May 1, 1934. F. N. LA CHAPELLE 1,957,216

METHOD OF MANUFACTURING SHOES

Filed Dec. 17, 1931

Fig. 1.

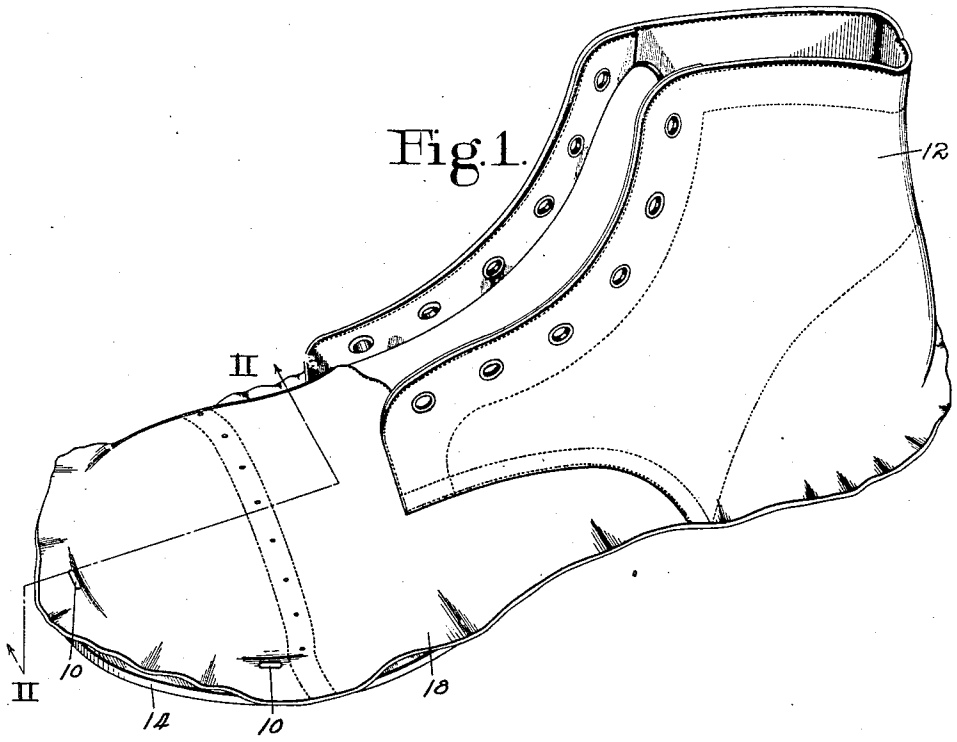


Fig. 2.

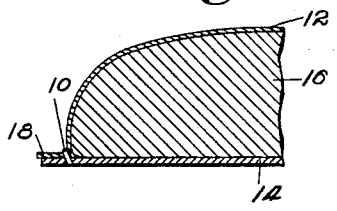


Fig. 3.

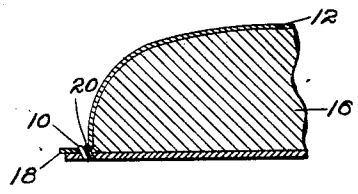


Fig. 4.

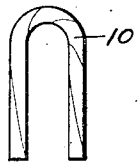
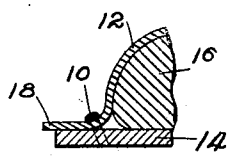


Fig. 5.



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UNITED STATES PATENT OFFICE

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METHOD OF MANUFACTURING SHOES

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Application December 17, 1931, Serial No. 581,678

41 Claims. (Cl. 12—142)

This invention relates to improvements in fastenings, improved methods of securing together parts of work pieces, for example, boots and shoes, and to boots and shoes or other articles having parts secured together by such fastenings. Since the problems solved by this invention arose in the manufacture of boots and shoes, the invention is illustrated herein with special reference to its applicability to the manufacture of boots and shoes but it should be understood that the invention is not so limited but is applicable to use in securing together the parts of other articles.

It is common in the manufacture of boots and shoes to secure together various parts temporarily or permanently by the use of metallic fastenings such as nails, staples and the like. Although these fastenings are easy to insert and are generally convenient to use, for many purposes at least, a number of objections and disadvantages arise from the use of such fastenings which make their elimination eminently desirable.

