively simple and efficient manner and with the employment of well known type of apparatus. The dieing out or stamping of the ply-wood lifts together with the assemblage of these lifts into a ply-wood body is accomplished without the necessity of expensive finishing operations, the roughened and uneven edges of the lift resulting in a greatly increased adherence of the rubber cover to the ply-wood body. Furthermore, the thorough drying and seasoning to which the thin sheets of ply-wood are subjected results in a built up body which is not only much stronger than a solid wooden body of the same dimensions but a body which may be shaped by pressure and which will not warp or be injured during the vulcanizing process.

I claim—

1. A method of making heels for boots and shoes which consists in producing a wooden core consisting of a plurality of plies of wood secured in assembled relation, assembling the previously formed core in a suitably shaped mold with a blank of rubber compound at one side thereof, and subjecting the core and rubber compound to vulcanizing heat and pressure while preventing lateral movement of the core within the mold to cause the compound to flow about the core and into the interstices at the edges of the core.

2. A method of making heels for boots and shoes which consists in cutting a relatively thin lift from ply-wood, assembling a series of such lifts, shaping the series of lifts to cause the assembled lifts to be curved in section, and finally assembling the ply-wood body with a blank of rubber in a heel mold and subjecting the two to vulcanizing heat and pressure while retaining the body in a predetermined position within the mold.

3. A method of making heels for boots and shoes which consists in cutting a series of generally heel shaped lifts from ply-wood sheets, assembling a plurality of such lifts in superimposed relation, shaping the body of assembled lifts to produce a curvature in section, and finally assembling the ply-wood body in a heel mold with a rubber blank and subjecting the blank and body to vulcanizing heat and pressure.

JOSEPH EDWIN MARKHAM COOKE.