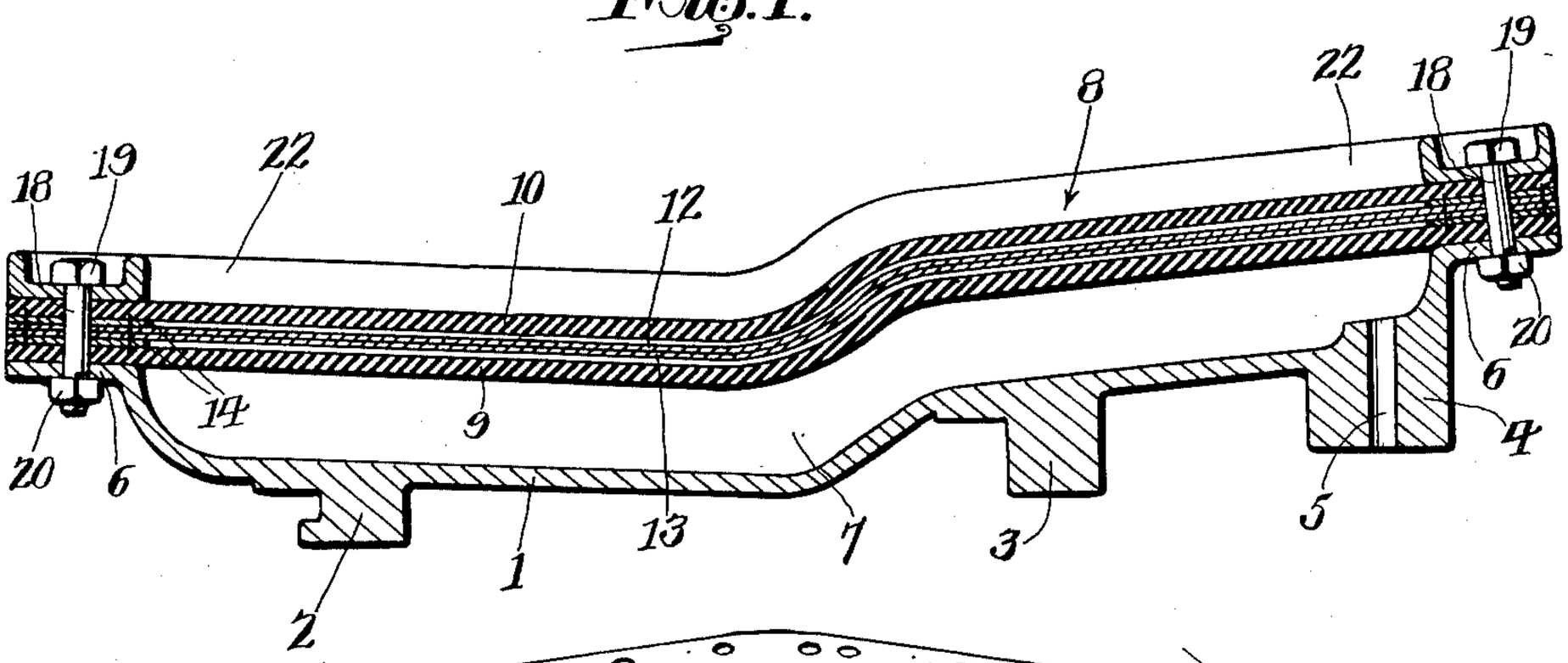
June 5, 1934. G. LAGANAS 1,961,883

SHOE LEVELING, SHAPING, AND SOLE SECURING APPARATUS

Filed Jan. 14, 1933

Fig. 1.



