Oct. 12, 1937. W. C. CARD, JR 2,095,658

INFLATABLE PAD

Filed June 7, 1935 2 Sheets-Sheet 1

Fig. 1

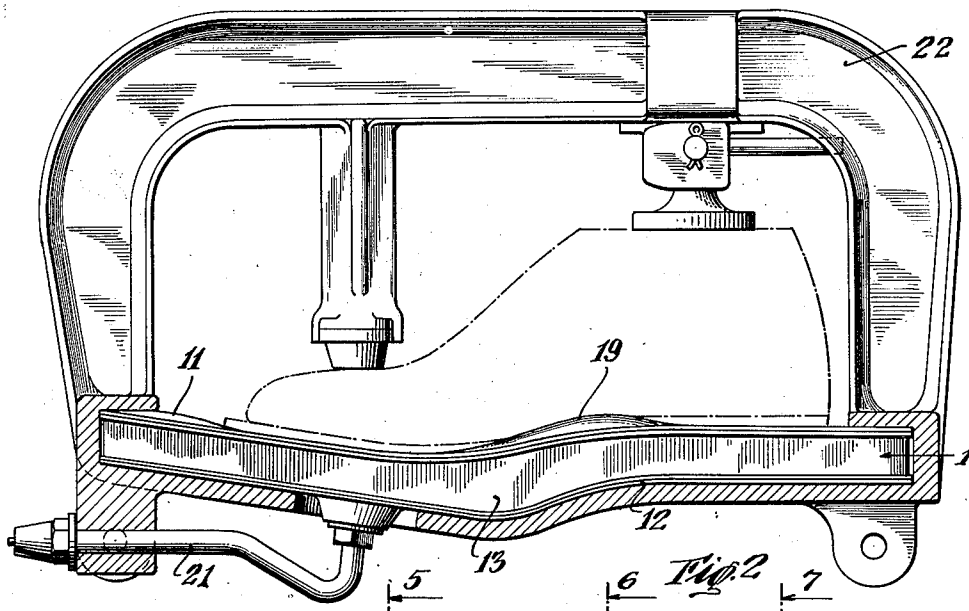


Fig. 2

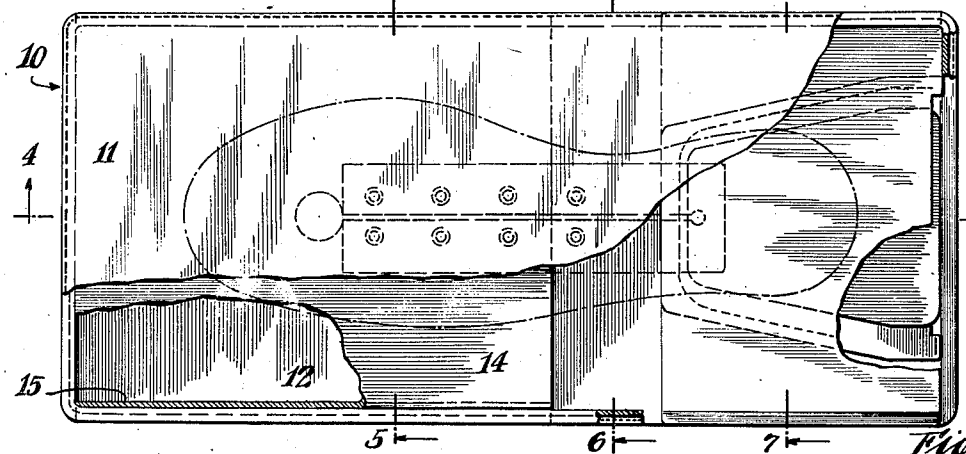
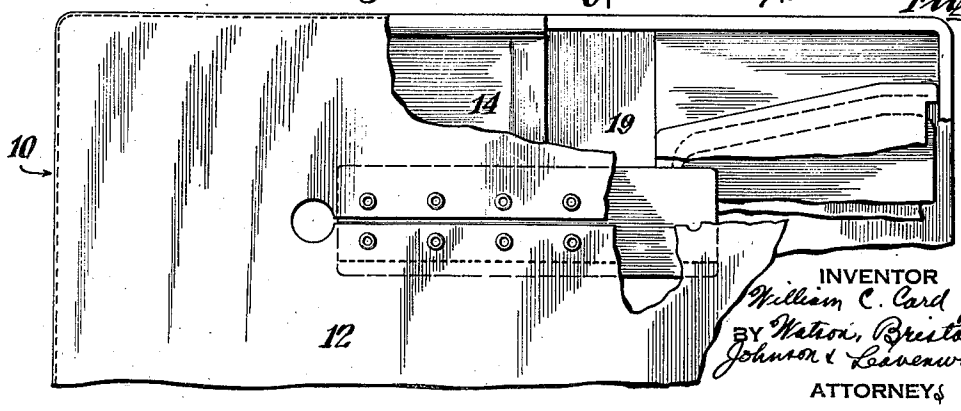


