Aug. 1, 1939. W. C. DURHAM ET AL 2,168,285

METHOD OF MAKING SHOE PRESS PADS

Original Filed July 26, 1935

Fig. 1.

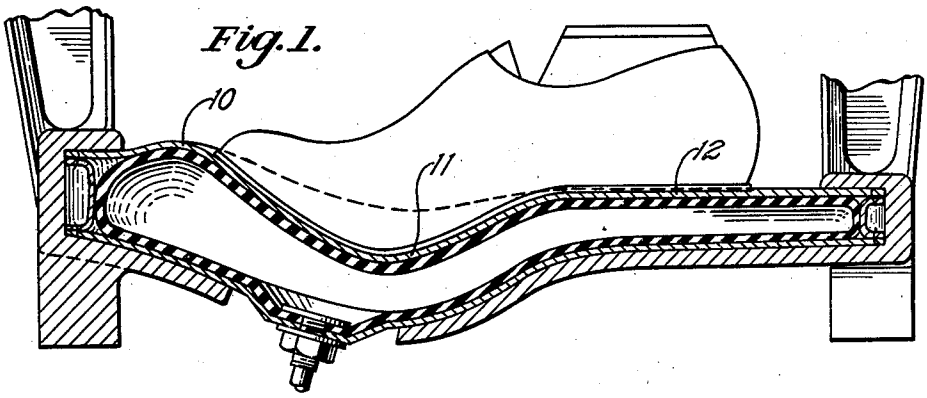
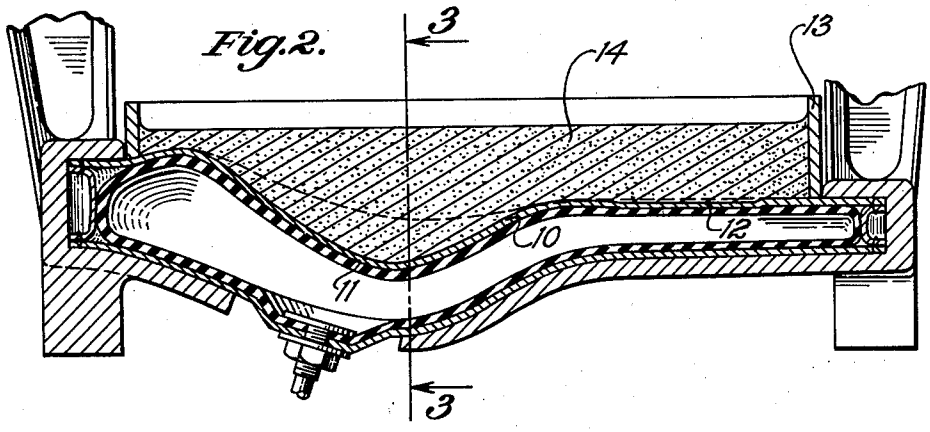


Fig. 2.



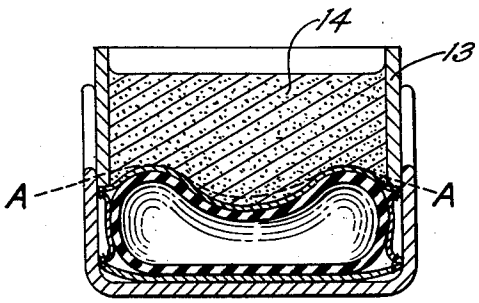


Fig. 3.

Fig. 4.

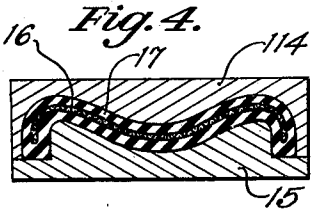
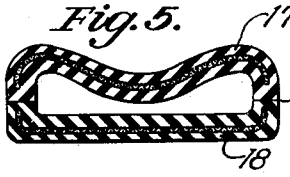


Fig. 5.



Inventors
Willard C. Durham
Leonard E. Beat,
by Melvin J. Herold
Attorney

Patented Aug. 1, 1939 2,168,285

UNITED STATES PATENT OFFICE

2,168,285

METHOD OF MAKING SHOE PRESS PADS

Willard C. Durham, Winchester, Mass., and Leonard E. Best, Summit, N. J., assignors, by direct and mesne assignments, to Compo Shoe Machinery Corporation, Boston, Mass., a corporation of Delaware

Original application July 26, 1935, Serial No. 33,320. Divided and this application August 28, 1937, Serial No. 161,355

3 Claims. (Cl. 18—55)

This invention relates to methods of making inflatable pads adapted for use in shoe presses of the kind used for sole pressing operations such as cement outsole affixing, sole leveling, channel laying and the like.

The present application is a division of our copending application Serial No. 33,320, filed July 26, 1935, and issued January 10, 1939, as Patent No. 2,143,101 which discloses and claims shoe press pads such as those made by the present method.