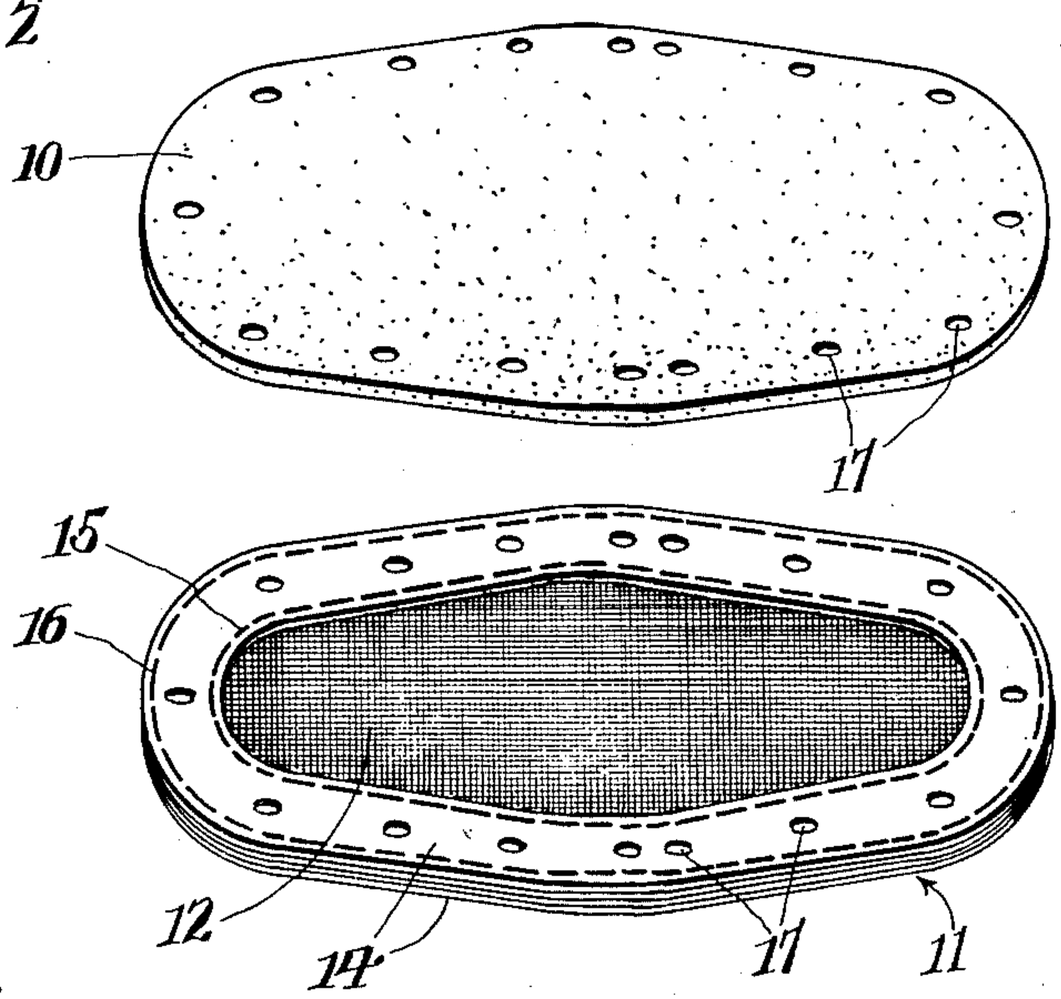
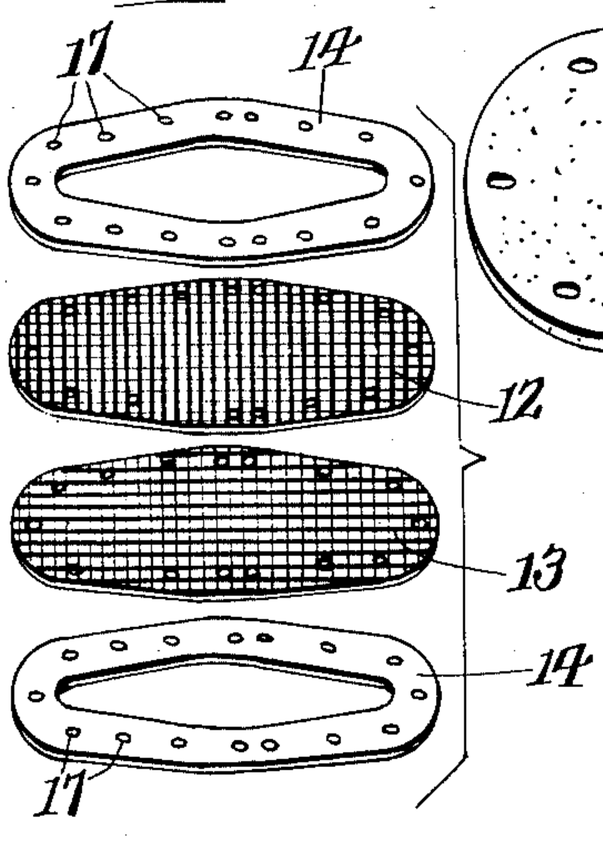


