

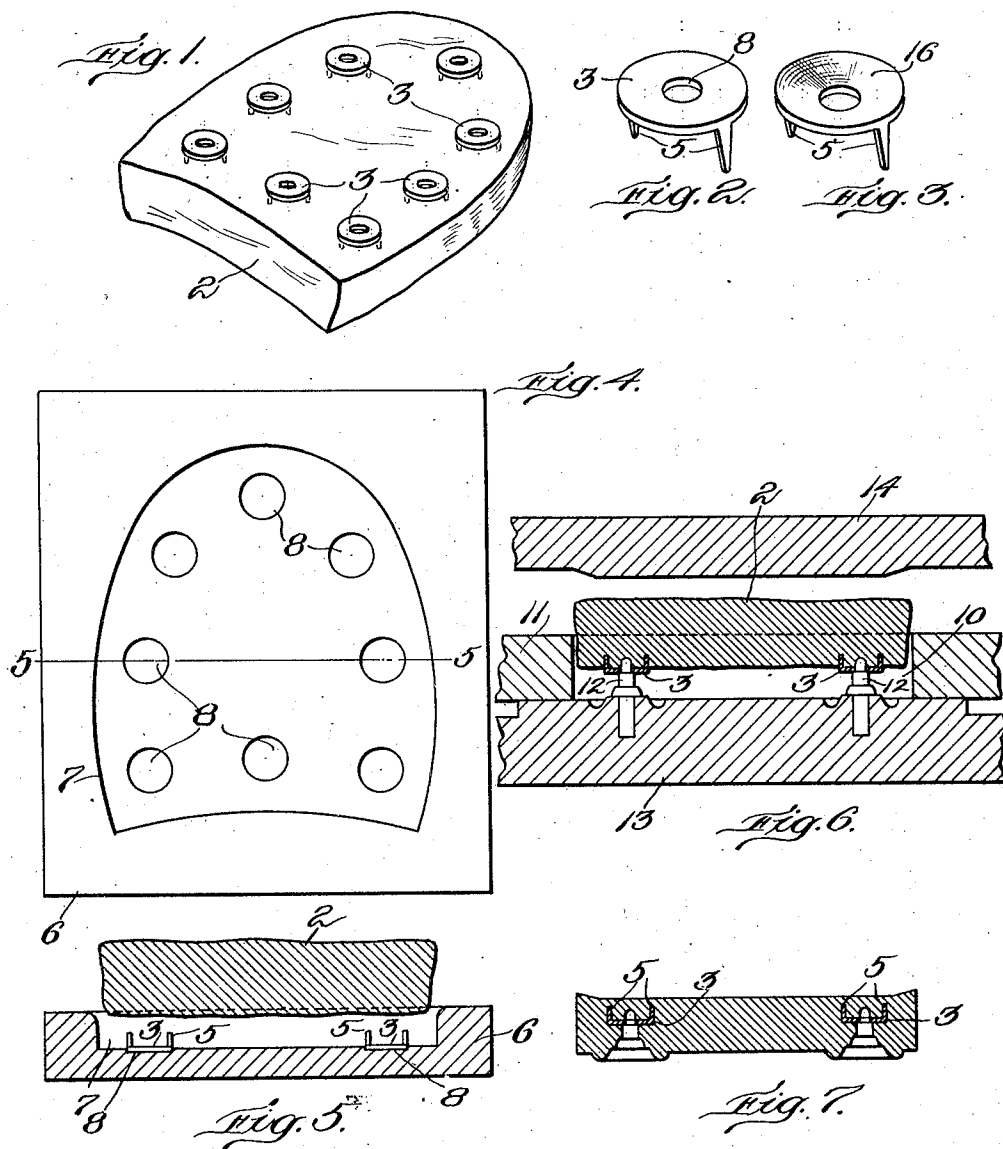
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MANUFACTURE OF RUBBER HEELS

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MANUFACTURE OF RUBBER HEELS.

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This invention relates to rubber heels and to processes of manufacturing them, and it has for its chief object to effect economies in the manufacture of articles of this character.

