Dec. 5, 1939. S. M. GRISWOLD 2,182,022

PROTECTIVE COVER

Original Filed June 30, 1936 5 Sheets-Sheet 1

Fig. 1.

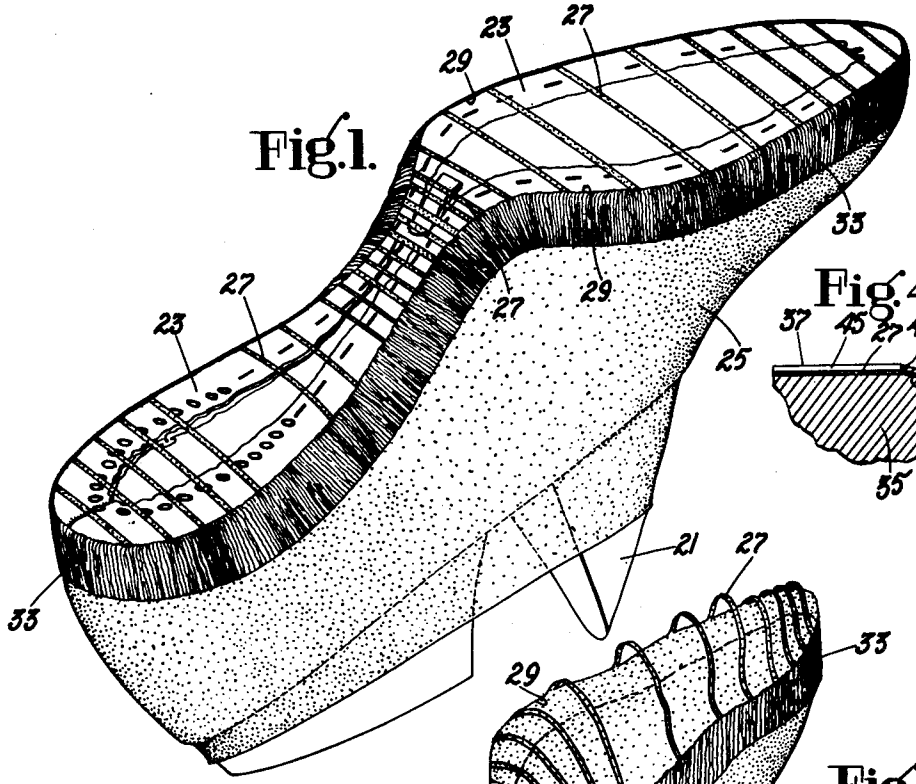

Fig. 2.

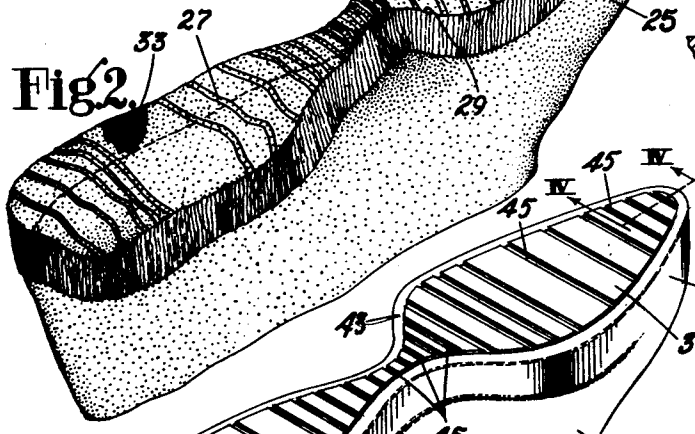

Fig. 3.

Fig. 4a

Fig. 4.

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Fig.5.

Fig.6.

Fig.7.

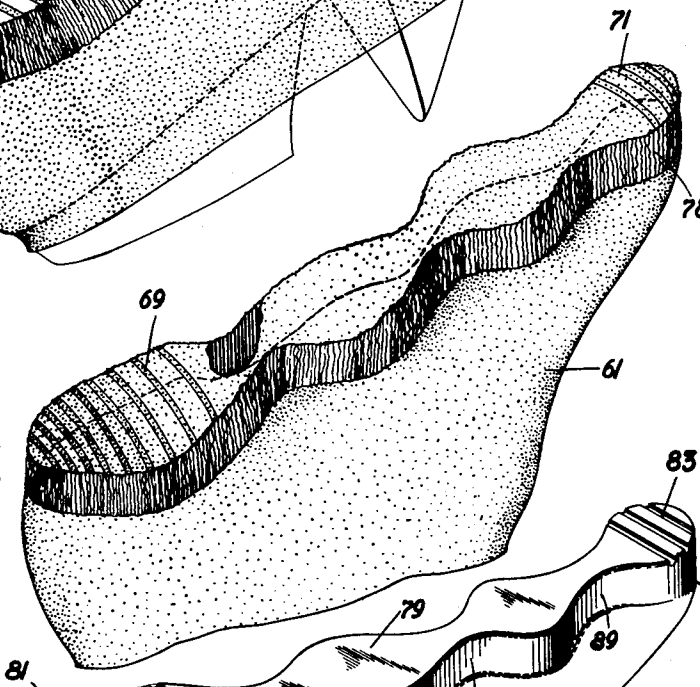
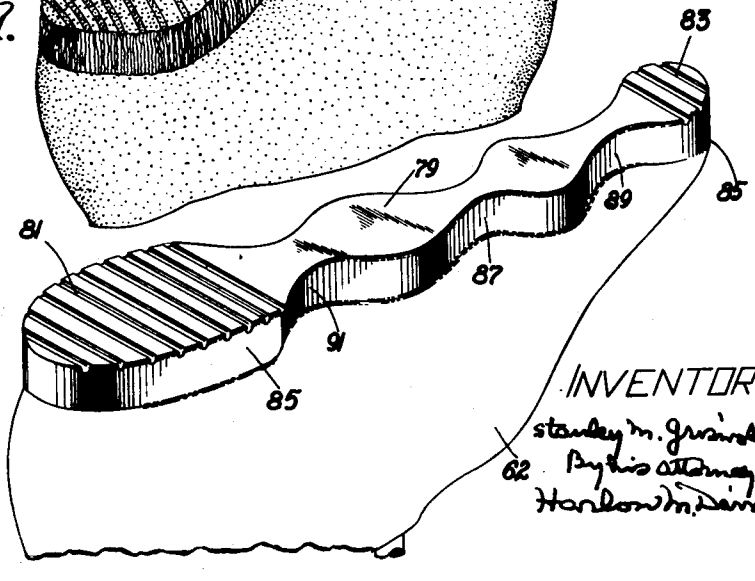


Fig.8.



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PROTECTIVE COVER

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Fig.9.