Fig. 2.

Fig. 3.



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SHOE LEVELING, SHAPING, AND SOLE SECURING APPARATUS

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12 Claims. (Cl. 12—38)

This invention relates to a shoe leveling, shaping and sole securing machine, and more particularly has reference to an improved construction for a compressed air pressing element for such machine.

Previously, shoes have been leveled and shaped and the soles secured thereto by various means, including the use of a pneumatic pressing element having a flexible wall adapted to fit against the bottom part of the shoe while the shoe is on a last. The shoe and last are held against this flexible wall and air pressure is admitted to the element thus forcing the flexible wall tightly against the bottom of the shoe and leveling and shaping the shoe against the last. Similarly, pressure has been applied against the soles of shoes to hold them in place after the soles have been applied to the shoes by means of cement or like material.

One of the greatest difficulties that has arisen in this type of structure has been in devising a pressing element which will operate satisfactorily and which will yet be durable and long lived. It has been necessary to make one wall of the pressing element of rigid material such as cast iron so that it can be attached to the machine or other support upon which it is to be placed. This attachment must be rigid in order that the pressing element may have a proper and positive backing or foundation. The other wall of the pressing element must however be flexible in order that the air pressure within the element might force this other wall against the bottom of the shoe to perform the function for which the element is intended. Various means have been devised for connecting the flexible wall to the rigid wall, but it has been extremely difficult to provide such a flexible wall which would not tear out after a short period of use and have to be replaced.

In practice, the composite flexible member is placed against a prepared facing on the rigid portion of the element, after which a metal ring or binding member corresponding in shape and size to the facing on the rigid part of the element is placed against the outer face of the flexible member. Bolts are then inserted through the facing on the rigid element, the flexible element, and the metal washer at frequent intervals, and the parts are thereby firmly secured together. However, even with these precautions, the flexible element frequently tears loose from the bolts and the metal washer which secure it in place, and it is then necessary of course to replace the flexible wall.

One of the objects of this invention is therefore to overcome the difficulties which have been encountered in the prior art.

Another object of this invention is to provide a pressing element of the type described with a flexible element which will not tear loose from the bolts or other means securing it in place.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawing, it being understood that the same is by way of illustration and example only and is not to be taken as in any way limiting the spirit and scope of this invention. The spirit and scope of this invention is to be limited only by the prior art and by the terms of the appended claims.

Referring now more particularly to the drawing in which like numerals indicate corresponding parts throughout:

Figure 1 is a longitudinal section of a pressing element illustrating one embodiment of this invention.

Figure 2 is a disassembled view of the composite flexible wall used on the member illustrated in Figure 1.

Figure 3 is a view similar to Figure 2 but illustrating the parts of the reinforcing member for the flexible wall in disassembled relation with respect to each other.

Figure 1 shows the arrangement of the pressing element, having a rigid portion 1 forming one wall thereof and being provided with suitable lugs or like formations 2 and 3 for the purpose of attaching them to a support. This portion 1 being made of cast iron or some equally suitable rigid material, and being mounted on a firm supporting member, it will be seen that the pressing element will be very firmly and substantially supported. The portion 1 is also formed with a connecting means 4 having an opening 5 therethrough for the purpose of admitting compressed air into the unit. This portion 1 is also provided adjacent its outer edges with a flange 6, one face of which is finished so as to receive and form an air tight seal with the edges of the flexible wall which is to be presently described.

