

No. 772,840.

PATENTED OCT. 18, 1904.

C. C. SMALL.
METHOD OF PRODUCING TOP LIFTS.

APPLICATION FILED JULY 16, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

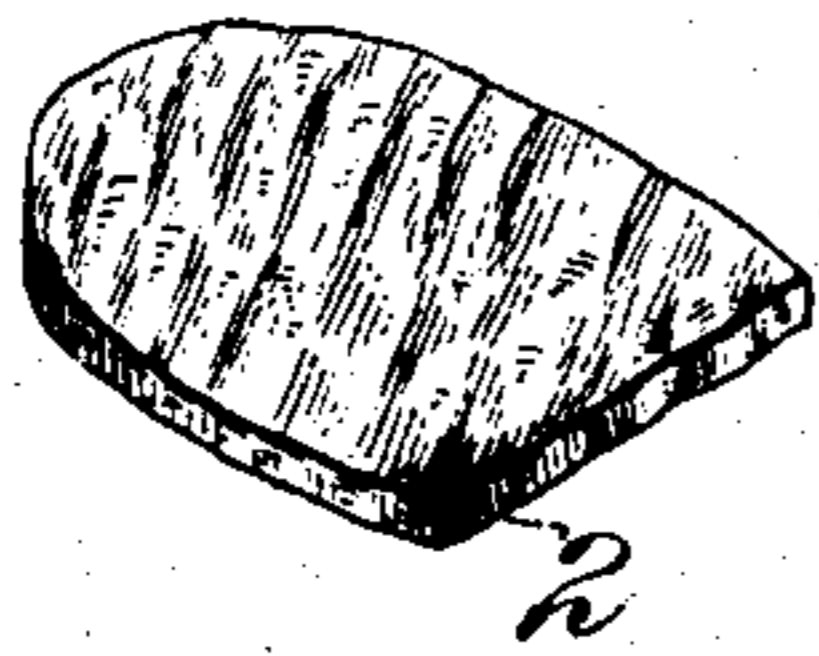


Fig. 2.