Fig. 3



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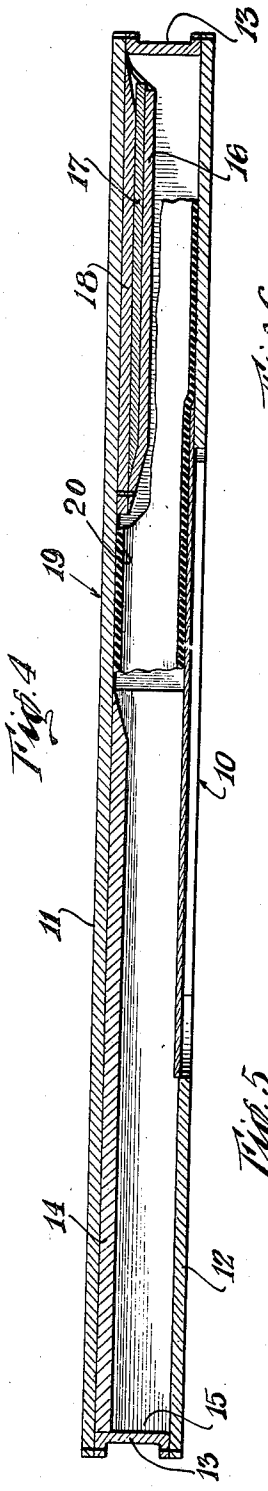


Fig. 4

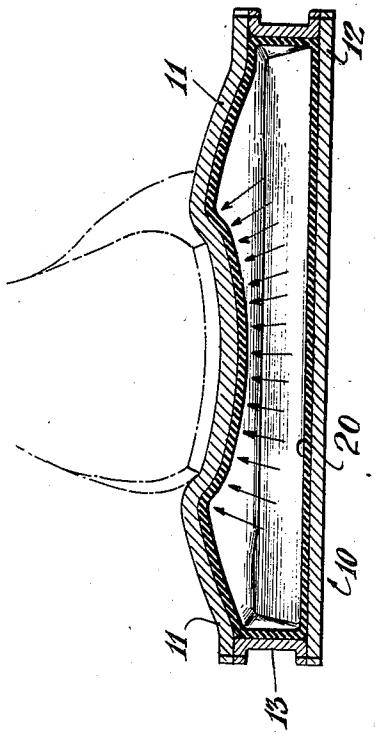


Fig. 6

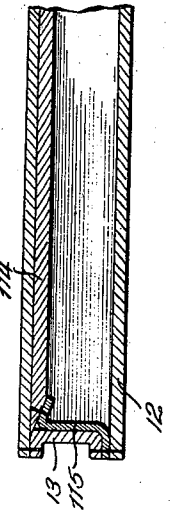


Fig. 8

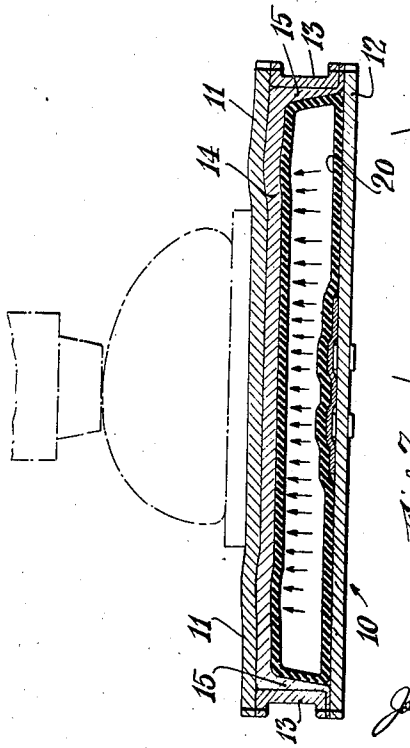


Fig. 5

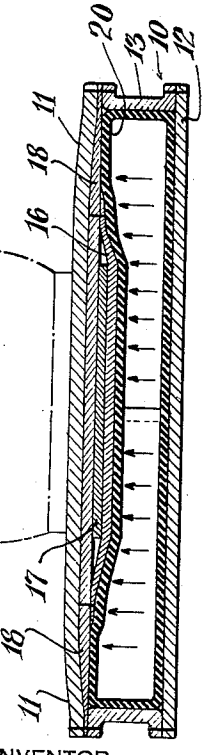


Fig. 7

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UNITED STATES PATENT OFFICE

2,095,658

INFLATABLE PAD

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Application June 7, 1935, Serial No. 25,381