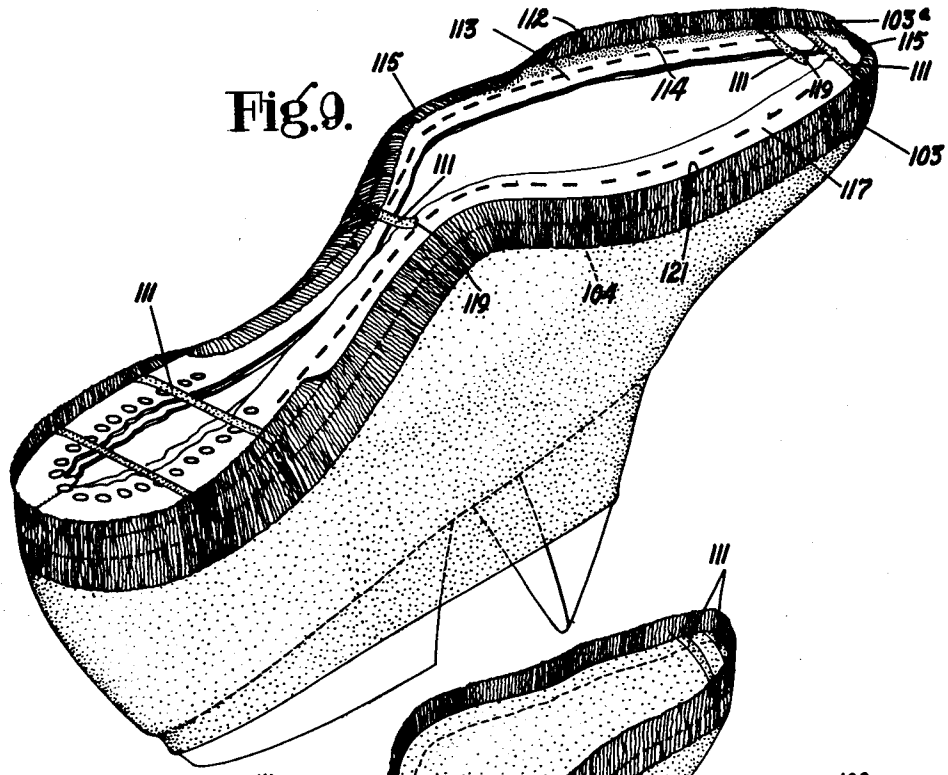

Fig.10.

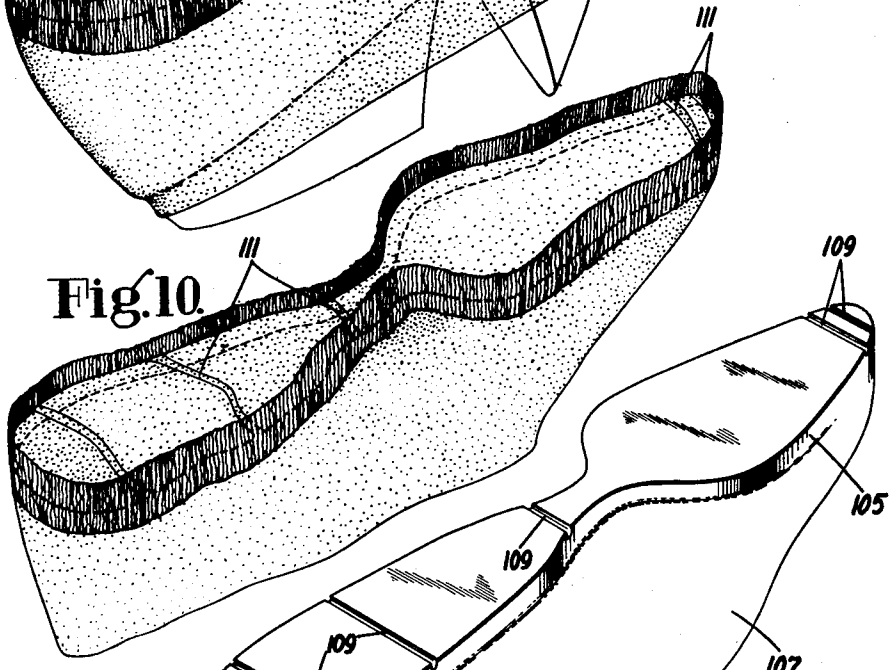

Fig.11.

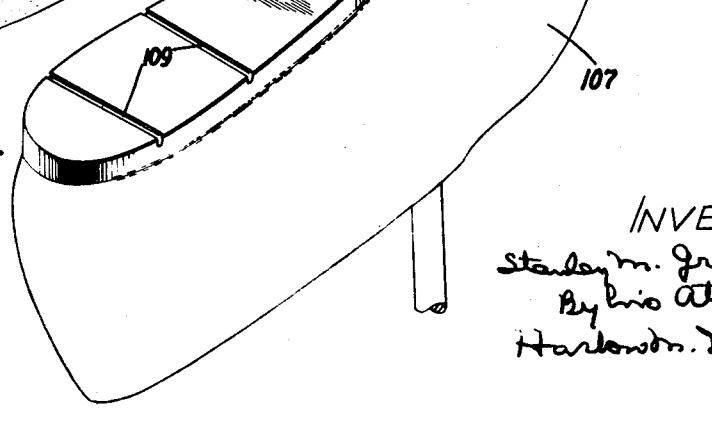

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Fig.12.

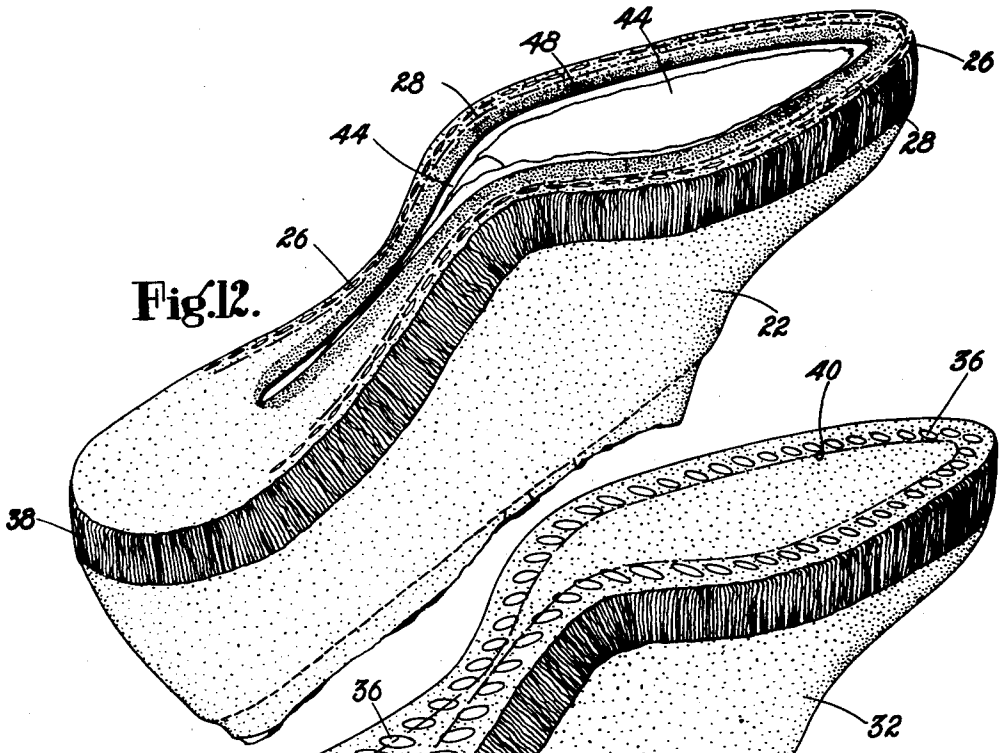

Fig.13.

Fig.14.