As is well understood by those skilled in this art, it is practically a universal custom to embed a series of washers in the body of a rubber heel to receive the nails, screws, or other fastenings by means of which the heel is secured to a shoe. The usual process of manufacturing rubber heels consists in making an unvulcanized rubber heel stock of suitable composition, running this stock into sheets of suitable thickness, and dieing out rubber heel blanks from this stock. These died out pieces, commonly known as blanks or "biscuits", are subsequently molded and vulcanized to form finished heels. The nail receiving washers for each heel are located on posts projecting into the heel cavities of the molds, and a biscuit or unvulcanized heel blank is placed on the posts in each cavity and is pressed into the cavity at the beginning of the molding operation, thus forcing the washers into the body of the blank. The posts hold these washers in the proper relationship to the body of the heel during the molding and vulcanizing operations.

For the purpose of performing the molding and vulcanizing operations (usually referred to simply as "molding") it is customary to use molds provided with a large number, say for instance thirty-six (36), heel cavities. The press in which the molding operation is performed has several "decks", usually four. That is, it is constructed to take four molds; and it is customary to run such a machine with two operators, one on each side of the press, each operator handling two molds. The washers are placed on the studs in the mold cavities by the press operators or "molders", and the length of time required for the molding of each individual batch of heels is controlled primarily by the time required for the molder to place the washers on the posts in the molds.

The present invention aims to improve the process of manufacturing rubber heels with a view particularly to reducing the labor and expense involved in embedding the washers in the heels.

It is proposed to accomplish this object by locating the washers on the heel blank

prior to the molding of the heel, and thus to utilize cheaper labor in handling the washers, to relieve the molder of this duty, and hence to speed up the molding operation to limits determined by the time required for the vulcanization of the heels.

The invention also provides a novel form of washer and a novel rubber heel construction.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a perspective view of the rubber heel blank or biscuit having a series of nail receiving washers properly located thereon;

Figs. 2 and 3 are perspective views of slightly different forms of nail receiving washers embodying one feature of the present invention;

Fig. 4 is a plan view of an apparatus with which the operation of locating the washers on the heel blank may be conveniently performed;

Fig. 5 is a cross sectional view on the line 5-5, Fig. 4, illustrating the manner in which the location of the washers on the heel blank is accomplished;

Fig. 6 is a cross sectional view showing a heel blank with the washers attached thereto placed in a mold; and

Fig. 7 is a cross sectional view through a finished heel.

According to the method at present preferred of practicing this invention, the rubber heel blanks are produced in the customary manner. The nail receiving washers are then secured on the face of a blank in substantially the spaced relationship which it is desired to have these washers occupy in the finished heel. Fig. 1 of the drawings shows a rubber heel blank or biscuit 2 made in any common or convenient manner, having a series of nail receiving washers 3 properly located on one face thereof. For the purpose of conveniently securing the washers to the heel blank in this manner a novel form of washer has been provided. Each washer 3 is of the form best shown in Fig. 2, and consists of a circular disk of metal having a hole 4 through the central

portion thereof and provided with two prongs 5—5 projecting at substantially right angles from the lower face of the disk at opposite edges thereof. The prongs 5—5 should be made long enough to anchor the washer securely in the surface of the heel. Usually these washers are made about five-sixteenths of an inch in diameter, and the prongs preferably are about one-eighth of an inch long.

In order to locate the washers in the proper spaced relationship to each other in the heel blank 2, a die 6 may conveniently be used. This die has a heel-shaped cavity 7 therein slightly larger than the heel blank 2. In the bottom of this cavity are a number of washer receiving pockets or cavities 8 having the positional relationship to each other which it is desired to have the washers bear to each other in the finished heel. The washers 3 are placed in the cavities 8 with their prongs 5 pointing upwardly, as clearly shown in Fig. 5, and the blank 2 is then placed in the heel-shaped cavity 7 and forced down on the washers. This operation obviously pushes the prongs of the washers into the heel blank, and when the blank is removed from the die 6 it will carry with it its full number of washers all properly spaced with reference to each other.

The heel blank is next transferred to the mold and is placed in an inverted position in the heel cavity of the mold, the washers registering with the posts in said heel cavity. It will be understood that the washer cavities 8 in the die 6 are located in accordance with the position and arrangement of the washer holding posts in the mold. Fig. 6 shows the heel blank 2 placed in the cavity 10 of the middle plate 11 of a mold of usual form, the washers 3 resting on the shoulders of the posts 12 which project upwardly into the cavity 10, these posts being secured in the lower mold plate 13. When the upper mold plate 14 is forced down into its proper relationship to the other plates 11 and 13 of the mold, it will force the stock of the blank 3 down into the mold cavity 10 filling this cavity and embedding the washers 3 in the body of the blank 2, thus repositioning the washers and stock with reference to each other and bringing them into the relationship which they are to occupy in the finished heel. The stock flows in the mold, as is well understood by those skilled in this art, assuming the shape of the mold cavity, and becomes vulcanized under the heat and pressure to which it is subjected. The posts 12 hold the washers 3 securely in their proper positions in the body of the heel while the molding and vulcanizing operations are performed.