An illustration of the difficulties arising from the use of metallic fastenings is the breakage of needles in sewing machines used to stitch soles to stitchdown shoes. In the pulling-over operation as performed in the manufacture of stitchdown shoes the upper of the shoe is worked over a last and temporarily secured to the last by metallic fastenings which are commonly driven through the out-turned marginal portion of the upper into a side of the last. In other cases the upper is temporarily secured in lasted position by tacks or nails driven through the upper and into the bottom of the last.

Temporary metallic fastenings such as tacks when inserted in the side of the last are driven as close to the edge of the last as is practicable with the particular fastenings used. In order to tighten the upper on the last to prevent the finished shoe from losing its shape it is necessary that the line of permanent fastenings, for example, stitches, be located as close to the edge of the last as is possible, and, accordingly, unless the temporary metallic fastenings are removed before the stitching operation, the needle of the stitcher is liable to hit one or more fastenings and will break, necessitating stopping the machine to replace and rethread the needle. This results not only in reducing the production of the machine but also is apt to result in damaged or weakened seams due to thread breakage.

In view of the foregoing, one object of this invention is to provide a fastening well adapted for use in lasting stitchdown shoes which will possess all the advantages of metallic fastenings without the objections and disadvantages arising from the use of such fastenings. In accordance with this object the invention in one of its aspects comprises a fastening having a plurality of work-penetrating members composed of felted fibrous material.

The term "felted" is used herein in the sense in which it is commonly used in the paper making art, thus including fibrous products the fibres of which have substantial inherent strength and intertwine and interlock, whereupon the inherent characteristics of the fibres themselves cause them to adhere to each other to form a strong coherent mass or sheet. Such products may, of course, be impregnated with a stiffening or sizing material, for example glue, in order to stiffen and lend body to the product. The word "staple" as used herein designates multiple pronged fastenings capable of being driven into a work piece. As illustrated herein, the fastening is in the form of a staple of hard twisted paper twine impregnated with glue.

Another feature of the invention resides in an article of manufacture having parts secured together by staples composed of felted fibrous material. In the illustrated embodiment of the invention, the article comprises a stitchdown shoe having its upper and sole secured together in lasted relation by paper staples.

In another aspect the invention contemplates a method of securing together overlapping parts of a workpiece by driving paper staples through the overlapped parts. As illustrated, the invention contemplates, in this aspect, working an upper over a last with the marginal portion of the upper outturned in the general plane of the last bottom, forming fastening receiving holes close to the edge of the last in the outturned margin of the upper and in the projecting portion of a sole member laid over the last bottom, driving paper staples into said holes to secure the upper in lasted relation to the sole member and stitching the upper and sole member together by a line of stitches located between the staples and the edge of the last.

While the invention is herein set forth, in several of its aspects, with particular reference to its applicability to the securing together of parts of stitchdown shoes it should be understood that in various aspects the invention is not so limited but is applicable to use in securing together parts of other types of shoes and to use in securing together parts of other articles.

With the above and other objects and features in view, the invention will now be described

in connection with the accompanying drawing and pointed out in the claims.

In the drawing,

Fig. 1 is a perspective view of a stitchdown shoe with its upper secured by fibre staples in lasted relation to a sole member;

Fig. 2 is a view in section along the line II—II of Fig. 1 through one of the staples;

Fig. 3 is a view similar to Fig. 2 showing also a line of stitching permanently securing the upper to the sole;

Fig. 4 is an enlarged view of the staple used for securing the shoe parts together; and

Fig. 5 is an enlarged detail view similar to Fig. 2.

Fig. 4 illustrates on a much enlarged scale a staple 10 of felted, fibrous material. While the staples may be formed and inserted by hand, in commercial work they would naturally be inserted by machinery which may be of the type disclosed in the United States Letters Patent No. 1,016,930, granted Feb. 13, 1912, on application of William H. Borden, the work controlling and operating mechanism being modified, if desired, as shown in United States Letters Patent No. 1,291,754, granted Jan. 21, 1919 on application of Matthias Brock. In machines of this type the staples are formed from a continuous strip of fastening material and are then driven into the work.

The illustrated staple is formed from a string of twisted paper impregnated with glue. A length of fastening material is severed from the string and a staple formed from the severed length of fastening material. Holes are formed in the workpiece to receive the legs of the staple either by hand or by machine.