Referring to Figure 1, it will be noted that this rigid portion 1 is so formed as to leave a hollow or cup-shaped space 7 which in the finished structure will form an air chamber beneath the flexible wall.

This flexible wall generally indicated at 8 in Figure 1, is preferably formed by placing two layers 9 and 10 of heavy flexible rubber or the

like on either side of a fabric reinforcing member generally indicated at 11 in Figure 2.

As shown in Figure 3, this fabric reinforcing member 11 consists of two layers 12 and 13 of canvas or similar fabric, these sheets of fabric being so cut out that the warp of one sheet will lie substantially at right angles to the warp of the other sheet whereby each sheet of fabric will tend to strengthen the other in the direction in which it is weakest. These sheets of fabric are cut out to the proper configuration, and are then placed together, after which a washer 14 of leather or like material is placed on either side in the manner shown in Figure 3. It may be found desirable before placing the washers 14 on the fabric sheets 12 and 13 to coat the adjacent surfaces of the various parts with cement or some similar adhesive material, so as to firmly unite the parts when they are put together.

After the fabric members 12 and 13 and the washers 14 have been assembled as just described, they are further secured together by means of two rows of stitching 15 and 16 as illustrated in Figure 2. It will be seen that this forms a very strong and durable reinforcing fabric member which may be placed between the rubber sheets 9 and 10 which will form a flexible member or wall capable of performing the function for which it is intended.

At some suitable point during the process just described, the various members including the sheets of fabric, the leather washers, and the rubber sheets are punched along their edges as illustrated at 17 so that they may receive the bolts which are to secure the composite flexible member to the rigid portion 1.

Referring again to the showing of Figure 1, it will be noted that the flange 6 is perforated at spaced points throughout its length to receive a series of bolts 18 for the purpose of securing the flexible wall of the pressing element in place. These bolts are preferably of the conventional type having heads 19 and nuts 20 adapted to be actuated by a wrench or the like.

There is also provided in connection with this securing means a washer member or binding ring 22 adapted to fit against the outer face of the flexible wall 8 and oppose the flange 6 in clamping the flexible wall in place.

From the foregoing, it will be seen that there has been provided an element for pressing, leveling and shaping and cementing the soles of shoes in place by means of compressed air. One of the walls of this element, it will be seen, is of such a nature as to form a rigid support for the element, whereas the other element is of such a nature as to flex under the action of compressed air and to thereby level, shape and cement the soles of shoes in place.

It will be seen that there has been provided a flexible wall for an element of this type, which wall is provided with a fabric reinforcement so as to make the flexible wall strong and durable. There has also been provided a flexible wall which is reinforced at its edges in such a manner that a great resistance will be offered to any forces tending to tear the flexible member away from the bolts which are to secure the parts together at their edges.

It will be seen that by so arranging the two canvas sheets 12 and 13 that the warp in one sheet will lie crosswise of the warp in the other sheet, the two sheets will be much stronger than if they were merely placed in superposed relation with the warps in both sheets running in the same direction. Furthermore, after these sheets have been placed together, the securing of the leather washer members 14 to either side of the assembled sheets by means of cement and stitching will greatly reinforce both portions of the sheets which will have a tendency to tear out after they have been clamped in the element and the air pressure applied. The effect of these leather washers is to distribute this pull to a great extent over the entire periphery of these canvas sheets, rather than to concentrate it at each of the several bolts 18 which are used for securing the flexible wall in place. By thus distributing the force, as well as by itself directly strengthening the canvas sheets, the leather washers thus greatly reduce the tendency of the fabric sheets to tear out at their edges along the line of holes which have been punched to receive the bolts 18.