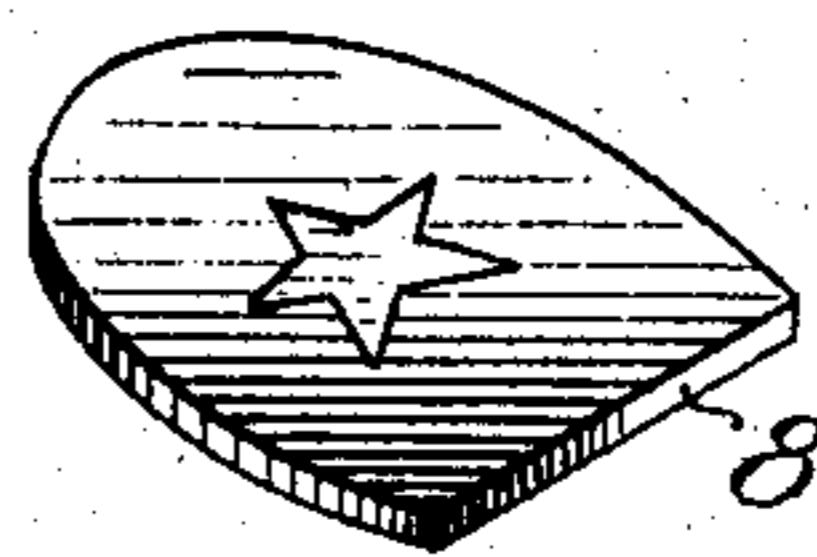
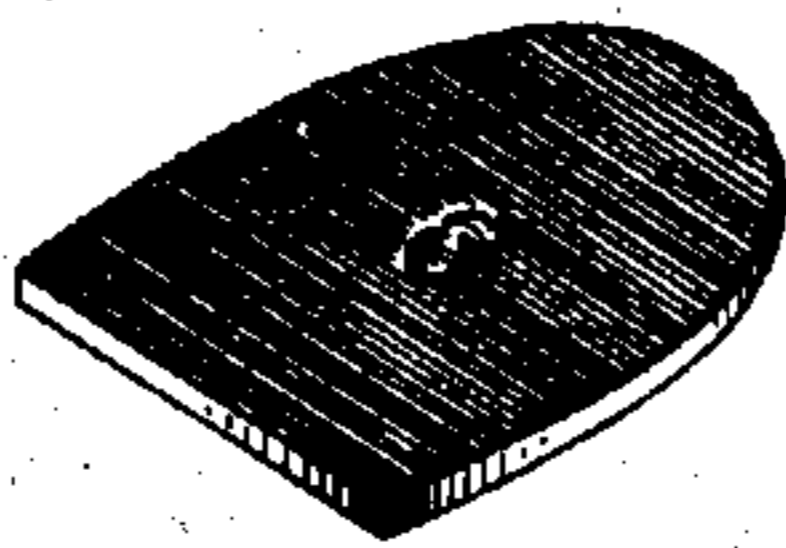
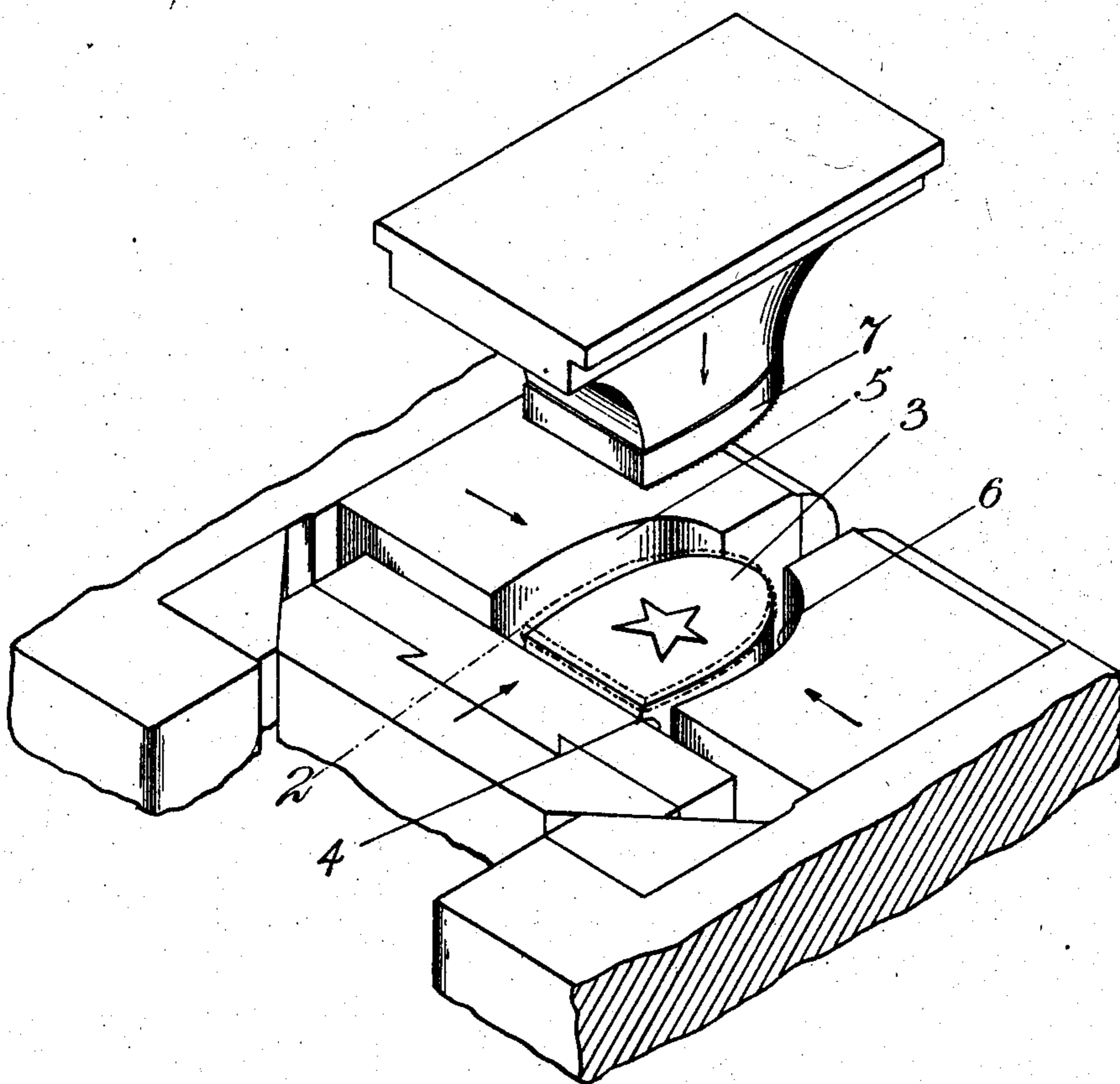