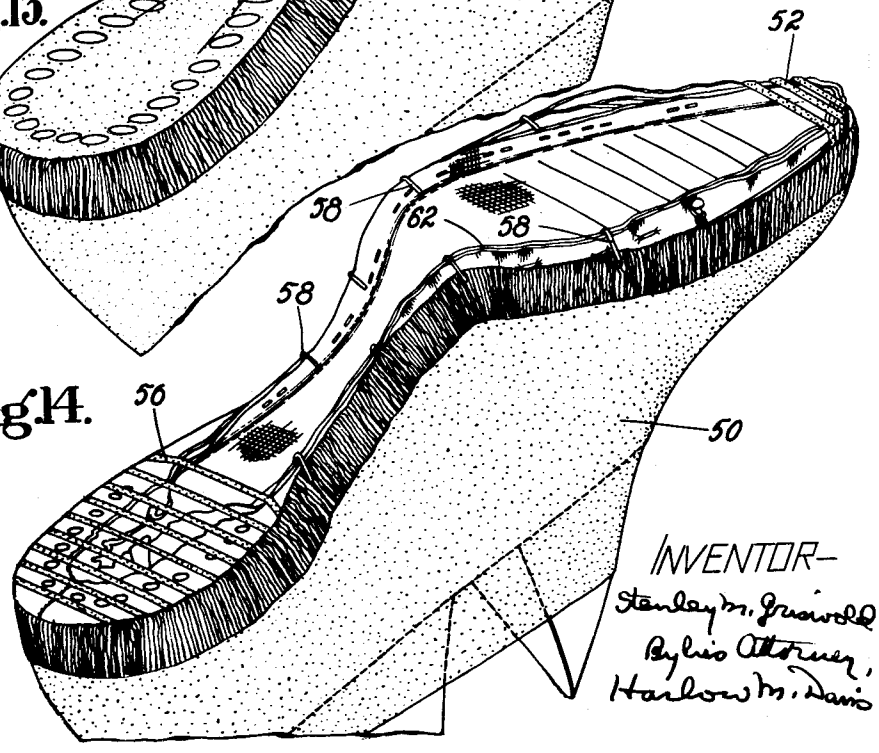

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Fig. 15.

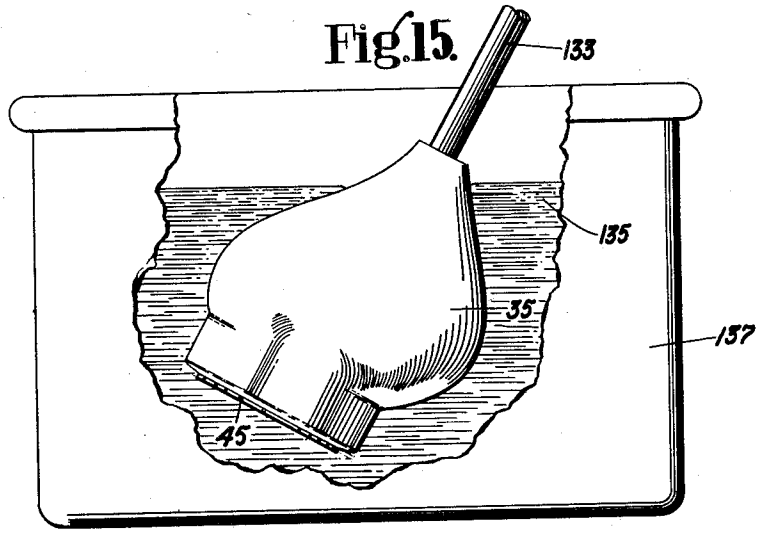
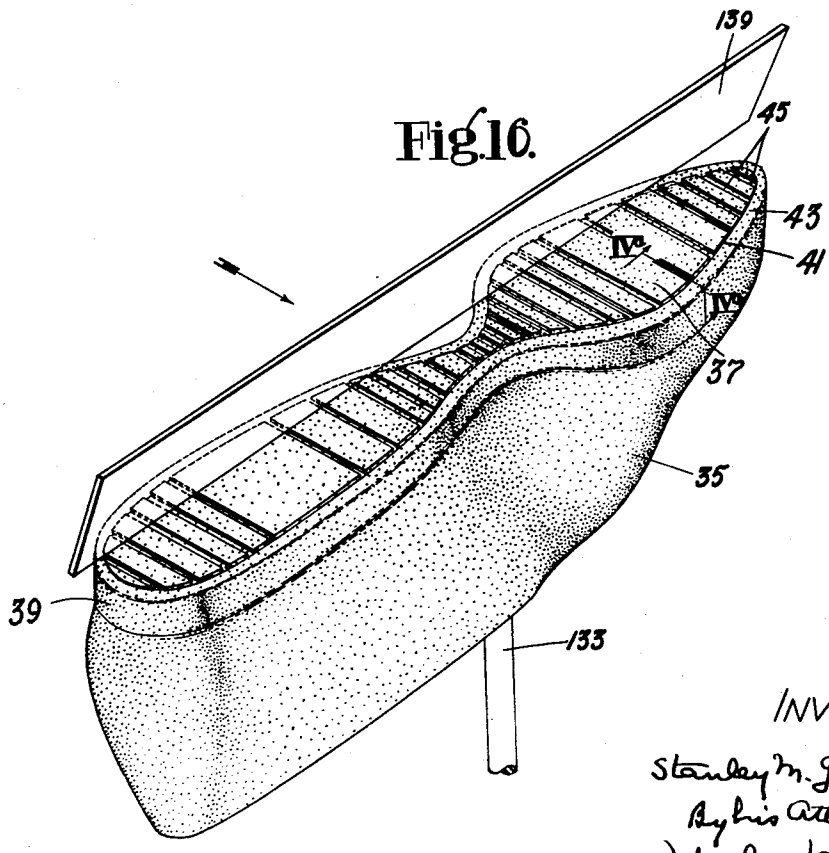


Fig. 16.



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2,182,022

UNITED STATES PATENT OFFICE

2,182,022

PROTECTIVE COVER

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Application June 30, 1936, Serial No. 88,167
Renewed April 28, 1939

20 Claims. (Cl. 36—72)

This invention relates to a protective cover for use in the manufacture of shoes and to a lasted shoe in process of manufacture, protected by such a cover.

In the manufacture of shoes, particularly during those operations which take place after the shoe has been lasted, such for example as sole laying, edge trimming and setting and heel finishing, the display surface of the upper is liable to be abraded and soiled, especially if the uppers are light-colored or are made of delicate fabric or leather such as suede. Various kinds of covers have been proposed to protect the uppers of shoes during manufacture, among others covers of thin elastic material such as rubber which have been either preformed covers adapted to be stretched over the lasted shoe, or covers formed by applying a coat of latex to the shoe and drying the latex. Such covers, so far as I am aware, have gone into only limited use because of certain disadvantages among which may be mentioned their liability to be weakened by abrasion or torn and the difficulty of readily removing them cleanly after they have served their purpose so as not to leave portions of them projecting from the crease between the upper and the welt or between the upper and the sole of the shoe.

The general object of the present invention is to produce a protective cover of elastic material which may readily be properly located on a lasted shoe, which will remain intact during the operations upon the shoe and which may readily be torn off after it has served its purpose without leaving fragments exposed to view in the crease at the junction of the upper with a bottoming element of the shoe.

The operations performed upon a lasted shoe after the cover has been applied are principally concerned with the attaching of the heel and the sole (including in the case of Goodyear welt shoes the sewing of the welt) and with various operations such as edge trimming, edge inking, edge setting and, in the case of shoes having leather heels, heel finishing. The guides, guards and shields of certain of the machines which perform these and other operations traverse the lower margin of the protective cover adjacent to the sole or heel and thereby subject it to considerable strains which tend to weaken it so that when the cover is finally torn off it will part at the weakened locality; or these guards, shields, etc., may break or cut the cover; and once broken or cut the cover has practically lost its protective attribute. This tendency is very considerable in the case of a thin rubber cover since the coefficient of friction between rubber and metal is comparatively large.