The primary object of the invention is to provide a method of making a shoe press pad which is capable of giving improved performance in the cement affixation of soles to lasted uppers.

More particularly, an object of the invention is to provide a method of making a press which is adapted firmly and fully to fit the press against the sole of a shoe and to impart accurately distributed sole affixing pressure thereto with a materially minimized consumption of air, is capable of ready and economical manufacture in quantity and which even in its new condition has the contour and improved operation of a fully broken-in pad.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the several steps and the relation of one or more of such steps with respect to each of the others thereof, which will be exemplified in the method hereinafter disclosed, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 is a fragmentary longitudinal vertical sectional view through a shoe press having a used or broken-in leather encased pressure applying pad;

Fig. 2 is a view similar to View 1, showing the step of taking a plaster cast from such pad;

Fig. 3 is a transverse vertical sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a transverse vertical sectional view showing the step of moulding an upper pad diaphragm; and

Fig. 5 is a transverse vertical view through a portion of a complete moulded pad embodying features of the present invention.

In the manufacture of cemented shoes, it is customary to place an outsole against a lasted upper with cement therebetween and to press these parts together in a shoe press having an inflatable or fluid filled pad in which the fluid pressure is increased in order to urge the upper pad diaphragm against the sole of the shoe. Pressure may also be increased, using such pads, by mechanically or hydraulically forcing the shoe thereagainst. These presses also are useful in other sole pressing operations, such as sole leveling and channel laying.

Heretofore, a common form of pressure pad has comprised a soft rubber bladder which is generally enclosed in a leather casing and is "inflatable" in that it is adapted to have its interior pressure increased in a suitable manner, such as by any of the above indicated methods. In most sole affixing operations it has been customary, with such previous pads, to utilize an air pressure or its equivalent, of about 55 lbs. per square inch or more. With these previously used leather cased pads, the quality of the work obtained has been found to improve as the pad becomes aged or broken in, continued use thereof forming a pliable or seasoned pocket in the area underlying the shoe which gradually becomes approximately contoured to the general configuration of the bottoms of shoes. This pocketed formation, in an old broken in pad, enables the pad diaphragm more closely to hug the shoe bottom, even at the relatively curved parts such as the shank, and assures improved affixing results.

In accordance with the present invention, there is provided a pad which, even when new, gives sole affixing performance which is equivalent or superior to that obtained with an old broken in leather casing, and this at an average pressure of around 35 lbs. per square inch as compared with the previous pressures indicated.

The present inventors have found that where the pressure is accurately applied, the amount of pressure may be reduced. That is, if full accurate surface contact between the pad and shoe is provided, then lower pressures are effective to produce the required affixing results. By permanently pocketing the pad to approximately the contours of shoe bottoms, so that when even in an inert condition the pad tends to fit against the sole, less pressure is needed than when a non-fitting pad is forced into conformity with the shoe, and this decreased pressure, in the case of the pad about to be particularly described, is equally effective with and even more effective than the higher pressures used with previous forms of pads. Further, the advantages of accurate surface contact between the pad and shoe are obtained, within the contemplation of this

invention, by providing a sole contacting diaphragm of quite flexible but relatively inextensible rubber, which is adapted readily to accommodate itself to the contours of shoe bottoms.

The pad constructed in accordance with the present invention is molded or otherwise suitably formed from rubber. It comprises an inflatable casing which has no interior bladder but is itself formed with desired areas of flexible elastic rubber, or rubber and fabric. Its flexibility and extensibility are controlled so that these properties preferably obtain in a greater degree in some areas of the pad than in others, all in accordance with the inflating characteristics that are desired. Further, in accordance with the best practice of the present invention, the shoe contacting upper diaphragm of the present molded rubber pad is initially fitted to the general contour of the shoe bottoms with which it is to be used, thus eliminating breaking in, while at the same time providing all the advantages obtaining with a broken in pocketed structure. To this last end, the pad of the present invention is preferably designed for use with right or left shoes only. The upper surface of the pad, particularly at the shank and forepart portions, is conformed to the lines of a broken in leather casing so that the desirable contour obtaining in such casing is utilized at the outset. This can readily be accomplished by making a plaster cast of such a broken in casing and forming a rubber mold therefrom. This cast is preferably further modified in order to idealize the contour of the ultimately molded or cast rubber pad, this modification comprising a suitable revision of the cast contour so as to produce a contour approximating the characteristics of those types of shoe bottoms which are to be operated on. This revision, in the case of a molded rubber pad, comprises decreasing, to some extent, the severity of the curvatures obtaining in the original model, so that the least curved among those shoes that are to be operated on may readily fit within the molded pocket of the finished rubber pad. Also, the pad may be molded from a suitable arbitrarily designed pattern having these desired characteristics as to size and contour. Thus, a given pad may preferably be made for operating on left shoes in women's and misses' styles, although it will be understood that the closeness of the conformity of the pad contour to the shoe may be varied as desired, provided commensurate tolerance is given in the expensibility and conformability of the pad material, so that advantages of the invention can be obtained even when widely different types of shoes are operated on with the same press. In fact, it is contemplated that many of the advantages of the invention are to be obtained by making the pad pocket quite roughly approximate the bottoms of shoes, so that both right and left shoes in an extended variety of styles and sizes may be handled.

