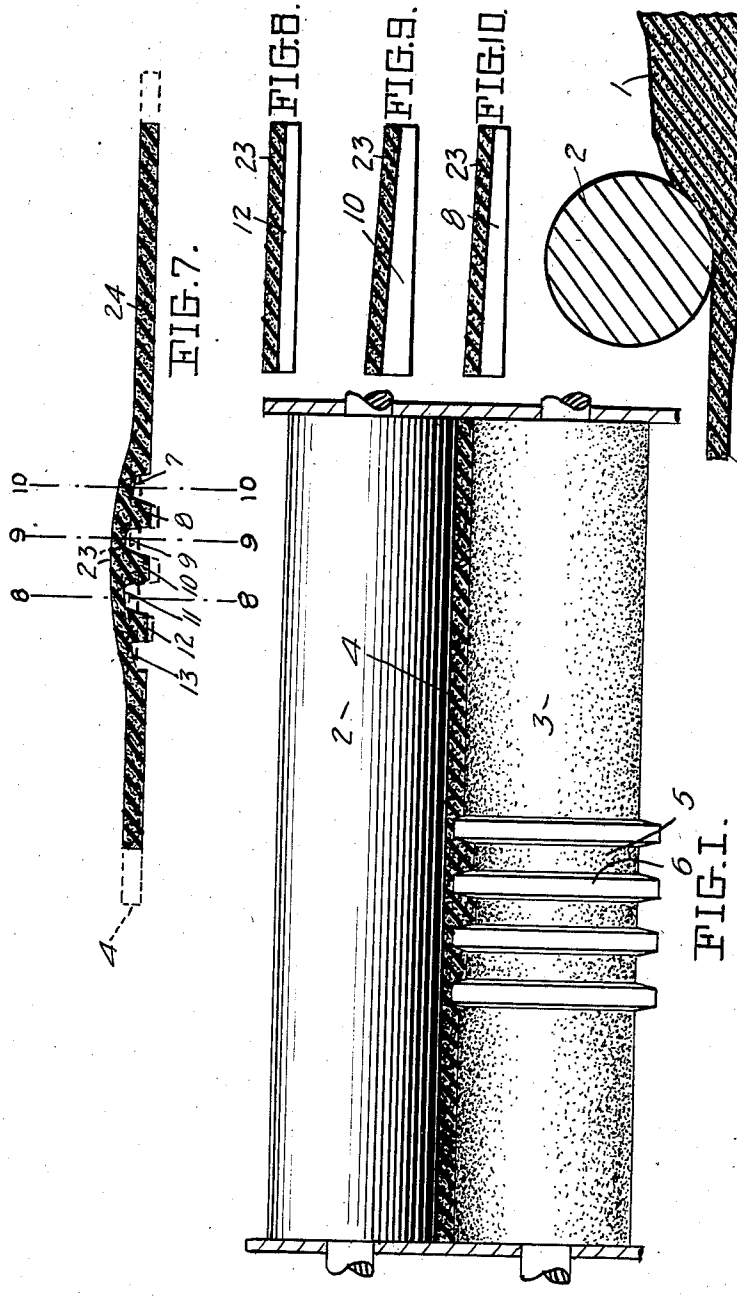
Oct. 21, 1941. A. FISCH 2,259,687

PROCESS FOR MAKING ORTHOPEDIC FOOTWEAR

Filed May 10, 1940 2 Sheets-Sheet 1



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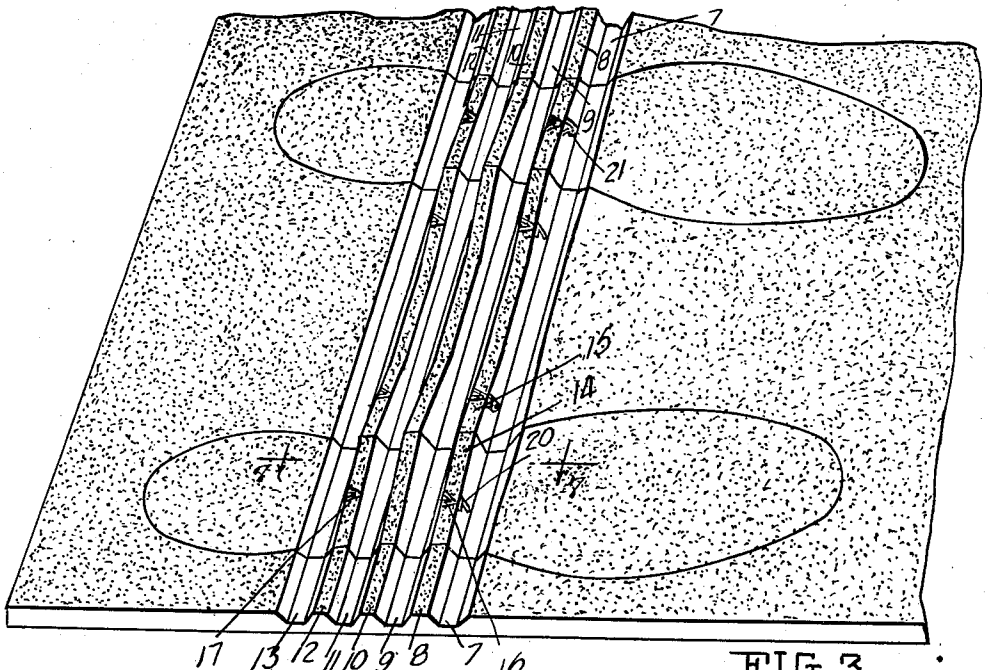