To overcome this difficulty that portion of the cover of the present invention which lies over the lower margin of the upper of the shoe adjacent to the sole is tougher or more slippery, or both tougher and more slippery than is the body portion, the toughness also facilitating, as will presently appear, the final tearing off of the cover after it has served its purpose. Conveniently, the cover may comprise a thin rubber body having attached to that portion of it which will lie over the lower margin of the upper of a shoe a strip of reinforcing fibrous material such as paper so made that it will stretch with the rubber body lengthwise of the margin. The illustrated cover, which is designed to be preformed and then stretched over a lasted shoe, comprises a body portion of thin rubber having cemented to its lower margin a strip of creped paper which contains a lubricant, the corrugations of the paper being transverse to its length so that the paper will stretch lengthwise with the rubber but will resist stretching crosswise; and preferably this paper carries threads all of which are parallel to the corrugations so that it can be subjected to a considerable tension crosswise. A cover of this kind, by reason of the toughness and the slippery surface of its lower margin, is very resistant to abrasion or cutting by the various guides and guards which traverse it, and the strength of this margin permits a strong pull to be exerted upon it to facilitate the final removal of the cover. It should also be noted that this paper, because of its corrugated structure which permits it to contract along a locality on one edge and to lengthen at an opposite locality on the other edge, will accommodate itself to the lower margin of the rubber portion of the cover as that margin is stretched into place around the lower margin of the upper of a lasted shoe.

It is desirable, when placing an elastic cover on a shoe that its proper location—that is the locating of the lower edge of the body portion at the edge or just over the edge of the bottom—should be easy of accomplishment. Accordingly, where the type of shoe being manufactured permits the use of a cover having a bottom, said bottom is such that it can be stretched more readily than the body portion. It is also desirable that the construction of these covers be such that the body portion may be readily and cleanly torn from the shoe after the cover has served its purpose. Both these desirable features—namely, ease in locating the cover properly on

the shoe and ease in cleanly tearing off the body portion after the cover has served its purpose—may be secured by weakening the bottom along a locality at or near its edge. Conveniently this weakening may be accomplished by providing a row of openings along the edge or margin of the bottom, said openings extending to a central portion or entirely across the bottom of the shoe and thus providing a bottom attached to the lower edge of the body portion by various straps.

The covers just described above are suitable more particularly for shoe the soles of which are attached by stitches, the nature of the bottoms being varied somewhat according to whether the shoe is of the McKay or Goodyear welt type. In the case of shoes the soles of which are permanently attached by cement, it is desirable that the entire bottom of the lasted shoe should be exposed; and for such shoes a cover with an open bottom is provided, said cover being held in place by being caused to adhere to the display surface of the upper along a narrow locality adjacent to the sole of the shoe.

The rubber portion of the covers is made by coating forms with a suitable liquid, for example by dipping them in rubber latex and drying or vulcanizing the latex according to whether a vulcanized or a vulcanizable latex is employed. In order to permit ready application of the paper strip to the lower margin of the cover, a form of particular shape is employed. This form preferably has a substantially flat bottom and a surface extending around the bottom which is flat in one dimension, said surface being preferably a cylindrical surface perpendicular to the plane of the bottom so that, when the form has been dipped and the latex dried, there is provided a sort of track upon which the paper strip may easily be applied. To cause the formation of bottom straps or openings in the bottom of the cover, when desired, a form having depressions in its bottom is employed, the surplus latex being scraped off after the dipping operation so as to leave latex only in the depressions.

These and other features of the invention, including certain variations of structure and procedure, will be described as embodied in several covers, their process of manufacture and their use in the manufacture of shoes.

Referring now to the accompanying drawings:

Fig. 1 is a perspective of a lasted shoe of the McKay type with a protective cover in place;

Fig. 2 is a perspective of the cover of Fig. 1 before it is applied to the shoe;

Fig. 3 is a perspective of the form on which the cover of Fig. 2 was made;

Fig. 4 is a cross-section on the line IV—IV of Fig. 3;

Fig. 4[a] is a section of a portion of the form shown in Figs. 3 and 16, on the line IV[a]—IV[a] of Fig. 16 showing also a part of a cover on the form;

Fig. 5 is a perspective on a greatly enlarged scale of a piece of the paper carrying filaments;

Fig. 6 is a perspective of a lasted Goodyear welt shoe with a cover in place;

Fig. 7 is a perspective of the cover of Fig. 6 before it is applied to the shoe;

Fig. 8 is a perspective of the form on which the cover of Fig. 7 was made;

Fig. 9 is a perspective of a lasted shoe of the type in which the sole is permanently attached by cement, the shoe having upon it a cover. In this figure the cover is shown with part of it in process of being applied to the shoe, another part after it has been applied to the shoe, and a third part, as it appears after it has been applied to the shoe and that portion which extended over upon the bottom has been roughed off.

Fig. 10 is a perspective of the cover of Fig. 9;

Fig. 11 is a perspective of the form on which the cover of Fig. 10 was made;

Fig. 12 is a perspective of a lasted shoe of the McKay type with a protective cover in place, said cover being attached to the bottom of the shoe by cement, the bottom of the cover having been weakened at a locality along the edge of the bottom by a row of slits. In this figure a dot-and-dash line indicates the line of stitches by which the sole will subsequently be attached.

Fig. 13 is a perspective of a lasted shoe of the McKay type with a protective cover in place, the bottom of said cover having been weakened at a locality along the edge of the bottom by a row of holes. The stitch line is shown in this figure as in Fig. 12.

Fig. 14 is a perspective of a lasted shoe of the Goodyear welt type with a protective cover in place, said cover having an opening in its bottom, the edge of the cover around the opening being attached to the sewing lip;

Fig. 15 is an elevation showing the dipping of a form in a coating liquid; and

Fig. 16 is a perspective of a form showing the bottom of the form in process of being scraped.

Although the lasted shoes, the covers and the forms have been shown bottom side up in the figures, their various parts will be referred to throughout the specification and claims as though the articles were right side up.

Referring first to Figures 1, 12 and 13, there are shown three forms of protective covers designed more particularly for use with shoes of the McKay type in which the sole is attached by stitches which pass through the outsole and the insole. The bottoms of these covers are each provided with a weakened locality extending along the edges of the bottom. This weakening of the bottom not only makes the bottom capable of being more easily stretched than is the body portion, so that the proper locating of the cover on the shoe is made easier, but also facilitates the subsequent tearing off of the body portion of the cover after it has served its purpose. Conveniently this weakening may be produced by providing a row of openings along the edge of the bottom. In Fig. 1 is shown a lasted shoe mounted on a last **21**, the overlasted margin of the upper being indicated at **23**. The bottom of this cover is weakened by openings which not only extend along the edge of the bottom but entirely across the bottom so as to provide a skeleton bottom consisting of narrow straps **27**. The bottom of the cover **22** of Fig. 12 is weakened along its edge by a row of slits **26** located outside the line of stitches **28** which subsequently attach the sole to the shoe; and the bottom of the cover **32** of Fig. 13 is similarly weakened by a row of holes **36** similarly located outside the stitch line **40**. The bottoms of these three covers are thus more readily stretched than are the body portions; and the covers, when the time comes to remove them, will break along the weakened locality, the broken edges being hidden in the finished shoe. It should be noted that the bottom of the cover of Fig. 1, which is the preferred form, may be said to result from using rectangular holes and increasing their size.