One example of the use to which these staples are particularly adapted is shown in Figs. 1, 2, 3 and 5 where an upper 12 of a stitchdown shoe is secured in lasted relation to a sole member 14, for example an extension sole, by means of the paper staples 10. The upper is assembled on a last 16 and secured in proper position by a tack inserted into the last adjacent to the back seam of the upper. The toe portion of the upper is then worked over the last by a pair of pincers and the upper is maintained under tension by the operator until after the upper has been secured to the sole by a paper staple. Holes for the reception of the legs of the staples are formed through the outturned marginal portion 18 of the upper and the sole 14 as close to the edge of the last as is practicable and a staple is inserted in these holes. The above operations may be repeated until the desired number of staples have been driven. Although the lasting and staple inserting operations have been described as taking place progressively about the last, it is evident that they could be performed simultaneously at spaced points along the marginal portion of the upper.

The sole and upper of the stitchdown shoe may now be permanently secured together by a line of stitches 20. It is possible to form the seam or line of stitches 20 a trifle nearer to the edge of the last than it is possible to drive the staples 10. This difference, as shown in Fig. 3, is very slight and, as a matter of fact, the line of stitching will, in most instances, be located substantially the same distance from the edge of the last as the staples. The staples being formed of paper are not hard enough the break the needle or damage the thread if the needle strikes the staples so that a perfect seam is formed.

After the upper has been secured to the sole 14 by the line of stitches 20 the shoe may be finished in any desired manner. For example, a welt may be applied to the upper surface of the outturned, marginal portion 18 of the upper and an outsole may be secured to the shoe by a line of stitching extending through the welt, upper, the extension sole 14, and the outsole.

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

1. A fastening to be driven having a plurality of work-penetrating members of felted fibrous material.

2. A staple of felted fibrous material impregnated with glue.

3. A staple of relatively hard felted fibrous material.

4. A staple of felted fibrous material.

5. A staple of paper impregnated with glue.

6. A staple of felted fibrous material impregnated with a sizing material.

7. A staple of twisted, sized paper.

8. A staple of felted fibrous material substantially circular in cross section.

9. That improvement in methods of manufacturing shoes, characterized by securing shoe parts together in desired relation by driving paper staples into said parts.

10. That improvement in methods of manufacturing shoes, characterized by severing a length of paper-fastening material, forming said fastening material into a staple, and securing together shoe parts in desired relation by driving said paper staple into said parts.

11. That improvement in methods of inserting staples, characterized by severing a length of fibrous material, forming said fibrous material into a staple and driving said fibre staple into a work piece.

12. That improvement in methods of making staples, characterized by severing a length of fibrous fastening material from a continuous strip of fastening material and forming a staple from said length of fibrous fastening material.

13. That improvement in methods of inserting staples characterized by severing a length of fibrous fastening material from a continuous strip of fibrous fastening material, forming a staple from said length of fibrous fastening material, and forming holes in a work piece for the reception of the legs of the staple and driving said staple into said holes.

14. That improvement in methods of manufacturing shoes, characterized by securing a sole member to an upper by driving fibre staples through the upper and into the sole member.

15. That improvement in methods of manufacturing shoes, which comprises securing the marginal portion of a shoe upper to a sole by driving paper staples through the upper and into the sole.

16. That improvement in methods of manufacturing shoes, which comprises shaping a shoe upper over a last, and securing the upper to a sole on the last by driving staples of felted fibrous material through the upper and into the sole.

17. That improvement in methods of securing together overlapping parts of a work piece characterized by driving a staple of felted fibrous material through one of the overlapping parts into another part.

18. That improvement in methods of securing together overlapping parts of a work piece characterized by driving a staple of felted fibrous material through the overlapped parts.

19. That improvement in methods of making shoes, which comprises placing shoe parts in overlapping relation, forming holes in the overlapped portions, and driving a staple of felted fibrous material into the holes to secure the shoe parts together.

20. That improvement in methods of making shoes, which includes placing shoe parts in overlapping relation, forming a staple from fibrous material, forming holes to receive the legs of the staple, and driving the staple into said holes.

21. That improvement in methods of making shoes, characterized by securing the outturned marginal portion of a shoe upper to a sole member with paper staples.

