

H. C. EGERTON.
INTERCHANGEABLE REINFORCED SHOE SOLE.
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1,282,400.

Patented Oct. 22, 1918.

Fig. 1,

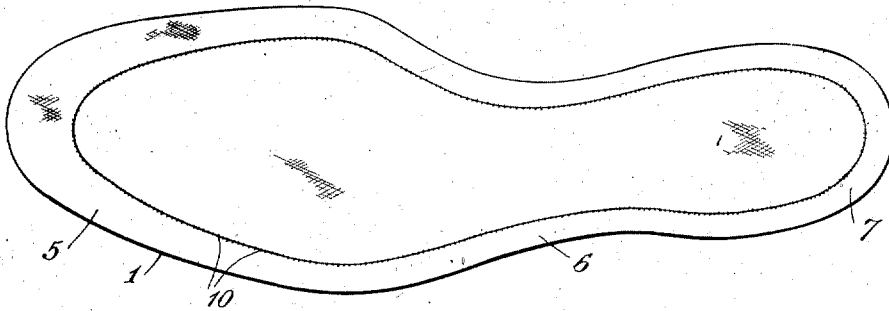


Fig. 2,



Fig. 3,

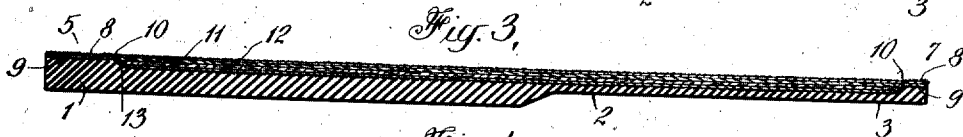


Fig. 4,

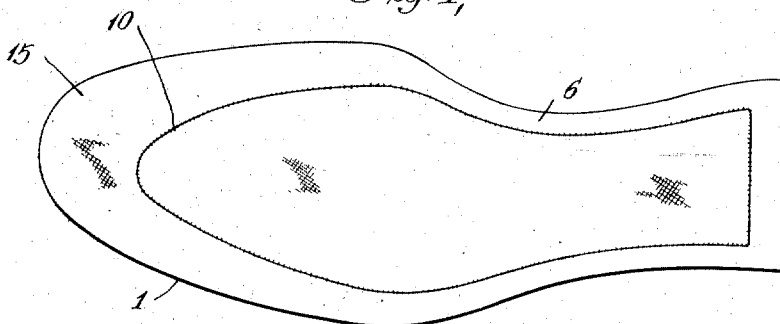
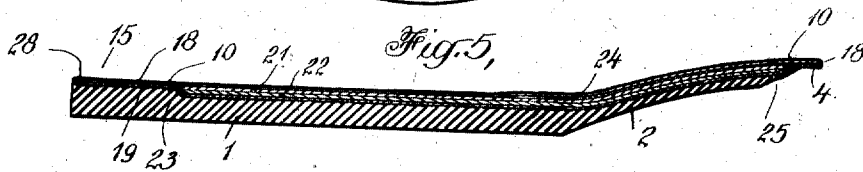


Fig. 5,



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INTERCHANGEABLE REINFORCED SHOE-SOLE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY C. EGERTON, a citizen of the United States, and resident of Ridgewood, county of Bergen, State of New Jersey, have made a certain new and useful Invention Relating to Interchangeable Reinforced Shoe-Soles, of which the following is a specification, taken in connection with the accompanying drawing, which forms part of the same.

This invention relates especially to rubber soles, in some cases, including heel portions thereof, comprising stiffener strips or members of cloth, paper or other fabric preferably of a rather fibrous open texture which has been more or less impregnated or coated with phenolic condensation cementing material, such as, bakelite, condensite or redmanol varnishes or similar compositions which are cured or solidified by heat so as to be preferably in the stiff and strong moderately cured condition of such material. These stiffening strips or members of which several layers may be used, if desired, may extend throughout the desired portion of the shoe sole and preferably at least adjacent the toe or front portion of the shoe sole, the stiffener is spaced away from the edge of the sole so as to leave a suitable attaching or stitching edge portion and make it unnecessary to pierce the phenolic condensation stiffening member in attaching the sole to a boot or shoe for instance. It is advantageous to indicate the approximate location of the edge of the stiffener member in the completed shoe sole so that it can be properly positioned and centered, and for this purpose, as where the stiffener is inclosed or concealed by additional facing layers or material, it is sometimes desirable to provide indicating means or marks on the upper or lower surface of the sole indicating or corresponding to the stiffener edge. It is in some cases desirable to employ a sole connector member of canvas or other fabric between the stiffener member and the rubber sole composition and by previously forming a frictioned or other rubber coating on this connector member its union with the rubber sole may be facilitated. By using a similar frictioned or other rubber coated strip on the exposed surface of the stiffener member with its rubber coating outside, the shoe sole may be provided with a substantially uniformly rubberized facing or surface which makes it possible to cement the sole to the