The cover of Fig. 1 consists of the body portion **25** made of thin transparent rubber and

the skeleton bottom consisting of the narrow straps 27 herein shown as integral with the body portion and extending across the bottom of the shoe. The construction or pattern of the bottom may of course be varied. It should, however, be such that it will facilitate the proper stretching of the cover over the shoe in such manner that the edge 29 of the lower margin of the protective or body portion of the cover (which as will presently be explained is preferably reinforced) may be readily located at the edge or slightly over the edge of the bottom of the shoe and will remain where located. The narrow straps extend inwardly across the line of stitches which subsequently attach the sole to the shoe so that only these narrow straps will be caught by the stitches or held gripped between the sole and the bottom of the lasted shoe after the sole has been attached thus ensuring that, when the cover has served its purpose, the protective or body portion may be cleanly torn from the shoe. The provision of narrow straps is particularly effective in the removal of the cover since only these weak straps need be broken. These straps stretch considerably before breaking, and the parts of them which remain attached to the shoe tend to snap back into a position in which their broken ends are not visible in the finished shoe. The cover, shown by itself in Fig. 2, is somewhat smaller than the lasted shoe over which it is to be stretched, and is considerably narrower across the bottom of its shank portion than is the corresponding portion of the shoe in order to cause the cover to conform to this portion of the shoe. In order to ensure a close fit and to hold the lower edge 29 of the cover properly in place, there is at the shank portion of the cover a series of straps located close to one another.

After the cover has been stretched over the shoe, the sole and heel are attached, and various operations performed upon them. During these operations certain guides, guards and shields of the machines used to perform these operations traverse the lower margin of the cover adjacent to the sole thus tending to abrade or break or cut the cover. In order to avoid this possibility the lower margin of the cover is preferably made tougher or more slippery or both tougher and more slippery than the body portion. Any suitable treatment may be employed to produce this result it being borne in mind that with a preformed cover which must be stretched over the shoe, the lower margin should be capable of stretching with the rubber at least in the direction of the lengthwise extent of the margin. For example, the lower margin of the body portion of the cover may be coated with rubber cement after which cotton flock may be applied to the wet cement. When the cement has dried there results a margin which is tougher and hence more resistant to abrasion. Instead of making use of cotton flock a lubricant such as zinc stearate may be rubbed into the rubber cement before it is entirely dry. In this case a lower margin is produced which is both tougher and more slippery than the rubber body portion. Preferably, however, as herein illustrated, a fibrous stretchable material such as a strip of creped paper 33 is attached by cement to the lower margin of the cover, the corrugations of this paper being transverse to its length so that the paper strip may stretch lengthwise with the rubber portion of the cover; and preferably this paper is impregnated with a waterproofing and lubricating substance or substances, for example with a mixture of paraffin and carnauba wax. The lower margin of the cover is thus much tougher than the body portion and has a much more slippery surface, since the coefficient of friction between paper and metal is much less than the coefficient of friction between rubber and metal.

As has been explained, the cover is made by coating a form with latex, drying the latex and stripping the cover from the form. In order to facilitate the manufacture of a cover having a strip of fibrous material such as paper along its lower margin, a form of particular shape may be employed, said form having along its lower margin a surface extending at an angle thereto which is flat transversely. Preferably the form 35 (Fig. 3) has a flat bottom 37 provided with transverse grooves 45. Surrounding this bottom is a beveled portion 43 which extends from the level of the bottoms of the grooves to an intersection with a cylindrical surface 39 which is perpendicular to the flat bottom 37. When the form has been coated with latex, the surplus latex scraped from the bottom except for the grooves and the latex dried, there result thin straps which are bonded to the body portion of the cover. Along the line of intersection of the bevel 43 with the cylindrical surface 39 the coating of latex is liable to be thin so that a weak locality along this line would result. The strip 33 of paper, however, covers this locality in the finished cover. Referring to Fig. 4[a] there is shown a cross-section of a portion of the form, its coating of rubber film 25 and the paper strip 33. It will be noted that when the latex coating has dried it has decreased in thickness so that the straps 27 do not fill the grooves 45. The edge of the flat bottom 37 projects above the rubber film 25 and provides a shoulder 41 against which one edge of the paper strip 33 is caused to abut. In this way the application of the paper strip is made easier, the weak locality in the film at the intersection of the bevel 43 and the cylindrical surface 39 is reinforced, and the cross straps 27 are well bonded to the margin of the body portion of the cover. The bevel 43 not only aids, as has been explained, in permitting a strong bond to be made at the ends of the straps but also imparts an inward bend to the extreme lower margin of the body portion of the cover so that, when the cover is applied to a shoe, the lower margin of the cover may more readily extend a short distance inwardly over the overlasted margin of the upper of the shoe.

The strip of fibrous material 33, as has been stated above, is preferably a piece of creped paper with the corrugations running crosswise of the strip. In order to strengthen this strip in such manner that a very strong pull may be exerted upon it to tear the protective portion of the cover from the shoe after the cover has served its purpose, the construction shown in Fig. 5 may be employed. In this construction the paper carries a plurality of filaments, such as threads 51, which extend parallel to the corrugations. Conveniently, the strips may be cut from a sheet of paper treated as follows: The sheet of paper, preferably waterproofed and lubricated as has been outlined above, is placed upon a convex support and coated with a latex cement which will finally dry to a non-sticky condition. A thread is looped back and forth over the members of two rows of pins carried by a suitable frame. The sides of the threads which are to contact with the paper are sprayed with latex.

This frame is then placed over the paper support with the wet side down in such manner that the runs of threads are parallel to the corrugations in the paper and are brought down firmly upon the paper. The threads and paper are run through suitable rolls to press the threads into firm contact with the paper throughout their lengths. The ends of the loops of threads are cut, or they may be cut before the rolling operation, and the strips **33** are then cut from this prepared paper.

In the manufacture of a shoe the lasted shoe is mounted bottom side up upon a jack having a last pin to enter the last-pin hole and an abutment to prevent the shoe from turning on the last pin. The cover is then stretched over the shoe beginning with the toe portion. The narrow straps, which leave exposed to view the greater part of the bottom of the shoe so as to permit the temporary attaching of the sole by cement if desired and are quite easily stretched, facilitate this operation and not only permit the lower margin **29** of the cover to be caused to occupy just the desired position, but also aid in holding it in that position. The cover is always smaller than the shoe which it is designed to cover, and consequently the bottom must be stretched to cause the lower edge **29** of the body portion to occupy the desired position which is preferably with its lower extremity just overlapping the outer edge of the overlasted margin of the upper of the shoe. The pull of the body portion of the cover which tends to pull the lower edge of said body portion away from the edge of the bottom of the shoe is balanced, as it were, by the pull of the straps and the friction of the body portion on the display part of the upper. Under these conditions the lower edge of the body portion will stay where it is placed. The narrow shank portion of the cover and the more numerous straps at that locality cause the cover to hug the shank and ball portions of the shoe and hold the lower edge of the cover in place particularly at and adjacent to the shank portion of the shoe. The covered shoe is removed from the jack and the sole and heel attached in the usual manner, the heel-end straps of the cover to the rear of the heel breast line of the shoe being left undisturbed if a leather heel is attached. If the heel is a wooden one, these heel-end straps are pulled back and broken so as to expose the entire heel seat. The various subsequent operations upon the sole and upon the heel (if it is a leather one) are carried out as usual, the guides, guards and shields of various machines traversing the lower margin of the cover. Due to the toughness of this margin and its slippery surface, the members of the machines traverse it without objectionable abrasion or cutting. The waterproof quality is also an aid, since otherwise the strip would be liable to soak up the edge and heel inks thus softening the strip so that when later some part of a machine, for example the corner of an edge setting tool, struck or rubbed against the strip, the pulpy strip might be roughed and broken. And even though in such a case the rubber beneath the strip may not be broken, the margin is liable to separate at these weakened localities when the cover is finally torn off instead of separating, as it should, at a locality hidden by the sole. After the various operations have been performed on the shoe the protective portion of the cover is torn off, preferably by seizing the lower margin and exerting a pull upon it. By such a pull the narrow straps, outside the line of stitching or outside the line adjacent to the stitching where some of them may be pinched tightly between the overlasted margin of the upper of the shoe and the sole are first greatly stretched and then broken, the broken ends snapping back out of sight. In case portions of the lower margin of the cover happen to be caught in the stitching or pinched tightly between the overlasted margin of the upper and the sole, such portions will either break at the line of stitching or pull out from where they are pinched.