Fig. 3.



WITNESSES.

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Fig. 2a.

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2 SHEETS—SHEET 2.

Fig. 4.

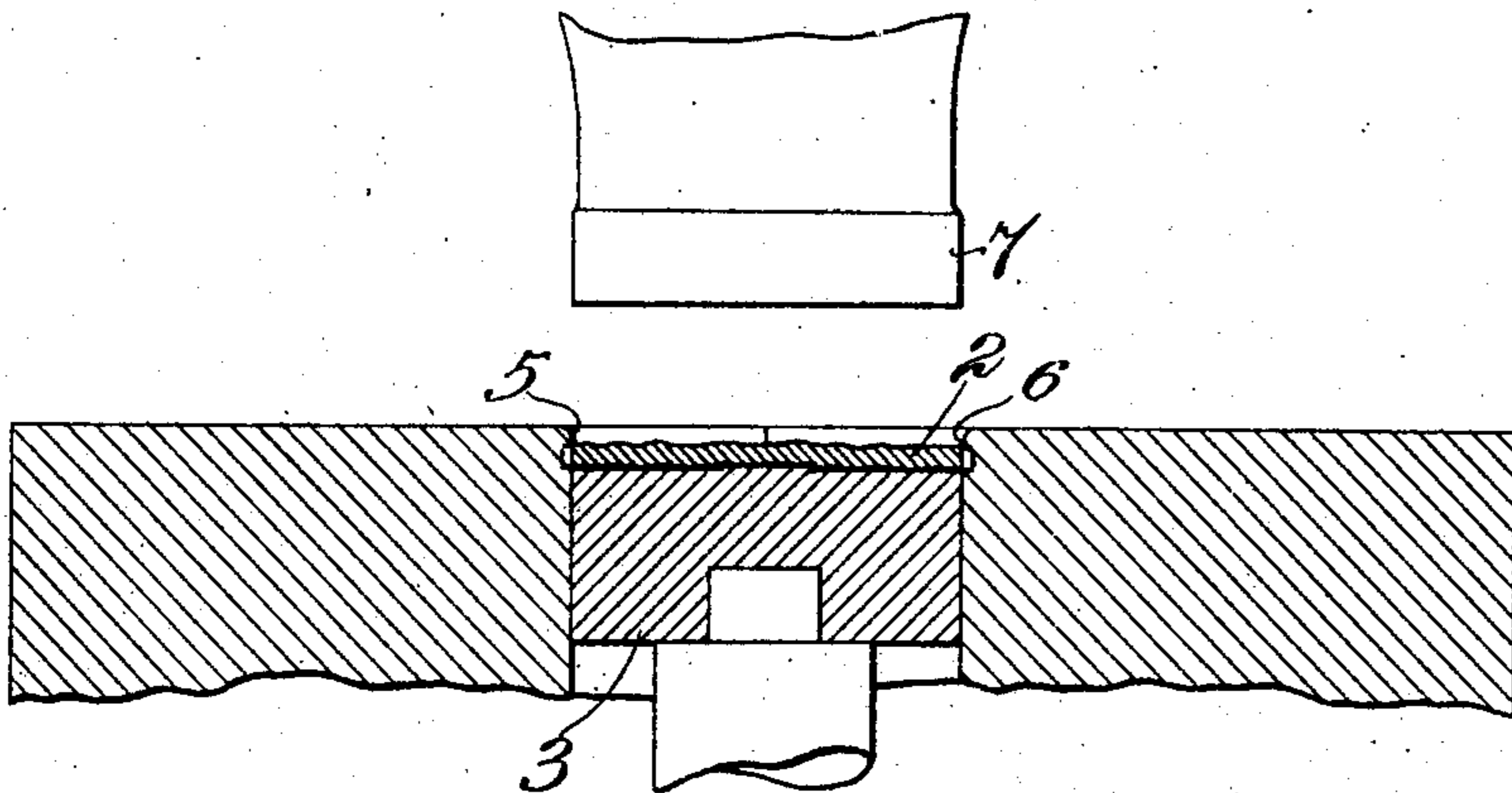
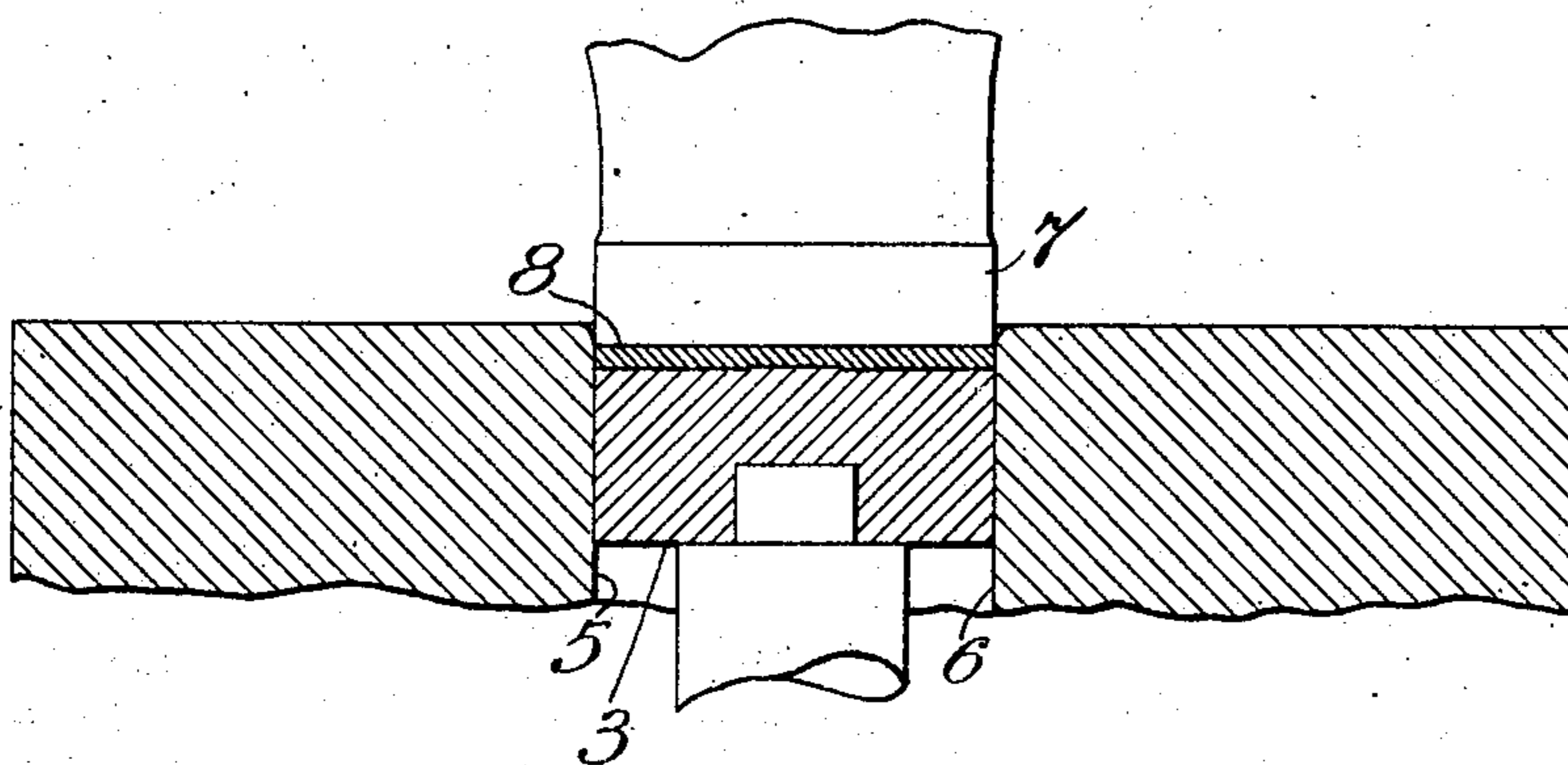