13 Claims. (Cl. 12—38)

This invention relates to shoe presses having inflatable pads of the type adapted to affix soles to lasted uppers in the manufacture of cemented shoes, and more particularly to inflatable pads expressly suitable to accommodate shoes having extension edge soles.

A general object of the invention is to provide a shoe press pad having improved characteristics which serve to facilitate the sole affixing operation and to insure elimination of defects in the quality of work produced.

More specific objects of the invention are to provide a shoe press pad having an upper diaphragm and a vertical lateral gusset so constructed as to insure equalized pressure throughout the entire area of a shoe bottom; and controlled relative flexibility and expansibility of a maximum degree in the shank area to conform to the contour of a corresponding area of a shoe permitting a slight rolling of the under sole surface, of a minimum degree in the heel area to procure vertical displacement of a corresponding portion of a shoe, and of an intermediate degree in the forepart area to prevent rolling of the extension edge portions of the sole therein.

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

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described 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 drawings, in which:

Fig. 1 is a side elevational view of a shoe press assembly providing the several degrees of expansibility of the upper diaphragm of a pad embodying the present invention;

Fig. 2 is a top plan view of the pad depicted in Fig. 1, illustrating the construction of the under surface of the upper diaphragm, partly broken away and partly in section, and showing in dotted line position the approximate position of a shoe when located on the pad;

Fig. 3 is a partial bottom plan view of the pad depicted in Fig. 2, showing portions of the lower diaphragm broken away further to illustrate the construction of the under surface of the upper diaphragm;

Fig. 4 is a longitudinal vertical sectional view taken along the lines 4—4 of Fig. 2;

Fig. 5 is a transverse sectional view taken along the lines 5—5 of Fig. 2;

Figs. 6 and 7 are similar views taken along the lines 6—6 and 7—7 respectively of Fig. 2; and

Fig. 8 is a partial cross-sectional view through the forepart of a modified form of the invention illustrating the construction therein.

Referring more particularly to the drawings, there is shown in Fig. 1 an inflatable pad indicated generally at 10, having an upper diaphragm or wall 11 and a lower diaphragm at 12, both diaphragms being spaced by a vertical lateral gusset 13, these parts being secured together at their meeting edges in any suitable manner such as by stitching or the like. The gusset 13 may begin at the center forepart portion of the casing and extend completely around the perimeter thereof in a single strip, where it is again joined in any suitable manner at its starting point. The gusset however may be broken up into one or more end portions and side portions so that the casing or pad has suitable end walls and side walls, which together with the diaphragms form an enclosed vessel adapted to have fluid pressure exerted therewithin.

Generally the pad or casing 10 is substantially rectangular in shape, and to all external appearances is much the same as the ordinary inflatable pads heretofore used. When the latter type of pad is inflated, however, it causes a ballooning effect to occur around the entire sole bottom of a shoe placed therein so that the shoe itself appears deeply to be sunk in a pocket. Under such conditions it is obvious that adhesively to affix an outer sole having an extension edge to a lasted upper, it is quite impossible to produce a finished product wherein the extension edge of the sole is not rounded or rolled. In order to overcome this rolling or curling of extension edge soles, various contrivances have been used in conjunction with the upper surface of the diaphragm, and while used with some success they have detracted from the equal pressure which was to have been distributed through the remaining surface contacting a shoe bottom, and because of the troublesome configuration thereof a relatively equal degree of pressure was not exerted in the shank area of the shoe as compared with the forepart area.

In accordance with the principles of the present invention, there has been provided a casing or pad in which the upper diaphragm 11 is so constructed as to allow a limited expansibility in the forepart area, with a consequent curtailing

of flexibility therein. This may be accomplished in any suitable manner, such as, for example, having the upper diaphragm of greater thickness in the forepart portion than in the remaining portion, using a different type of material in that section in order to check expansibility and give more or less flexibility, but preferably is more conveniently accomplished by reinforcing the under surface of the forepart portion of the upper diaphragm with an additional equal thickness of leather as indicated at 14. As an aid to limiting the expansibility and flexibility in the forepart portion of the pad, the leather reinforcing strip 14 may extend downwardly along the inner surface of the gusset 13 as at 15, where it is conveniently secured between the mating edges of the lower diaphragm 10 and gusset 13. With this construction it will be seen that the forepart portion of the upper diaphragm contacting the under surface of the sole is greatly limited in its flexibility and the upward expansibility which does occur is substantially vertical as indicated by the arrows in Fig. 5. Since, therefore, there is little or no ballooning effect, it is impossible that the sole edges will be rounded or rolled, but instead a shoe having a much more finished appearance is thereby produced.