FIG 3

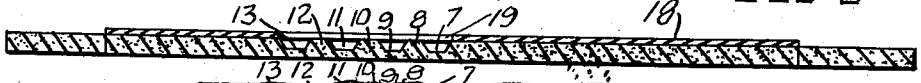


FIG 4

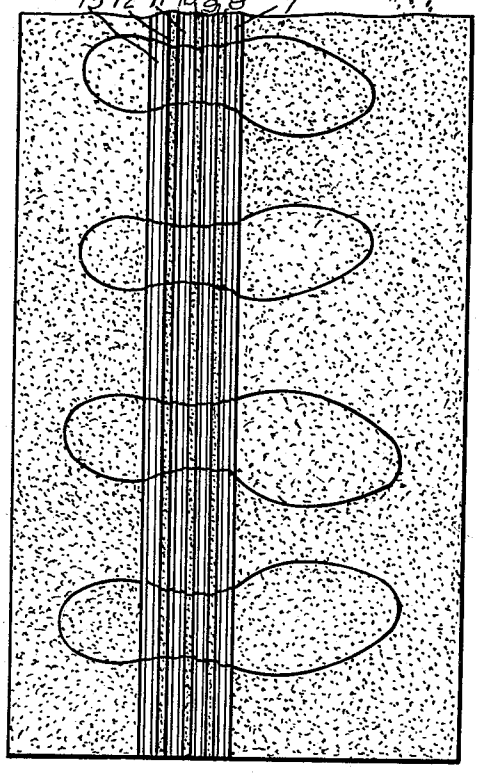


FIG. 5.

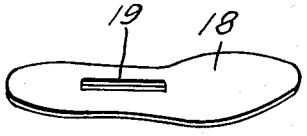


FIG 6

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UNITED STATES PATENT OFFICE

2,259,687

PROCESS FOR MAKING ORTHOPEDIC FOOTWEAR

Arthur Fisch, Guelph, Ontario, Canada

Application May 10, 1940, Serial No. 334,314

5 Claims. (Cl. 12—146)

My invention relates to improvements in processes for making orthopedic footwear of the type disclosed in my United States Patent No. 2,150,057 dated March 7, 1939, and in my prior application Serial No. 290,273 filed August 15, 1939, and the object of the invention is to devise a simple quick inexpensive process by which orthopedic rubber soles may be formed without the rubber being vulcanized during the formation of the sole and therefore the connecting of the formed sole to the upper permitted without stitching to form an integral part of the shoe by cementing and vulcanizing the sole and upper together, and which will leave the cuttings left from stock unvulcanized so that they can be utilized in the production of other soles and it consists of the various steps hereinafter described.

Figs. 1 and 2 illustrate the apparatus by which my process for producing an outsole from uncured rubber is carried out.

Fig. 3 is a perspective view of a rubber sheet fragment after it leaves the apparatus illustrated in Figs. 1 and 2 with the bar supports formed therein and indicating the line on which the sole blanks are cut.

Fig. 4 is a sectional view through Fig. 3 and taken longitudinally through one of the sole blanks.

Fig. 5 is a plan view of a rubber sheet out of which the sole blanks are cut and illustrating that pairs of soles differing in size may be cut from the same sheet.

Fig. 6 is a perspective view of a pattern by which the sole blanks are cut.

Fig. 7 is a sectional view through a shoe sole as completed by my process and taken on line 7—7 Fig. 3 passing through the upwardly inclined portions 14 of the ribs 7, 9 and 11.

Figs. 8, 9 and 10 are sectional view taken respectively on line 8—8, 9—9, and 10—10 Fig. 7.

In the drawings like characters of reference indicate corresponding parts in the different views.

In order to produce soles of the above type uncured rubber or other moldable material 1 is brought to a plastic condition and fed between the rollers 2 and 3 to form a sheet 4. The roller 3 is formed with alternate ribs and grooves 5 and 6 to impress into the plastic material as the sheet is formed the alternate grooves and ridges 7 to 13 inclusive as illustrated particularly in Figs. 3, 4 and 5.