Fig. 5.



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UNITED STATES PATENT OFFICE.

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A CORPORATION OF NEW JERSEY.

METHOD OF PRODUCING TOP LIFTS.

SPECIFICATION forming part of Letters Patent No. 772,840, dated October 18, 1904.

Application filed July 16, 1904. Serial No. 216,884. (No model.)

To all whom it may concern:

Be it known that I, CHESTER C. SMALL, a citizen of the United States, residing at Newton Highlands, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain Improvements in Methods of Producing Top Lifts, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention consists in a method of producing top lifts for heels of boots and shoes.

It has heretofore been the practice to employ in making top lifts only the better grades of leather which have a close fiber and a fine grain. The poorer grades have been regarded as practically valueless for such use, because they are soft and spongy or badly wrinkled or warped. Top lifts made of this inferior stock have little capability of resisting wear or of properly taking a finish, and their bad appearance renders them unfit for use in shoes of good quality.

The purpose of the present invention is to devise a method of manufacturing from these poorer grades of leather top lifts which shall be hard and dense throughout, which shall have smooth faces of the exact size desired, which shall be of uniform thickness, and which shall have other valuable characteristics hereinafter mentioned.

In carrying out the method which constitutes the present invention I take a leather blank of approximately the desired outline and of a diameter somewhat larger than that which the finished top lift is to have. I first subject this blank to pressure at its edges, thus reducing its diameter to the size desired for the finished top lift. I then apply great pressure to the faces of the blank to compress and condense it thoroughly, so that not only is the entire surface of the top lift thus produced rendered smooth and hard, but also the fibers of the body of the leather throughout are forced closely into contact, and the characteristics of the top lift are appreciably changed. A top lift made according to this

method has numerous advantages over the ordinary uncompressed top lift, as will more fully hereinafter appear.

Referring to the accompanying drawings, Figure 1 is a perspective view of a top-lift blank, which may be transformed into a finished top lift by the method constituting the present invention. Figs. 2 and 2^a are similar views showing, respectively, the outer or tread face and the inner or flesh face of a finished top lift made by this method. Fig. 3 is also a perspective view showing one form of dies which may be employed in carrying out the method. The dies are shown in initial open position, and the top-lift blank is indicated by broken lines. Fig. 4 is a sectional view of the same upon a somewhat larger scale, showing by broken lines the top-lift blank before it has been compressed and by full lines the dies and the blank in their relative positions at the termination of the operation of the side dies. Fig. 5 is a similar view with the parts in the positions they occupy at the time of final compression.