shoe by the use of the ordinary rubber cementing compositions and without employing phenolic condensation cementing material for this purpose as is sometimes desirable where the phenolic condensation stiffening members are more or less exposed on the upper surface of the reinforced shoe sole, which may of course, be arched or shaped up at the shank or other portions, if desired.

In the illustrative embodiments of the invention shown in the drawing—

Figure 1 is a top view of one form of shoe sole.

Fig. 2 is a longitudinal section thereof showing the parts in separated position for greater clearness.

Fig. 3 is a corresponding sectional view of the assembled shoe sole.

Fig. 4 is a top view of a modified shoe sole for repair work, and

Fig. 5 is a longitudinal section thereof.

As shown in Figs. 2 and 3, the phenolic condensation stiffening member may comprise two or more strips or sheets of canvas or other fabric impregnated or coated with bakelite varnish or other phenolic condensation cementing material as by thoroughly impregnating the fabric therewith in the usual impregnating or coating rolls or machines and drying the impregnated fabric. These stiffener strips, such as 11 and 12, which may have the desired thickness and extend throughout the various parts of the shoe sole, may, if desired, be formed with beveled edge portions 13, and are preferably of such size as to extend considerably inside the outline of the shoe sole so as to leave relatively penetrable or softer edge portions for stitching or otherwise attaching the sole to the shoe. Fig. 1 indicates a suitable outline of the stiffener which may be located within the stitching or other distinguishing outline 10 appearing on the upper or lower surface of the shoe sole, which may thus have a fairly wide attaching edge portion 5 adjacent the front or toe portion, while relatively narrower attaching edge portions 6, 7 may be formed adjacent the shank of the shoe sole. In this way, the workman can apply the rubber composition sole 1, with which this stiffener member is incorporated, in the usual way by stitching or nailing the sole to the welt strips or other parts of the shoe and these edge portions outside the stiffener members may, of course, be trimmed off to

the desired extent to suit the different shapes or lasts of shoes to which the soles are applied.

It is sometimes desirable to employ a suitable sole connector strip or member such as 9, between the stiffener member or strips and the shoe sole, and this connector member may be formed of canvas or other fabric preferably provided with a suitable rubber coating such as the friction coating 28 on its lower face, where it engages the rubber shoe sole 1, as shown in Figs. 2 and 3. When united to the rubber composition sole by forcing the parts together in a suitable mold under the desired temperature of 300° F. more or less, the rubber sole composition preferably of a tough strong relatively pure character, may be forced strongly against the connector member and be vulcanized thereto at the same time that the rubber composition is vulcanized and shaped up, and this heat is sufficient to soften and melt the phenolic condensation cementing material in the stiffener strips so that it can thoroughly unite them and also secure them to the upper surface of the interposed sole connector member where this is used, so as to thoroughly and strongly unite all these parts to form a substantially integral shoe sole, which may be sold and shipped for originally making or repairing boots or shoes of any suitable character. In some cases also, a rubberized facing may be provided on this shoe sole by the use of a similarly rubber coated or frictioned canvas or other fabric strip 8 having its rubber coating 28 on the outer or upper surface so that it is vulcanized by the heat of the forming mold to form a substantially smooth rubber surface on the sole, while this facing strip is securely and strongly attached to the other members at the same time. The rubber contained in the attaching edge portions 5 of these rubberized strips 8 and 9 is sufficient, in connection with the rubber contained in the cooperating part of the shoe sole 1, to strongly unite these fabrics when the rubber is vulcanized, and the bakelite varnish or other phenolic condensation cementing material contained in the stiffener members throughout the inner part of the sole still more strongly secures the facing strip in position throughout this area. It is usually convenient to preliminarily assemble the coated or impregnated stiffener strips and the rubber coated connector strip or member and rubberized facing member, and they may be connected together in any suitable way as by a row of stitching 10 extending around the same at or adjacent the outer edge of the stiffener member as shown in Figs. 1 and 2. Especially by making this stitching of a somewhat contrasting color it shows at once the location of the stiffener member in the completed shoe sole so that