The covers of Figs. 12 and 13 are in general like that of Fig. 1 in that they are provided with weakened localities caused respectively by the slits **26** and the holes **36** and in that their lower margins are reinforced with creped paper strips **38** and **42** like that of Fig. 1. The cover of Fig. 12 differs further from that of Fig. 1 in that it is held in proper position on the lasted shoe in a somewhat different manner. The bottom of this cover is provided with an elongated opening **44** extending from near the toe end to the vicinity of the heel breast line, said opening being enlarged to about the outline shown when the cover is stretched over the shoe. In order to hold the cover in proper position on the shoe, use is made of an adhesive. Preferably an adhesive which is dry when the cover is ready to be placed on the shoe but can readily be activated is employed. For example, the inner face of the margin of the cover around the opening **44** is coated with thermoplastic cement which has been indicated by a dotted area at **48**. The operator stretches the cover over the shoe, locates it properly and then by means of a hot iron activates the cement and causes the margin of the cover around the opening **44** to adhere to the bottom of the shoe. A sole may be temporarily attached to this shoe by cement if desired, since the bottom of the rubber cover is cemented to the bottom of the shoe and thus provides a firm support for the sole. The covers of Figs. 12 and 13 may be made in any suitable manner, for example by employing forms substantially like that of Fig. 3, but having patterns of different configurations on their bottoms.

In Figs. 6, 7 and 8 are shown respectively a lasted shoe of the Goodyear welt type, its cover **61** and the form **62** upon which the cover is made. In the manufacture of a shoe of this type the machine, which sews the welt to the projecting lip **63** of the insole **65** and the projecting portion **67** of the upper which lies against the sewing lip, has a guide adapted to traverse the inside of the lip at the base thereof. For this reason it is not desirable to provide the cover with bottoms like those of the covers of Figs. 1, 12 and 13. This cover is therefore such that nearly the whole sole attaching face of the shoe is exposed. At the heel end a series of straps **69** are provided at the rear of the rear ends of the sewing lip **63**. At the toe end a small number of straps **71** (three being shown) are provided. These are sufficient to hold the toe end of the cover on the toe end of the shoe; but, due to their capability of stretching and to their location, do not interfere with the operation of the guide of the welt sewing machine. It should be understood that the particular bottom of this cover which has been shown and described—that is, a bottom of transverse straps or of open-work nature—is not essential. It is desirable, however, to provide a cover having enough of a bottom to extend over the toe portion and the heel portion of the bottom of the shoe.

Owing to the open nature of the bottom of this cover, it is desirable to impart to it a shape which

will make up to an extent for the absence of cross-straps across the forepart and shank of the shoe. To this end a form such as that shown in Fig. 8 may be used in making the cover. This form has a flat bottom 79, cross grooves 81, 83 and a cylindrical surface 85 which in general resemble corresponding features of the form shown in Fig. 3. The cylindrical surface, however, is provided not only with one pair of reëntrant curved portions, one of which is shown at 87, but with a second pair at the forepart, indicated at 89, and a third pair, indicated at 91, just ahead of the heel breast line. The cover 61, made on this form, thus has a lower margin 78 which is provided with three pairs of corresponding reëntrant curves as shown in Fig. 7. These three pairs of reëntrant curves cause the cover to hug the greater part of the shoe closely. At the shank, however, just to the rear of the ball the lower margin of the cover tends to bridge from the ball to the heel and to fall away from the level of the bottom of the shoe, particularly at the junction of the shank and ball portions of the shoe. To ensure an accurate fit of the cover at the locality means is provided for holding the cover securely in place, such means, in the illustrated construction, taking the form of metallic fasteners such as staples, one of which is shown at 77, which fasten the lower margin of the cover to the base of the sewing lip, there being one of these staples at each side of the shoe in the location shown. This cover, it should be noted, may be very accurately located on the shoe whereby the cover effectively protects the shoe during manufacture and may be easily and cleanly removed. The extreme lower margin of the cover extends over upon the shoulder or shelf where the upper lies upon the feather of the insole and abuts the upper at the base of the sewing lip. The reëntrant curves in the lower margin of the cover at the forepart and near the heel end hold the lower edge of the cover in position at these localities, so that no fastening means except the two staples at the location shown are necessary to ensure an accurate fit of the cover. When the welt is sewed to the sewing lip the extreme lower margin of the cover, which lies upon the shelf or shoulder outside the base of the sewing lip, is pinched between the welt and the upper, but the welt-attaching stitches will not ordinarily pass through the lower margin of the body portion of the cover although at times they may do so in a few localities. At such localities the cover will part at the stitch line when it is later removed. This cover like the others is preferably provided with a reinforced lower margin in the form of a creped paper strip 78 like the strip 33 of the cover of Figs. 1 and 2; and this strip with its cross filaments facilitates the removal of the cover. It should be noted that the bottom of this cover which consists of the straps 71, 69, is more readily stretched than is the body portion.

It is believed to be unnecessary to describe in detail the sewing of the welt, the trimming of the inseam, the attaching of the sole and heel, and the various subsequent operations all of which are carried out in the usual manner, the tough and slippery lower margin 78 of the cover ensuring that the cover will not be broken or cut or substantially weakened.

The cover 50 of Fig. 14 which is shown as applied to a Goodyear welt shoe but may, as will be explained, be used with a shoe of the McKay type, resembles in many respects the cover shown in Fig. 6. The bottom is open except for a toe end consisting of cross-straps 52 and a heel end consisting of cross-straps 56. This cover carries at the lower edge of its body portion a plurality of fastening members herein shown as hooks 58 which are caught in a part of the bottom of the shoe, being herein shown as hooked over the sewing lip 62, to hold the cover in proper position. It should be noted that this cover could be used on a shoe of the McKay type, in which case the hooks would be caught in some part of the bottom of the shoe, for example in the overlasted margin of the upper.

Fig. 9 shows a lasted cement shoe, that is a shoe the sole of which is to be permanently attached by cement. In this figure the cover is shown with part of it in process of being applied to the shoe, another part after it has been applied to the shoe, and a third part as it appears after it has been applied to the shoe and that portion of it which extended over the overlasted margin of the upper has been roughed off. In a shoe of this kind, after it has been made ready for the attaching of the sole, the whole sole-attaching portion of the bottom, which extends from the toe end to a locality slightly forward of the heel breast line, should be fully exposed. In this cover the paper strip 103 projects well beyond the lower edge 104 of the rubber portion of the cover. Conveniently this cover may be made on the form shown in Fig. 11 which is in general like the form of Fig. 3, but differs from that form in the following particulars. There is no bevel corresponding to the bevel 43 of the form of Fig. 3. The cylindrical surface 105 of the form 107 has a height less than that of the cylindrical surface of the forms of Figs. 3 and 8, being approximately ¼ of an inch in height instead of from ½ to ¾ of an inch as in the other two forms. This form of Fig. 11 also differs from the other forms in the number and location of the grooves in its flat bottom. The number and location of these grooves may be greatly varied since, as will presently appear, all of the straps formed by these grooves, except those across the heel end of the shoe, are removed before the sole is attached. As illustrated, the grooves 109 comprise two grooves across the extreme toe end of the bottom of the form, one across the shank and two across the heel. After the form 107 has been coated with latex, its bottom scraped, and the latex dried and vulcanized, a paper strip about ¾ of an inch wide precoated with latex as usual is attached to that portion of the cover which overlies the cylindrical surface 105 so that about ½ of an inch of the paper strip projects beyond the bottom of the form, the straps 111 which result from the grooves 109 being attached at their ends to the lower edge of the rubber body portion of the cover.