22. That improvement in methods of making shoes which comprises shaping an upper having an outturned marginal portion over a last, and driving a staple of felted fibrous material through said upper and into a sole member to secure the upper to the sole member in a predetermined relation.

23. That improvement in methods of making shoes, characterized by securing a sole member to a last bottom, working an upper having an outturned marginal portion over the last, and driving a paper staple through the outturned portion of the upper and into the sole member to secure the upper and the sole member in pulled-over relation.

24. That improvement in methods of manufacturing shoes characterized by assembling parts of an upper on a last, shaping the upper over the last, and driving staples of fibrous material at spaced points through the upper and into a sole member to maintain the upper and sole in a predetermined relation to each other.

25. That improvement in methods of manufacturing shoes characterized by shaping a shoe upper over a last, temporarily securing the upper to a sole member by paper staples to maintain the upper and the sole member in a predetermined relation to the last and permanently securing the upper and sole member together by a line of stitches.

26. That improvement in methods of manufacturing shoes characterized by working a shoe upper over a last, securing the upper to a sole member by paper staples driven close to the edge of the last, and securing the upper and sole member together by a line of stitches located close to the edge of the last and substantially in the line of the staples.

27. That improvement in methods of manufacuring shoes characterized by working an upper having an outturned marginal portion over a last, securing the outturned marginal portion of the upper to a sole member by paper staples driven close to the edge of the last, and securing the outturned marginal portion of the upper to the sole member by a line of stitching located close to the edge of the last and substantially in the line of staples.

28. That improvement in methods of manufacturing shoes which comprises shaping an upper over a last with a portion of the marginal portion of the upper outturned in substantially the general plane of the last bottom, forming fastening receiving holes in the upper and in a sole member laid over the last bottom, driving paper staples into said holes to secure the marginal portion of the upper to the sole member, and permanently securing the sole member to the upper by a line of stitching.

29. That improvement in methods for use in the manufacture of stitchdown shoes which consists in assembling an upper and an extension sole upon a last, working the upper over the last at salient points, securing the upper in outturned relation to the extension sole by felted fibrous fastenings driven through the upper and the extension sole at locations outwardly spaced from the angle between the side of the last and the projecting margin of the sole, and sewing a seam through the outturned margin of the upper and the extension sole between the fastenings and the side of the last.

30. That improvement in methods for use in the manufacture of stitchdown shoes which consists in assembling an upper and an extension sole upon a last, working the upper over the last at salient points, securing the upper in outturned relation to the extension sole by felted fibrous fastenings driven through the upper and the extension sole at locations spaced slightly outwardly from the angle between the side of the extension sole and the projecting margin of the sole, and sewing a seam through the outturned margin of the upper and the extension sole in the narrow space between the fastenings and the side of the last.

31. That improvement in methods of manufacturing shoes which comprises shaping an upper over a last with the marginal portion of the upper extended outwardly in substantially the general plane of the last bottom, forming fastening receiving holes close to the edge of the last in the outturned margin of the upper and in the projecting margin of a sole member laid over the last bottom, driving paper staples into said holes to secure the upper to the sole member, and stitching the upper to the sole member by a line of stitches located between the staples and the edge of the last.

32. An article of manufacture parts of which are secured together by staples of felted fibrous material.

33. A shoe having parts thereof secured together by staples of felted, fibrous material.

34. A shoe having parts thereof secured together by staples of relatively hard felted fibrous material.

35. A shoe having parts thereof secured together by means of staples of twisted paper impregnated with a stiffening material.

36. A shoe having a sole member secured to an upper by a plurality of staples of felted fibrous material.

37. A shoe having an upper and a sole secured together by driven fastenings each having a plurality of work-penetrating members of felted fibrous material.

38. A shoe comprising an upper having an outturned marginal portion, and a sole member secured to the outturned marginal portion of the upper by a plurality of paper staples.

39. A shoe comprising an upper having an outturned marginal portion, and a sole member secured to the outturned marginal portion of the upper by paper staples.

40. A shoe having an upper provided with an outturned marginal portion, and a sole member secured to the outturned marginal portion of the upper by paper staples spaced from each other along the forepart of the shoe.

41. A stitchdown shoe comprising an upper having an outturned marginal portion, a sole member secured to the outturned marginal portion of the upper by paper staples, and a line of stitching permanently securing the upper to the sole.

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