When the molding operation has been completed and the heel is removed from the mold, it appears in cross section substan-

tially as shown in Fig. 7. It will be noted that the prongs 5 of the washers 3 project toward the upper face of the heel, that is, away from the tread face. Consequently, these prongs do not reduce the wearing qualities of the heel or interfere in any way with its serviceability. On the other hand, they anchor the washers more securely in the heel.

It is contemplated that various forms of washers or equivalent devices may be used and that they may be made differently from the particular form above described. The anchoring projections may for instance take other forms than that of the prongs shown. The construction shown, however, is very satisfactory and may be manufactured economically.

It sometimes is desirable to use a washer which is cupped or dished so that it will direct the nail toward the hole provided for it in the washer. Such a construction is shown in Fig. 3, in which the washer 16 is made exactly like the washer 3 except that it is cupped or dished for the purpose just described.

It will now be appreciated that in manufacturing heels according to this invention, the operation of placing the washers on the heel blanks is made a separate and distinct step in the process of manufacture of the heels. This operation requires no skill or training and may, therefore, be performed by girls or other unskilled laborers, so that the expense of this operation is substantially less than that of having the molders place washers on the posts in the cavities of the heel molds. This expense is further reduced by the fact that the girls can place the washers much more rapidly than can the men who handle the molds, the girls being quicker and their fingers nimbler. The molder also is hampered in placing washers on the posts by the fact that the molds are hot. Since the molder is relieved of this duty he can reload the heel cavities with heel blanks on which the washers are already positioned almost as rapidly as he could place the biscuits in the cavities if they did not have the washers secured to them. The molder, therefore, is enabled to handle more molds than he could otherwise, and the time required for the molding operation can be reduced to that necessary simply for vulcanization to take place. Since the molder is the highest paid operative connected with the manufacture of rubber heels, and since the presses and molds are the most expensive pieces of equipment used in this industry, the advantage of increasing the output of the molder will readily be appreciated. It has been definitely been determined that by this process one molder can handle practically twice as many molds as in the former process.

No claim is made in the present application to the piece of apparatus shown in Figs. 4 and 5 but the right is reserved to claim this apparatus in a divisional case.

5 Having thus described my invention, what I desire to claim as new is:

1. That improvement in the process of manufacturing rubber heels having nail receiving washers embedded therein, which
10 consists in securing the nail receiving washers on the surface of an unvulcanized rubber heel blank in substantially the positional relationship which it is desired to have them bear to each other in the finished heel,
15 and subsequently molding the heel while holding the washers in said relationship.

2. That improvement in the process of manufacturing rubber heels which consists in providing an unvulcanized rubber heel
20 blank, fastening a plurality of nail receiving washers on the face of said blank in substantially the positional relationship to each other which it is desired to have said washers occupy in the finished heel, subsequently
25 forcing said washers into the body of said blank, and molding and vulcanizing the heel while holding said washers in the proper positions in the body of the heel.

3. That improvement in the process of
30 manufacturing rubber heels having nail re-

ceiving washers embedded therein, which consists in arranging the washers in substantially the positional relationship which it is desired to have them bear to each other in the finished heel, securing said washers on
35 the surface of an unvulcanized rubber heel blank while maintaining said arrangement substantially undisturbed, subsequently placing said blank in a heel mold, and then molding and vulcanizing the blank while
40 holding said washers in said relationship.

4. An article of manufacture consisting of a substantially unvulcanized rubber heel blank having a series of fastening receiving washers secured on the face thereof in sub-
45 stantially the positional relationship which it is desired to have said washers bear to each other in the finished heel.

5. That improvement in the process of manufacturing rubber heels having fastener receiving washers embedded therein,
50 which consists in fixing the fastener receiving washers to the surface of a substantially unvulcanized rubber heel blank in substantially the positional relationship which
55 it is desired to have them bear to each other in the finished heel and then molding said blank in the usual manner.

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