In moulding a pad in accordance with this invention there is provided a used or broken-in leather casing **10**, as shown in Fig. 1, which has formed in it a pocketed contour generally conforming with the contours of shoe bottoms which have been pressed thereby. This pocketed portion is especially pronounced at the forepart and shank areas generally designated **11**, and gradually merges into a heel portion **12**, which is flat rather than pocketed. These pocketed contours obtain even in the inert condition of the pad.

In order to take advantage of this broken-in surface a cast is taken of the pad while in its inert condition, as shown in Fig. 2. Here a casing **13** is seated around the pad periphery and plaster **14**, or like moulding material, is poured therein and allowed to set so as to obtain a negative replica of the pad surface.

It will often be found desirable to modify the contours of the casting thus obtained, which is preferably done by decreasing the severity of the curvatures of the cast pattern while retaining the approximate contours imposed by the casing. Suitable results can readily be obtained if it be borne in mind that the ultimate surface is to correspond as closely as is reasonably practicable with that of the shoe bottom to be pressed, while at the same time fitting readily the least curved among those shoes that are to be operated on by a given moulded pad. Thus, as is shown in Fig. 3, the casting curvatures may be decreased in severity by altering them from their originally cast contour down to the contours indicated by dotted line A—A, it being understood that the alterations in different parts of the pad and for different pads, will vary in accordance with the nature of the fit desired and the extent of the size range to which the pad is to be applied.

Having thus obtained, and if desired modified, a copy of the pad surface, this copy is used to make a permanent pattern or mould **114** (Fig. 4) having negative surface contours based on the initially cast pattern. A complementary mould **15** is made having surfaces spaced from those of the surfaces of mould section **114**. The space between the moulds is enough to provide for a rather heavy rubber moulded sheet or diaphragm on the general order of about 3/8" thickness, and variations of the flexibility and extensibility of the moulded diaphragm may be obtained by varying the contours of mould sections **15** as compared with its mating section to provide relatively thick and thin portions in desired areas, all as more particularly pointed out in our copending patent application, Serial No. 33,320.

A rubber diaphragm is moulded or cast between the sections **114** and **15** and is so vulcanized, either while within the cast or later, as to be rather live or elastic. However, in view of the comparative thickness of the walls, this moulded diaphragm is of limited extensibility, which is preferably further controlled and limited by embodying in the cast diaphragm a layer **16** of fabric. The pad diaphragm thus constructed is able to press up against a shoe sole in full pressing contact, but need not unduly curl around the sides thereof so as to roll the sole edges.

As shown in Fig. 5, the upper diaphragm designated **17** is vulcanized or otherwise attached to a lower pad section **18** along the joint **19** to provide a complete hollow vessel capable of containing pressure fluid. When wanted a suitable fluid pressure inlet and outlet can be inserted in the hollow pad as will be readily understood.

Through use of a pad constructed in accordance with these principles, it has, as pointed out above, been found possible to obtain even with brand new pads, a close and accurate application of pressure to all parts of the curved shoe bottom and to obtain sole affixing results equal or superior to those obtained with previously used presses while using relatively lower air pressures, which in turn leads to economies as to air consumption and increases the speed of the inflating operation.

Since certain changes may be made in carrying out the above method without departing

from the scope of the invention, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

We claim:

1. A method of making a shoe pressing member which comprises providing a broken in leather pad casing which has acquired a pocketed contour approximating the contours of shoe bottoms through previous use, forming a rubber diaphragm into a replica of the shoe engaging face of said casing, and incorporating said diaphragm as one wall of a hollow pressing member adapted to be filled with a fluid pressure medium.

2. A method of making a shoe pressing member which comprises providing a broken in leather pad casing which has acquired a pocketed contour approximating the contours of shoe bottoms through previous use, casting a pattern directly from the shoe engaging surface of said casing, decreasing the severity of the curvatures of said pattern while retaining the approximate contours imposed by said casing, molding a rubber diaphragm from said pattern, and incorporating said diaphragm as one wall of a hollow pressing member adapted to be filled with a fluid pressure medium.

3. A method of making a shoe pressing member which comprises providing a broken in leather pad casing which has acquired a pocketed contour approximating the contours of shoe bottoms through previous use, casting a pattern directly from the shoe engaging surface of said casing, utilizing said pattern to mold the forepart and shank engaging portions of a flexible rubber diaphragm and forming a flat comparatively inflexible heel engaging portion on said diaphragm, and incorporating said diaphragm as one wall of a hollow pressing member adapted to be filled with a fluid pressure medium.

WILLARD C. DURHAM.
LEONARD E. BEST.