The ribs 6 are so formed as to provide oppositely inclined portions 14 and 15 to conform to the required build up to evenly support the arch from the outside to the inside of the shank. On the upper face of the ribs 8 and 12 are impressed the V letters 16 and 17, the apices of which are in transverse alignment indicating the centre line of each sole.

18 is a sole pattern (see Fig. 6) corresponding in size to the size of sole to be cut either a man's or woman's sole. On the centre line of the pattern is cut a slot 19 which extends forward from the base line of the heel. The patterns 18 are laid on the sheet alternately, the rights and the lefts as indicated by the impressed letters L and R appearing at the side of the rib 8 at 20 and 21. The letters V appear through the slot 19 of the pattern 18 to indicate the pattern is on proper centre line, the base line of the heel coinciding with the outer side of the groove 13. The operator then cuts through the sheet following the edge of the pattern.

When so cut the inside edge of the shank of both the right and left sole extends through the meeting point between the inclined rib portions 14 and 15 in the case of a man's shoe so that the inside side of the shank in each case is properly built up to support the arch, and in the case of a women's shoe a little to one side of such meeting point or at a point intermediate in the incline 14.

By my process transverse arch supporting ribs 8, 10 and 12 are formed for the arch portion 23 of the sole 24 illustrated in Fig. 7 which support the arch from one side to the other and vary in height as illustrated in Figs. 8, 9 and 10 to conform to the shape of the arch to evenly support it.

By my process the various disadvantages met with in producing a molded sole are overcome such as the expense of employing a separate mold for each size of sole, the waste produced by discharging of spew or overflow from between the mold members which becomes vulcanized and therefore forms waste, the slowness of operation and the spoiling of the soles by air as it is discharged from the molds as the mold closes.

The employment of the above process allows the production of orthopedic soles of different sizes without the employment of numerous expensive molds and eliminates all waste material, the cuttings from the sheet after the soles are cut being utilizable for the manufacture of other soles. Furthermore, after the sole is cut out it is unvulcanized and can be attached to the upper by means of cement, the sole being still in a raw state.

After the sole is cemented to the upper, the

upper and attached sole are vulcanized together to strengthen the adhesion of the sole and upper and to give the shoes the same wearing qualities as a molded sole.

It may be stated the form of shank support for orthopedic soles described in my foregoing specification is merely illustrative, and that the supports may be constructed and arranged in any other way, and arranged in any regular or irregular manner which will give the desired orthopedic effect.

What I claim as my invention is:

1. A process of producing rubber sheets from which arch supports may be cut comprising, forming a continuous sheet from a mass of uncured rubber and concurrently forming longitudinally thereof a plurality of grooves in a region intermediate the marginal regions and intermediate each groove a continuous ridge of regularly varying maximum and minimum height.

2. A process of producing shoe soles comprising, forming a continuous sheet from a plastic mass such as rubber or the like, concurrently forming longitudinally thereof a plurality of grooves in a region intermediate the marginal regions and intermediate each groove a continuous ridge of regularly varying maximum and minimum height, and cutting a sole blank from the sheet so formed at a position such that the inner edge of the heel portion of the blank coincides with and is parallel to one edge of the grooved region.

3. A process of producing shoe soles comprising, forming a continuous sheet from a mass of uncured rubber, concurrently forming longitudinally thereof a plurality of grooves in a region intermediate the marginal regions and intermediate each groove a continuous ridge of regularly varying maximum and minimum height, placing a sole pattern transverse the sheet so that the inner edge of the heel portion thereof coincides with an edge of the grooved region, and cutting a sole from the sheet around the edge of the pattern.

4. A process of producing shoe soles comprising, forming a continuous sheet from a mass of uncured rubber, concurrently forming longitudinally thereof a plurality of grooves in a region intermediate the marginal regions and intermediate each groove a continuous ridge of regularly varying maximum and minimum height, placing a sole pattern transversely of the sheet so that the inner edge of the heel portion coincides with one edge of the grooved region while the inner edge of the shank portion overlies the ridges at a point of maximum height, and cutting a sole from the sheet around the edge of the pattern.

5. A process of producing shoe soles comprising, forming a continuous sheet from a mass of uncured rubber, concurrently forming longitudinally thereof a plurality of grooves of continuously equal depth in a region intermediate the marginal regions of the sheet, the thickness of the sheet at the grooved area being less than the thickness thereof at the marginal portions, also concurrently forming intermediate each groove a continuous ridge of regularly varying maximum and minimum height, and cutting a sole blank from the sheet so formed at a position such that the inner edge of the heel portion of the blank coincides with and is parallel to one edge of the grooved region.

ARTHUR FISCH.