In Fig. 8, there is shown another way of anchoring the lateral edges of a forepart underlying ply 114 of leather or like flexible but substantially inextensible material between the vertical gusset or side wall 13 and the lower diaphragm 12. Here a separate extension or strip 115 of leather or like inextensible material is stitched to each lateral edge of ply 114 (only one edge being illustrated in the drawings), these edges being terminated adjacent the upper portion of gusset 13. The lower end of the extension passes down beside the gusset and stitched between it and the lower diaphragm, these parts thus forming a continuous strap or band extending across the top of an inflatable bladder. The bladder exerts pressure downwardly against the lower diaphragm as well as upwardly against the ply 114 and since the latter is anchored to the downwardly held lower diaphragm, there is an enhanced restraining action against rolling or bulging of the upper diaphragm.

On the under surface of the upper diaphragm in the heel area of the shoe there is provided a leather pocket 16 carrying a rigid plate 17 (Fig. 7). The upper portion of this pocket 18 extends across the heel area and acts as an additional reinforcing strip, as in the case of the reinforcing strip in the forepart of the diaphragm, and is conveniently secured at the meeting places of the gusset and upper diaphragm. From such reinforced construction in the heel area it will be seen that there is little, if any, expansibility or flexibility in that area and rolling of the under surface of the sole in the heel portion of the shoe is also overcome, which is a very desirable feature for affixation of the heel at a later stage of the shoe construction.

Since there is no reinforcing material of any kind whatsoever throughout the shank portion of the pad, there is no curtailing of the flexibility or expansibility, or even the ballooning action through that portion beyond the natural stretch and distortion to which the pad is subjected when inflated. It is because of this effect that the shank area indicated generally at 19 (Fig. 6) is urged against the corresponding area of a shoe and allowed to roll or conform closely to the peculiar contour of the shoe in that section. Because of this construction there is given to the under portion of the sole in the shank of the shoe a slight rolling effect and at the same time an equal amount of pressure is exerted throughout the shank area of the shoe as is exerted in the forepart area of the shoe, insuring uniform affixation of the sole throughout the shoe bottom.

The casing itself is equipped with the usual rubber bladder 20 and is connected with inflating means 21 of a shoe press 22, such as for example the type found in my copending application Serial No. 677,809, filed June 27, 1933, although the pad is adapted to be used in any suitable or convenient form of press. It will be understood that the invention, in at least some of its aspects, may readily be adapted to the type of inflatable casing heretofore used with the older shoe presses, in which a vertical lateral gusset spacing the upper and lower diaphragms may or may not be employed.

A pad constructed in accordance with the disclosure set forth above contemplates a casing which is reinforced in a certain manner in the forepart portion of the diaphragm and gusset and in a different manner in the heel area, and relatively provides three different degrees of flexibility and expansibility which might be designated as intermediate in the forepart, maximum in the shank part and minimum in the heel part. These terms, forepart, shank and heel parts, as applied to the pad, are of course intended to refer to those vicinities of the pad which are adjacent the named parts of a shoe placed thereover.

It will also be understood that a pad of the present construction is generally useful in any operation involving the application of pressure to shoe bottoms, such as sole leveling and channel laying as well as sole affixing. In all such operations, a properly controlled and well distributed pressure is applied with an effectively limited rolling action at the forepart and with the application of substantially vertical, non-rolling pressure at the heel where even cemented shoes are generally tack lasted and where such application of pressure to the heel seat is usually advisable.

It will thus be seen that there has been provided an inflatable pad which is peculiarly adapted to accomplish the objects herein set forth and since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings 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.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. An inflatable shoe press pad comprising upper and lower diaphragms having a reinforcing sheet of leather disposed on its under surface within the pad in the forepart area and a platen carried within a pocket disposed on its under surface in the heel area of said pad, the remaining area of said pad being of consequently greater flexibility.