This cover is placed on a lasted shoe with about ¼ of an inch of the paper strip projecting beyond the level of the bottom of the shoe, as indicated in Fig. 9 by the portion 103^a, the straps 111 aiding in properly locating the cover on the shoe and temporarily holding the cover in place. A coat of adhesive 114 is extruded along the edge 112 of the bottom of the shoe in such manner that part flows upon the overlasted margin 113 and part flows over the edge and down between the cover and the display surface of the upper, the width of this stripe of adhesive on the display surface of the upper being about ⅛ of an inch. No manipulation of the paper strip is ordinarily needed to accomplish this result since the lower margin of the cover around the edge of the bottom of the shoe is loose enough to permit adhesive to flow down between the cover and the up-

per for a short distance, but is tight enough at a distance of about ⅛ of an inch from the level of the bottom of the shoe to prevent the adhesive from flowing farther. This adhesive is of such a nature that it will form a firmer bond with the latex-coated paper than with the display surface of the upper when the two have been pressed together and the adhesive has dried; so that, later, the paper and the adhesive may be stripped cleanly from the display surface of the upper. Any suitable adhesive which will act in this manner may be used, for example the latex preparation now commonly sold under the trade name of "Protectashu". After the adhesive has been applied in the manner described above on the outer portion of the sole-attaching portion of the overlasted margin and on a narrow area of the display surface of the upper, the projecting portion of the strip 103 is bent over the edge of the bottom of the shoe and pressed against the overlasted margin of the upper as indicated at 115. When the adhesive has dried, the cover is thus attached to the lasted shoe through the paper strip which adheres to a narrow locality along the display surface of the upper and to the overlasted margin.

Before the permanent attaching of a sole by cement to a lasted shoe the overlasted margin of the upper is roughed to remove the glaze or finish on the upper leather so as to provide a proper surface to receive the cement. When this regular roughing operation is carried out, that part of the paper strip which adheres to the overlasted margin is removed together with the finish on the overlasted margin, this locality being indicated at 117; and the straps which lie across the overlasted margin are at the same time broken, as indicated at 119, and also removed. The whole sole-attaching surface on the bottom of the shoe is thus left exposed for the reception of the sole, the edge of what remains of the paper strip 103 being indicated at 121. The cover is therefore attached to the shoe only by the adhesion of a narrow margin of this paper strip to the display surface of the upper along the edge of the bottom of the shoe. The sole is then attached by cement, the heel being attached in a suitable manner depending upon whether it is of leather or of wood. In the case of a leather heel, the projecting margin of the paper strip may if desired be bent over the overlasted margin, and the heel may be attached without disturbing the paper or the heel straps. In the case of a wood heel, the heel straps may be pulled back and caught over the heel end of the shoe to expose the whole heel seat for the fitting operations which prepare it for the reception of the heel. After the usual operations have been performed on the shoe and the protective cover has served its purpose, it may readily be stripped from the upper of the shoe.

In this form of cover the paper strip carries no reinforcing threads since these would interfere with the roughing operation. Although, as described above, the paper strip projects beyond the edge of the rubber portion of the cover for approximately ½ of an inch, it should be understood that the extent of this projection may be varied. The lower edge of the rubber portion of the cover might be flush with the lower edge of the paper strip if desired, in which case there would be, prior to the roughing operation, a layer of rubber attached to the overlasted margin of the upper, said layer of rubber having upon it a layer of paper. Under these conditions, the roughing operation proceeds satisfactorily, the rubber and paper being readily removed.

Referring now to Figs. 3, 8, 11, 15 and 16, a more detailed description of the forms and of the method of employing them in the manufacture of covers will be given. Each form is somewhat smaller than any lasted shoe to which it is to be applied, it being understood that the cover made on a particular form may be used on several sizes of lasted shoes. Referring first to Figs. 3 and 16, the form there shown has a bottom portion having a flat bottom surface 37 broken by transverse grooves 45 of the same depth as the slight shoulder 41, the vertical surface of which intersects the flat surface 37. A narrow outwardly and downwardly beveled surface 43 surrounds the bottom 37 and intersects at its lower edge a vertical cylindrical surface 39. This bottom portion is surmounted by a lastlike upper portion the height of which is proportionately less than that of the lasted shoe for which the form is to provide a cover by an amount determined by the height of the bottom portion which in this case is approximately ½ of an inch. The bottom of the forepart of the form is considerably narrower than the corresponding part of the lasted shoe to which the cover made on the form is to be applied. The shank portion of the bottom of the form is very narrow with abrupt reentrant curves in the cylindrical surface 39 just to the rear of the ball; and to compensate for this narrowness the upper portion is swelled or bulged at this locality to produce a peripheral outside transverse measurement which is proportional to the corresponding measurement of the lasted shoe. The bottom of the form at the rear part is somewhat narrower than the corresponding part of the lasted shoe but is not proportionally as narrow as is the forepart of the bottom.

The form shown in Fig. 8 is in general similar to that shown in Fig. 3 with the exception of the location of the groves in its bottom, the fact that the bottom as a whole with the exception of the heel portion is narrower than the bottom of the form of Fig. 3, and that the cylindrical surface 85 has three pairs of reentrant curves indicated at 87, 89 and 91, such a curving of the cylindrical surface being desirable since in the cover made on this form there are no bottom straps between the extreme toe end and the heel breast line. As herein shown there is no bevel corresponding to the bevel 43 of the form of Fig. 3 and no shoulder corresponding to the shoulder 41 of the form of Fig. 3, although these features may be embodied in the form if desired. As shown the form of Fig. 8 has a flat bottom, the edge of which is slightly beveled. Otherwise, and except as noted above, the two forms are much alike, the upper portion of the form of Fig. 8 being enlarged or bulged just to the rear of the ball and having a comparatively narrow rear part.

The form of Fig. 11, except for the arrangement of the grooves in its bottom and the reduced height of the cylindrical surface 105, and the fact that there is no bevel around the edge of the flat bottom, is like the form of Fig. 3.

The manufacture of covers on all of these forms is carried out in practically the same manner, two of the steps as carried out in the manufacture of a cover on the form of Fig. 3 being shown in Figs. 15 and 16. A rod 133 is driven into a hole in the top of the form to provide a handle by which the form may be manipulated to coat it with latex. This coating is accomplished by dipping the form slowly into latex 135 in a receptacle

137, the dipping being carried out in such manner and at such speed that no air bubbles result from trapped air and no dripping of latex occurs when the form is removed. The coated form is removed from the latex bath and is immediately turned bottom-side-up in which position, as indicated in Fig. 16, a scraper 139 is used to scrape the latex from the bottom of the form, except for that which remains in the grooves 45. The form is then placed in an oven to dry the latex or to dry and vulcanize it depending upon the nature of the latex which is used. The creped paper strip is then applied over that portion of the cover which lies on the cylindrical surface 39 and on the beveled surface 43 with the edge of the strip abutting the shoulder 41. Because of the cylindrical surface of the form the paper strip may be applied very readily, the latex adhesive coating on the strip being progressively activated during the application of the strip. The cover is then stripped from the form.