The top-lift blank 2 represented in Fig. 1 is made of soft, spongy, and wrinkled leather. Leather with these characteristics is often found in such portions of a hide as the head, neck, belly and butts, and these portions of the hide have heretofore been regarded as unavailable for use as top lifts. Even after the leather is rolled, as is customary, a top lift made of such material without further treatment is practically valueless. It has little or no capability of resisting wear, and, furthermore, the wrinkles seriously impair its marketable value. While these wrinkles may be removed by continuing the buffing operation long enough, yet this is expensive both in labor and in materials and there is danger of cutting through the grain of the leather, thus giving an imperfect finish to the tread-surface of the heel. Such untreated top lifts are usually of uneven thickness and crooked or warped, and for that reason they frequently cannot be properly held by the machine for spanking them onto the heel. These top lifts are also liable to curl up and even to fly off

from the heel after they have been spanked on. As this may not be discovered until after the shoe has left the hands of the manufacturer, it is certain to occasion considerable inconvenience and expense to the dealer or purchaser. A top lift such as indicated in Fig. 1 has a serious disadvantage due to its irregular edges. Even when the better grades of leather are used the top lifts are liable to be cut imperfectly, as when the cutting-dies are not in good condition. It is highly desirable, however, that the edges of the top lift be regular and that the length and width be approximately that of the top lift on the finished shoe, since it is the practice to use the edges to guide the trimming-knives when the heel is subsequently trimmed in a heel-trimming machine. If, therefore, the top lift is irregular in outline, the heel also will be trimmed unevenly. Another disadvantage of the ordinary uncompressed top lift when made from oak-tanned leather, which in other respects is well adapted for such use, is that the edges will feather or roughen up as the top lift is subjected to wear.

My invention consists in a method or process of producing a top lift which shall be substantially free from the objections above set forth. I start with such a blank as is represented in Fig. 1, which is of a length and width slightly greater than that desired for the finished top lift. I prefer to use a blank which has been tempered to render it pliable and capable of being molded easily. This preliminary tempering, though advantageous, is not essential to my method. The blank is now subjected to positive and direct pressure applied at its edges, and thus its diameter in all directions parallel to its faces is reduced to that which it is desired that the finished top lift shall have. By this step the top lift is given a predetermined size without breaking down or shearing off its edges. The top-lift blank is next subjected to a very heavy positive pressure applied directly to its faces, while at the same time it is held against expansion laterally. The thickness of the blank is thus somewhat reduced, but its diameter remains unchanged. If desired, an impression may be stamped upon one or both faces of the top lift simultaneously with the application of this pressure, as hereinafter described. The total amount of pressure which is required for this operation varies considerably, according to the condition and quality of the stock and the size of the top-lift blank. Thus a smooth and flat blank will require less pressure than one which is badly wrinkled or warped and a blank which has been well tempered less than one that is dry and stiff. In every case the pressure must be at least sufficient to condense the fibers of the leather and to transform the blank into a top lift of appreciably different qualities and characteristics. My experiments indicate that under the most

favorable conditions my improved top lift cannot be produced by a pressure of less than twelve tons. Since the qualities of the top lift are improved as the pressure is increased, I find it convenient in the commercial application of my method to employ a pressure considerably above the amount stated in order to be able to handle top lifts of varying qualities without the necessity of frequently adjusting the pressure. The finished top lift 8, made according to this method, is represented in Figs. 2 and 2^a.

My invention consists in the method comprising the above-stated succession of steps, and any suitable means may be utilized in carrying out the method.

In order to illustrate my process diagrammatically, I show in Figs. 3, 4, and 5 of the accompanying drawings certain elements of a mechanism which may be used in practicing the method. The blank 2 (indicated by dotted lines in Figs. 3 and 4) is shown supported on a pressure-plate or lower die 3, which is preferably of the outline desired for the finished top lift. Pressure is exerted upon the edges of this blank by the breast die or plate 4 and the side dies 5 and 6, the dies being moved relatively toward each other simultaneously by suitable mechanism. (Not shown.) Thus an initial edge compression is given to the blank and its final diameter is determined, as above described. Fig. 4 represents by full lines the parts in the positions they occupy at this stage of the process, the blank top lift being indicated at 2. It will be seen that the blank is completely inclosed except at the top in a chamber or mold formed by the dies and that there are no openings or cracks between the dies to form ribs or other irregularities in the blank. The blank is now compressed by great force exerted on its faces by the pressure-plate 3 and the follower or upper die 7, the latter being preferably of just the size and shape to close the chamber or mold, above mentioned, at its top, so as to leave no cracks or openings into which the leather may flow to form ribs or ridges on the finished top lift. Either the blank may be forced upwardly against the follower 7 or the follower brought downwardly upon the blank. In either case the breast and side dies 4, 5, and 6 are preferably maintained in the same position relatively to the pressure-plate 3, and they are also held against any lateral yielding or separation. The blank is thus subjected to the heavy pressure, which is required to change its characteristics and qualities, as hereinbefore described. Fig. 5 represents the positions of the parts as this step of the method is completed, the finished top lift being indicated by reference-numeral 8.