2. An inflatable shoe press pad for adhesively affixing extension edge soles to shoes comprising, upper and lower diaphragms spaced by a vertical lateral gusset, a reinforcing sheet of leather disposed beneath the forepart portion of said upper diaphragm and extending along the inner surface of said gusset laterally of said forepart portion to control vertical expansibility of said forepart portion whereby rolling of said sole edge is prevented.

3. An inflatable shoe press pad for adhesively affixing extension edge soles to shoes comprising, upper and lower diaphragms spaced by a vertical lateral gusset, a reinforcing sheet of leather disposed beneath the forepart area of said upper diaphragm and extending along the inner surface of said gusset laterally of said forepart portion, a pocket disposed on the under surface of said upper diaphragm in the heel area, a platen located in said pocket, said platen and said reinforcing sheet of leather being adapted to prevent rolling of the sole edges by curtailing the ballooning effect of said pad in said areas while simultaneously permitting said ballooning effect to occur in the shank area.

4. A shoe press pad comprising a casing having upper and lower diaphragms spaced by a vertical gusset, said upper diaphragm having added plies of reinforcing material on the under side of its forepart and heel portions and coextensive therewith and with said gusset and secured therebetween but not at its shank portion, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

5. A shoe press pad comprising a leather casing having an upper diaphragm formed with different thicknesses of leather at its forepart and heel and coextensive therewith, and at its shank portions, the shank portion being thinner than the remaining portions, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

6. A shoe press pad comprising a leather casing having an upper diaphragm formed with an added thickness of leather attached within the casing under and coextensive with the forepart portion of such diaphragm, whereby its forepart portion is less flexible than its shank portion, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

7. A shoe press pad comprising a casing having upper and lower diaphragms and a vertical gusset spacing and attached to said diaphragms, a ply of flexible but substantially inextensible material spanning the forepart portion only of said upper diaphragm, means anchoring the lateral edges of said ply respectively between said gusset and lower diaphragm at opposite sides of the casing, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

8. A shoe press pad comprising a casing having upper and lower diaphragms and a vertical gusset or sidewall to which said diaphragms are stitched, an added ply of material underlying and spanning the forepart portion only of said upper diaphragm and having its lateral edges extended downwardly and anchored to said lower diaphragm, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

9. A shoe press pad comprising a leather casing having upper and lower diaphragms and vertical walls joining said diaphragms, added plies of leather spanning the forepart and heel portions only of said upper diaphragm and anchored to said vertical walls, whereby the flexibility and vertical expansibility of the upper diaphragm is more restrained at the foreport and heel portions than at the shank portion, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

10. A shoe press pad comprising a casing having an upper diaphragm of flexible but substantially inextensible material, added plies of such material spanning the forepart and heel portions only of such diaphragm and having their lateral edges anchored to said casing to limit the flexibility and vertical expansibility of said portions with respect to the shank portion, a rigid plate carried by the reinforced heel portion of said diaphragm to provide an inflexible but limitedly vertically expansible heel pressing area, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

11. A shoe press pad comprising a casing having an upper and lower diaphragm and a vertical gusset to which said diaphragms are anchored, a ply of flexible but substantially inextensible material spanning the heel portion only of said upper diaphragm and having its lateral edges anchored to said gusset to limit the vertical expansibility of said heel portion, a rigid plate confined to the medial portion of said ply and having its lateral edges spaced from the sides of the casing to provide an inflexible but limitedly vertically expansible heel pressing area, a fluid pressure pad within said casing, and means for increasing the pressure in said fluid pressure pad.

12. A shoe press pad comprising an enclosed vessel having an upper diaphragm of flexible material, a ply of flexible but substantially inextensible material underlying the forepart portion only of said diaphragm and having its lateral edges anchored to the sides of said vessel to restrain the rolling action of said forepart portion against a shoe sole as compared with the rolling action permitted at the shank portion, and fluid pressure means for exerting pressure on the under side of said diaphragm.

13. A shoe press pad comprising a casing having upper and lower diaphragms and a vertical gusset spacing and attached to said diaphragms, a ply of flexible but substantially inextensible material spanning the forepart portion only of said upper diaphragm and having means anchoring its lateral edges respectively between said gusset and lower diaphragm at opposite sides of the casing, a second ply of flexible but substantially inextensible material spanning the heel portion only of said upper diaphragm and having its lateral edges anchored to the sides of the casing, said plies being spaced at the shank portion to allow more flexibility and vertical expansibility at the shank than at the plied portions of the upper diaphragm, and means for exerting fluid pressure within said casing.

WILLIAM C. CARD, JR.