No. 744,078. PATENTED NOV. 17, 1903.

C. R. JOHNSTON.

MACHINE FOR STRETCHING THE SOLES OF BOOTS OR SHOES.

APPLICATION FILED SEPT. 19, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

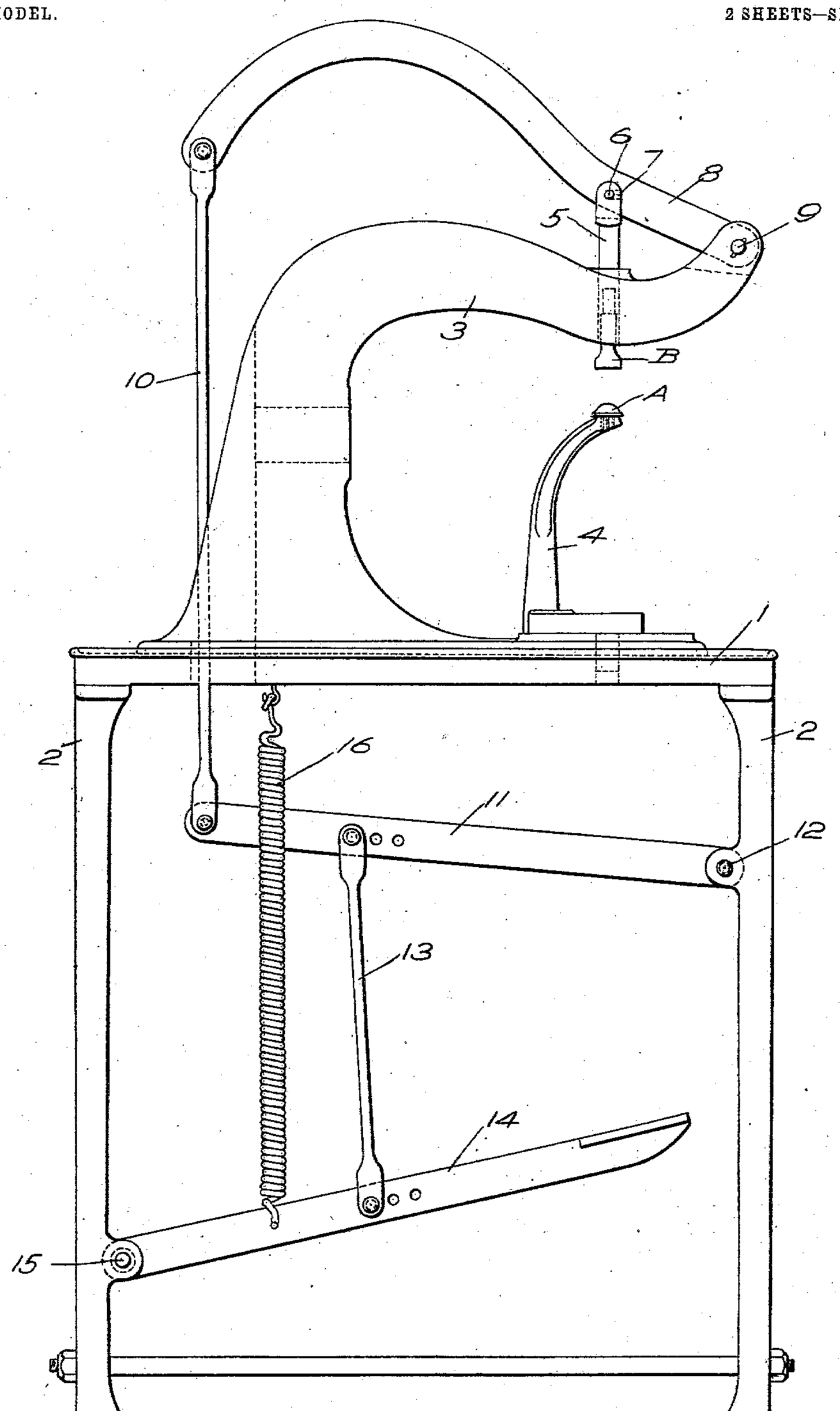

Fig. 1.

WITNESSES
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NO MODEL. 2 SHEETS—SHEET 2.