Although the advantages of certain features of the covers such as the reinforced lower margins of the body portions, the ready capability of stretching and the open-work nature of the bottom portions have been herein set forth, it should be understood that the invention is not limited in the scope of its application except as defined in the appended claims.

The reenforced paper strip and the method of making it form the subject matter of application Serial No. 101,439, filed September 18, 1936; and the forms upon which the covers are made form the subject matter of application Serial No. 145,730, filed June 1, 1937.

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

1. An elastic protective cover ready to be stretched over a partly fabricated shoe, said cover comprising a thin rubber body portion to the lower margin of which is attached a strip of reënforcing material capable of stretching lengthwise, said strip being so located that when the cover is in place and an outsole has been located upon the bottom of the shoe, the strip lies adjacent to the sole with its lower portion extending over upon the overlasted upper of the shoe and terminating short of the locality of the line of the stitches which in a McKay shoe attach the sole to the insole and in a Goodyear welt shoe attach the upper to the welt.

2. An elastic cover for the protection of the upper of a shoe during its manufacture, said cover comprising a thin rubber body and a strip of reënforcing material capable of stretching lengthwise, said strip being so located that, when the cover is stretched over a shoe and an outsole is located upon the bottom of the shoe, the strip lies adjacent to the sole, said strip being capable of stretching lengthwise and carrying a solid material which renders the strip impervious to liquids.

3. An elastic protective cover for use in the manufacture of shoes, that portion of the cover which, when the cover is in place, lies over the lower margin of the upper of the shoe adjacent to the sole comprising a strip of creped paper the corrugations of which are transverse to the length of the strip, said paper carrying filaments all of which are substantially parallel to the corrugations.

4. An elastic protective cover having a bottom portion and being adapted to be stretched over a lasted shoe, the bottom portion of the cover being capable of being stretched more easily than is the body portion.

5. An elastic cover adapted to be stretched over a lasted shoe to protect the upper thereof, said cover comprising a body portion of thin elastic material having a bottom which is capable of being stretched more easily than is the body portion, and a strip of reinforcing material capable of stretching lengthwise attached along the lower margin of the body portion, said strip being so located that when the cover has been stretched into place and an outsole has been located on the shoe the strip lies adjacent to the outsole with its lower edge lying upon the overlasted margin of the upper and spaced from the edge of said overlasted margin.

6. An elastic protective cover for use in the manufacture of shoes comprising a body portion adapted to be stretched over the upper of a lasted shoe and a plurality of narrow straps integral with the body portion and adapted to be stretched over the bottom of the shoe.

7. A protective cover for use in manufacturing shoes having an elastic body portion adapted to be stretched over the upper of a shoe, and a skeleton bottom comprising narrow elastic straps integral with the body portion and extending transversely over the sole-attaching locality of the bottom of the shoe.

8. A protective cover for use in manufacturing shoes having an elastic body portion adapted to be stretched over the upper of a shoe, and a bottom comprising elastic straps integral with the body portion and so narrow and so widely spaced apart as to expose the greater part of the sole-attaching locality of the bottom of the shoe.

9. A protective cover for use in manufacturing shoes having an elastic body portion adapted to be stretched over the upper of a shoe, and a bottom comprising elastic straps integral with the body portion and so narrow as to break easily and thus facilitate removal of the body portion when the cover has served its purpose.

10. An elastic cover having a bottom portion and being adapted to be stretched over a lasted shoe, the bottom of said cover being capable of being more easily stretched than the body portion, and the lower margin of the body portion having opposed reentrant curves.

11. An elastic protective cover for use in the manufacture of a Goodyear welt shoe, said cover having a substantially open bottom to permit the guide of the welt sewing machine to traverse the base of the sewing lip, the lower margin of the cover having an inward bend in the forepart adapted to lie over upon the margin of the bottom of the shoe with the lower edge of the cover terminating short of the line of stitches by which the welt is subsequently attached, said cover being adapted to be fastened to the shoe at the shank portion, said fastening and said bend together with the elasticity of the cover serving to hold the lower edge of the cover close to but outside said line of stitches.

12. An elastic protective cover adapted to be stretched over a lasted shoe, the lower margin of the body portion of the cover having a plurality of pairs of opposed reentrant curves.

13. A lasted Goodyear welt shoe in process of manufacture having stretched over it a cover to protect the upper thereof, said cover having a bottom sufficiently open to permit the guide of the welt sewing machine to traverse the base of the sewing lip and comprising a thin elastic body portion having firmly attached along its lower

margin a strip of reinforcing material which is more resistant to abrasion than the body portion and is capable of stretching lengthwise, the lower margin of said strip extending over upon the overlasted portion of the upper and terminating short of the line of stitches by which the welt is subsequently attached.

14. A protective cover ready to be stretched over a lasted shoe, said cover comprising an elastic body portion having a substantially open bottom, there being attached along the lower edge thereof a strip of reinforcing material which is more resistant to abrasion than is the elastic body portion and is capable of stretching lengthwise.

15. An elastic protective cover ready to be stretched over a lasted shoe, said cover having a substantially open bottom, the lower margin of the toe portion of the cover having an inward bend such that when the cover is stretched over a shoe, the lower edge of the cover lies naturally over a portion of the overlasted margin of the upper close to but outside the line of sole-attaching stitches and aids in holding the cover on the shoe.

16. A lasted Goodyear welt shoe in process of manufacture having stretched over it an elastic cover having an open bottom to permit the guide of the welt sewing machine to traverse the base of the sewing lip, the lower edge of the cover extending over upon the lasted-over portion of the upper and lying substantially outside the line of stitches by which the welt is subsequently attached.

17. An elastic protective cover ready to be stretched over a partly fabricated shoe, said cover comprising a thin body portion of elastic material to the lower margin of which is firmly attached a reinforcing material capable of stretching lengthwise and being more resistant to abrasion than is the body portion, said material being so located that when the cover has been stretched into place and an outsole has been located upon the shoe the material lies adjacent to the outsole with its lower edge lying upon the overlasted margin of the upper and spaced from the edge of said overlasted margin.

18. An elastic protective cover for protecting the upper of a partly fabricated shoe during subsequent manufacturing operations, said cover comprising a body portion having a bottom, said body portion and bottom consisting of thin elastic material, and a strip of reinforcing material, the bottom of the cover being capable of being stretched more easily than the body portion, and the strip of reinforcing material being attached along the lower margin of the body portion and being capable of stretching lengthwise.

19. An elastic protective cover for protecting the upper of a partly fabricated shoe during subsequent manufacturing operations, said cover comprising a body portion of thin elastic material having a plurality of narrow straps integral therewith and adapted to be stretched over the bottom of the shoe, and a strip of reinforcing material attached along the lower margin of the body portion, said strip being capable of stretching lengthwise.

20. An elastic protective cover ready to be stretched over a lasted shoe to protect the upper thereof, said cover comprising a body portion of thin elastic material having a bottom which is capable of being stretched more easily than is the body portion, said body portion having opposed reentrant curves, and a reinforcing material firmly attached along the lower margin of the body portion and having a lower coefficient of friction with metal than has the body portion, said reinforcing material being capable of stretching with the body portion lengthwise of the cover and being so located that when the cover has been stretched into place and an outsole has been located on the shoe, the reinforcing material lies adjacent to the outsole with its lower edge lying upon the overlasted margin of the upper and spaced from the edge of said overlasted margin.

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