In the arrangement of the various parts of the flexible wall, it will be seen that one of the heavy rubber sheets is placed next to the flange 6, whereby an air tight seal may be easily formed with that flange, and that another of the rubber sheets is placed on the outside of the canvas or fabric reinforcing member so that there will be a smooth surface to fit against the under side of the shoe and level and shape the sole instead of a rough surface such as the canvas would present.

It is apparent from the foregoing that the method and means set forth as the object of this invention have been fully disclosed in a manner such as to enable anyone skilled in the art to make and use the same.

What I claim is:—

1. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material and a pair of sheets of woven fabric, one of said sheets of woven fabric having its warp running at right angles to the warp in the other sheet.

2. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a reinforcing sheet of fabric, and a tough, flexible, ring-shaped reinforcing member secured to the sheet of fabric substantially all along its margin to prevent the flexible member from tearing apart at its edges where it is to be clamped.

3. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a pair of sheets of woven fabric, one of said sheets of woven fabric having its warp running at right angles to the warp in the other sheet, and a tough, ring-shaped reinforcing member secured to the sheets of fabric substantially all along the margin thereof to prevent the flexible member from tearing apart at its edges where it is to be clamped.

4. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a reinforcing sheet of fabric, and a tough, ring-shaped reinforcing member cemented to the sheet

of fabric substantially all along its margin to prevent the flexible member from tearing apart at its edges where it is to be clamped.

5. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a reinforcing sheet of fabric, and a tough, ring-shaped reinforcing member stitched to the sheet of fabric substantially all along its margin to prevent the flexible member from tearing apart at its edges where it is to be clamped.

6. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a reinforcing sheet of fabric, and a tough, ring-shaped reinforcing member cemented and stitched to the sheet of fabric substantially all along its margin to prevent the flexible member from tearing apart at its edges where it is to be clamped.

7. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a pair of sheets of woven fabric, one of said sheets of woven fabric having its warp running at right angles to the warp in the other sheet, and a tough, ring-shaped reinforcing member stitched to each side of said pair of sheets of fabric substantially all along the margin thereof to prevent the flexible member from tearing apart at its edges where it is to be clamped.

8. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a pair of sheets of woven fabric, one of said sheets of woven fabric having its warp running at right angles to the warp in the other sheet, and a tough, ring-shaped reinforcing member cemented and stitched to each side of said pair of sheets of fabric substantially all along the margin thereof to prevent the flexible member from tearing apart at its edges where it is to be clamped.

9. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a pair of sheets of woven fabric, one of said sheets of woven fabric having its warp running at right angles to the warp in the other sheet, a tough, ring-shaped reinforcing member cemented and stitched to each side of said pair of sheets of fabric substantially all along the margin thereof to prevent the flexible member from tearing apart at its edges where it is to be clamped, and a second sheet of rubber-like material on the opposite side of said fabric from the first.

10. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a reinforcing sheet of fabric, and a tough, ring-shaped reinforcing member secured to the sheet of fabric substantially all along its margin to prevent the flexible member from tearing apart at its edges where it is to be clamped, said sheets of material all having spaced openings along their margins to receive clamping means for clamping the flexible wall to the rigid supporting member.

11. In a shoe-pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a pair of sheets of woven fabric, one of said sheets of woven fabric having its warp running at right angles to the warp in the other sheet, a tough, ring-shaped reinforcing member cemented and stitched to each side of said pair of sheets of fabric substantially all along the margin thereof to prevent the flexible member from tearing apart at its edges where it is to be clamped, and a second sheet of rubber-like material on the opposite side of said fabric from the first, said sheets of material all having spaced openings along their margins to receive clamping means for clamping the flexible wall to the rigid supporting member.

12. In a shoe pressing device of the character described, a flexible wall adapted to be clamped along its margin to a rigid supporting member to form a pneumatic pressing element, said flexible wall comprising a sheet of rubber-like material, a pair of sheets of woven fabric, a flexible ring-shaped reinforcing member secured to each side of said pair of sheets of fabric substantially all along the margin thereof to prevent the flexible member from tearing apart at its edges where it is to be clamped, and a second sheet of rubber-like material on the opposite side of said fabric from the first.

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