the workman can be guided in applying the sole and trimming off, where necessary, the outer attaching edge portions thereof, which may as indicated have a progressively increasing width. For most ordinary or light service the reinforcement of the central portions of the shoe sole with this relatively stiff and strong phenolic condensation impregnated fabric is ample to prevent the undesirable penetration of stones or other projecting parts of the ground which would be objectionable if the rubber sole, especially if of the relatively soft and strong tough composition, which is desirable for best wearing and gripping properties, was used without reinforcement. The rubber sole may, of course, have any desired thickness at the various parts and may be formed with an integral projecting heel, if desired, although as indicated in Figs. 2 and 3, the shank portion 2 may be somewhat thinner than the front portion of the sole and the heel portion 3 may be of substantially the same thickness.

Fig. 4 shows a modified shoe sole adapted for more general use in shoe repairing, for instance, in which the stiffener members consisting of one or more layers of canvas or other fabric or fibrous material carrying or impregnated with phenolic condensation cementing material, may be of still less extent at least adjacent the toe portion of the shoe sole so as to leave a still wider attaching or stitching edge portion 15 at this point. As indicated in Fig. 5 two fabric layers or stiffener strips 21, 22 may be used at the toe portion of the shoe sole and may have the inclined or beveled edge 23 adjacent which a line of stitching 10 may be used to preliminarily secure this compound stiffener member to the inclosing fabric strips 18, 19 which are previously provided with a rubber coating, such as 28, at least on the inner or exposed side of the completed shoe sole, before they are united or connected to the rubber composition sole 1. If desired, also one or more extra stiffening strips such as 24 may be employed adjacent the shank of the shoe sole to still further stiffen and strengthen this portion which may as indicated, be arched or shaped up to support the instep of the foot to the desired extent. The stiffener and connected facing and connector member may be united to the rubber or other composition sole 1 of any suitable character which is preferably of a pure and strong character when vulcanized rubber is used, tire tread stock being especially desirable for most purposes where great durability is desired. In the forming and vulcanizing mold the parts may be strongly forced together and united under the desired heat treatment which continues until the rubber is vulcanized and united to the other parts and until the phenolic condensation

cementing material in the stiffener member is solidified or cured to the desired extent, although of course this curing may be more or less previously performed so that the stiffener members are at least partially cured before uniting them to the rubber sole. As indicated in Figs. 4 and 5 the shank portion 2 may be relatively thin and the sole need not be extended much beyond the point where the heel of the shoe begins, the rubber being beveled off at about this point to form the beveled portion 25, while the rear attaching portion 4 is adapted to extend beneath the heel and be securely nailed or otherwise held in position. The use of such a wide attaching edge portion 15 at the front part of the shoe sole as indicated in Fig. 4 makes the shoe sole more generally adapted for use with different size shoes, since the amount of material which can be trimmed off is correspondingly increased. At the same time a relatively penetrable soft and yielding attaching edge portion is left so as to facilitate the attachment of the sole to the shoe by the ordinary stitching or nailing processes without necessitating punching through or penetrating the relatively hard stiffener members which minimizes special methods or tools for this operation.

This invention has been described in connection with a number of illustrative embodiments, forms, proportions, elements, parts, shapes, materials, compositions, methods of preparation, production and use, to the details of which disclosure the invention is not of course to be limited, since what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. The integral stiffened rubber shoe sole comprising a stiffener member formed of a plurality of layers of fabric carrying cured phenolic condensation cementing material, a sole connector member located on one side of said stiffener member and having an edge portion projecting beyond the same, a fabric member on the other side of said stiffener member and having a rubber coating on its exposed surface, stitching adjacent the edges of said stiffener member and uniting said connector member and facing member and securing them around said stiffener member, and a vulcanized rubber sole vulcanized to said connector member and stiffener member and extending outward considerably beyond said stiffener member at least at the toe portion of the shoe sole to form a relatively penetrable attaching edge portion.

2. The integral stiffened rubber shoe sole comprising a stiffener member formed of fabric carrying cured phenolic condensation cementing material, a sole connector member located on one side of said stiffener

member and having an edge portion projecting beyond the same, a fabric facing member on the other side of said stiffener member and having a rubber coating on its exposed surface, stitching adjacent the edges of said stiffener member and uniting said connector member and facing member and securing them around said stiffener member, and a vulcanized rubber sole vulcanized to said connector member.

3. The integral stiffened rubber shoe sole comprising a stiffener member formed of fabric carrying cured phenolic condensation cementing material, a sole connector member located on one side of said stiffener member, a fabric facing member on the other side of said stiffener member and having a rubber coating, stitching uniting said connector member and facing member and securing them around said stiffener member and a vulcanized rubber sole vulcanized to said connector member.