As illustrated, the pressure-plate 3 may be provided with any ornamental design or distinguishing mark which it is desired to stamp upon the tread-surface of the top lift. (See

Fig. 2.) The follower 7 may be also provided with a mark as to indicate its size, and it may be roughened or corrugated somewhat to give the inner or flesh side of the top lift a good holding-surface for the glue commonly used in attaching the top lift to the heel. In this way the desired impression is stamped upon the top lift, and at the same time the top lift is given its final compression, thus saving the cost of stamping it by a separate operation, if indeed such an impression could be secured at all if the top lift were first compressed, as above described, and then an attempt were made to stamp the impression on the hard dense top lift. By the term "impression" in this description and in the appended claims I intend to include any trademark, ornamental design, size-number, distinguishing mark, corrugations, or the like which may be stamped upon the top lift.

An important feature of this method of compressing top lifts is the order of the steps. Obviously if the faces were first subjected to pressure before the side and breast dies were brought together the stock would be forced into the cracks between these dies and also would be crowded both upwardly around the follower and downwardly around the pressure-plate. Hence when the dies at the edges of the blank were then brought together ribs or ridges would be formed all around and in the edges of the top lift. It is also obvious that the size or diameter of the top lift would not be exact. Furthermore, in case the face of either the upper or the lower die were roughened or formed with recesses or projections for the purpose of impressing a design on the tread-face or of corrugating the flesh side, then when the face-dies were first brought together the stock would flow into the recesses, while the projecting portions of the die would become embedded in the stock, so that the main body of the blank would be held thereby against compression by the side dies when they were subsequently brought together. This would tend to upset the edges and would result in an uneven compression of the top lift, as it would be more dense near the edges than within the body and at its faces. On the other hand, it is evident that by following my method in which the side pressure is first applied the resulting top lift is of a predetermined size, has smooth faces and edges free from ridges or other irregularities, and is uniformly condensed. The edges are so hardened that they will not feather or roughen

up, and because they are regular it is possible to produce evenly-trimmed heels, as above set forth. I am able therefore to produce from a poor and low-priced grade of stock a hard top lift of very close fiber, which will look as well and wear longer than an uncompressed top lift made from more expensive stock.

This method of treating a top-lift blank produces an article which is entirely free from the many objectionable features above set forth, some or all of which are found in the ordinary top lifts now available.

The novel top lift disclosed in the above description of my method is not claimed herein, but is described and claimed in my copending application, Serial No. 178,437, filed October 24, 1903.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The method of producing a top lift which consists in first reducing the diameter of a top-lift blank by pressure on its edges and then exerting great pressure on its faces, whereby the characteristics and qualities of the top lift are appreciably changed.

2. The method of producing a top lift which consists in first applying pressure to the edges of a top-lift blank and then exerting great pressure on its faces while holding its edges against expansion, whereby the characteristics and qualities of the top lift are appreciably changed.

3. The method of producing a top lift which consists in first applying positive pressure to the edges of a top-lift blank and thus reducing it to a predetermined diameter, and subsequently, while it is held at every point in its perimeter against lateral expansion, exerting such a pressure on its faces that the characteristics and qualities of the top lift are appreciably changed.

4. The method of producing a top lift which consists in first reducing the diameter of a top-lift blank by applying pressure to its edges and then exerting great pressure on its faces and simultaneously stamping an impression on one of said faces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHESTER C. SMALL.

Witnesses:

FREDERICK L. EDMANDS,
ARTHUR L. RUSSELL.