4. The stiffened rubber shoe sole comprising a stiffener member formed of fibrous material carrying cured phenolic condensation cementing material, a sole connector member located on one side of said stiffener member, a fabric facing member on the other side of said stiffener member and carrying rubber on its exposed surface, stitching adjacent the edges of said stiffener member and uniting said connector member and facing member to thereby inclose said stiffener member, and a vulcanized rubber sole vulcanized to said connector member.

5. The stiffened rubber shoe sole comprising a stiffener member formed of fibrous material carrying cured phenolic condensation cementing material, a sole connector member located on one side of said stiffener member, a fabric facing member on the other side of said stiffener member and carrying rubber on its exposed surface, means uniting said connector member and facing member to thereby inclose said stiffener member, and a vulcanized rubber sole vulcanized to said connector member.

6. The stiffened rubber shoe sole comprising a connected fibrous stiffener member carrying cured phenolic condensation cementing material, a rubberized fabric facing member on the upper side of said shoe sole, the edges of said stiffener member being considerably inside the edge of said shoe sole at least adjacent the toe portion thereof to form a relatively penetrable attaching portion adapted to be trimmed off when the shoe sole is connected to a shoe, and means on the upper side of said shoe sole indicating the approximate location of the edge of said stiffener member.

7. The stiffened rubber shoe sole comprising a connected fibrous stiffener member carrying cured phenolic condensation cementing material, a rubberized facing on the

upper side of said shoe sole, the edges of said stiffener member being considerably inside the edge of said shoe sole at least adjacent a portion thereof to form a relatively penetrable attaching portion adapted to be trimmed off when the shoe sole is connected to a shoe, and means on said shoe sole indicating the approximate location of the edge of said stiffener member.

8. The integral stiffened rubber shoe sole comprising adjacent one surface a connected stiffener member formed of fabric carrying cured phenolic condensation cementing material and a rubber coated fabric facing member on the adjacent side of said shoe sole and having a relatively flexible attaching edge portion, the edges of said stiffener member being considerably inside the edge of said shoe sole at least adjacent the toe portion thereof to form a relatively penetrable attaching portion adapted to be trimmed off when the shoe sole is connected to a shoe.

9. The stiffened rubber shoe sole comprising adjacent one surface a connected stiffener member formed of fabric carrying cured phenolic condensation cementing material and a rubber facing on the adjacent side of said shoe sole, the edges of said stiffener member being considerably inside the edge of said shoe sole at least adjacent the toe portion thereof to form a relatively penetrable attaching portion adapted to be trimmed off when the shoe sole is connected to a shoe.

10. The stiffener member adapted for use with rubber shoe soles and comprising fabric carrying phenolic condensation cementing material, a cooperating relatively flexible sole connector member united to said stiffener member and having an edge attaching portion projecting beyond the same to a progressively increasing extent adjacent the toe portion, a fabric facing member on the other side of said stiffener member and having a correspondingly projecting edge portion, and stitched to said sole connector

member adjacent the edges of said stiffener member.

11. The stiffener member adapted for use with rubber shoe soles and comprising fabric carrying phenolic condensation cementing material, a cooperating relatively flexible sole connector member united to said stiffener member and having an edge attaching portion projecting beyond the same to an increasing extent adjacent the toe portion, a fabric facing member on the other side of said stiffener member and connected to said sole connector member.

12. The stiffener member adapted for use with rubber shoe soles and formed of a plurality of layers of canvas impregnated with and carrying cured phenolic condensation cementing material, a sole connector member of fabric united to said stiffener member and having an edge portion projecting beyond the same, a fabric facing member on the other side of said stiffener member and carrying a rubber coating on its exposed surface, and stitching adjacent the edges of said stiffener member and uniting said connector member and facing member to thereby inclose said stiffener member.

13. The stiffener member adapted for use with rubber shoe soles and formed of fabric carrying phenolic condensation cementing material, a sole connector member of fabric united to said stiffener member, a fabric facing member on the other side of said stiffener member and carrying a rubber coating on its exposed surface and stitching adjacent the edges of said stiffener member and uniting said connector member and facing member to thereby inclose said stiffener member.

14. The stiffener member adapted for use with rubber shoe soles and formed of fabric carrying phenolic condensation cementing material, a sole connector of fabric united to said stiffener member, and a fabric facing member on the other side of said stiffener member and carrying a rubber coating.

HENRY C. EGERTON.