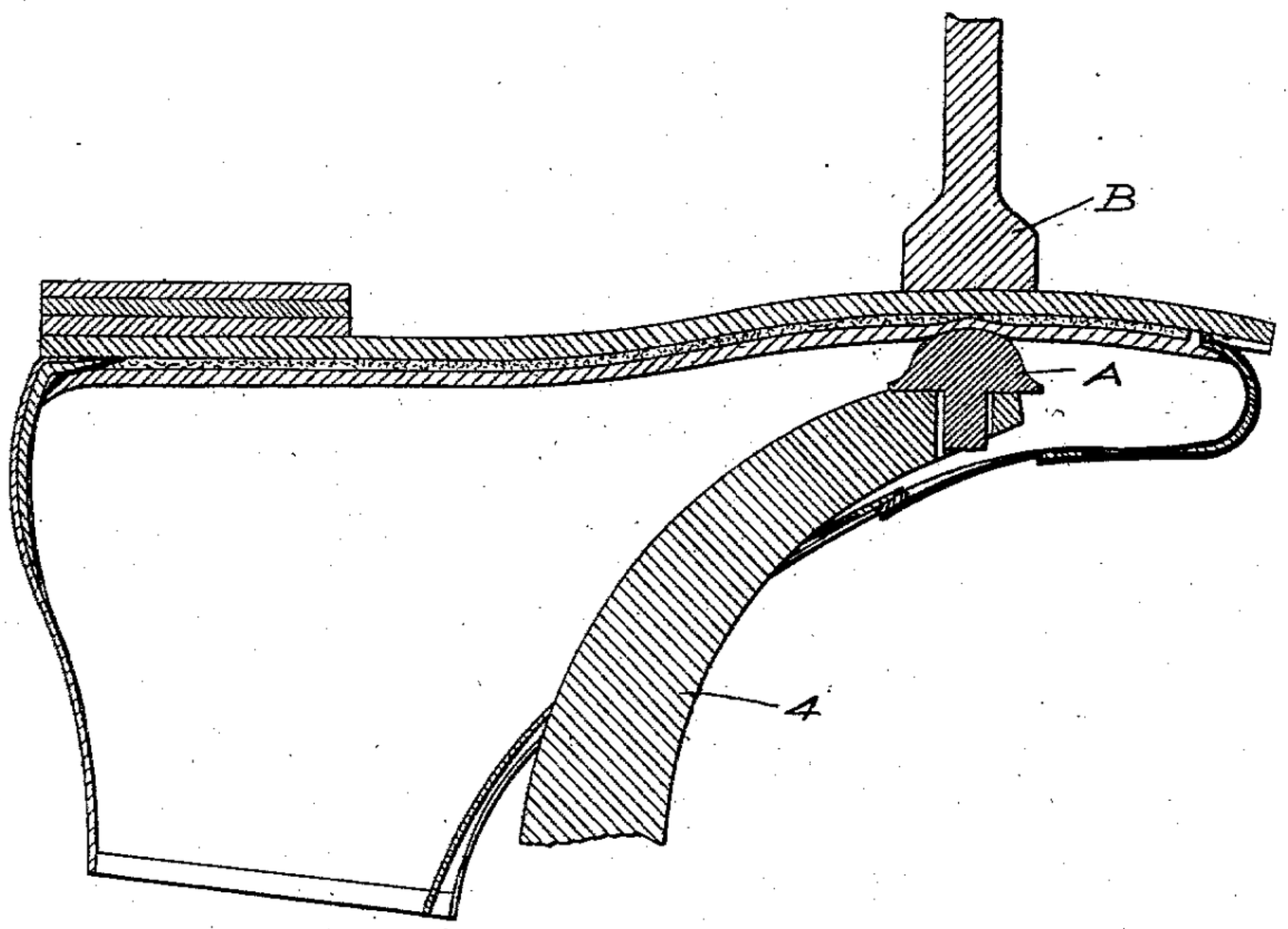

FIG. 2.

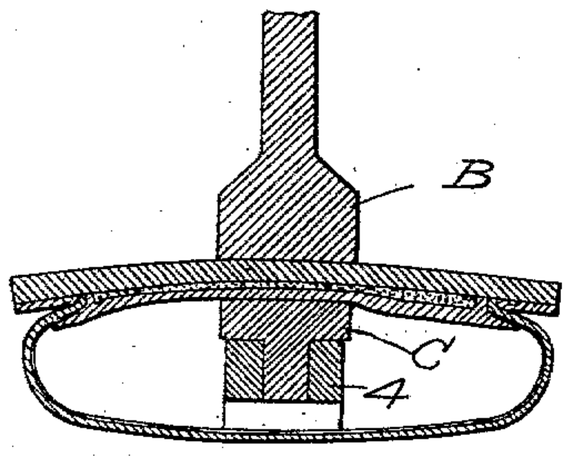

FIG. 3.

WITNESSES
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No. 744,078. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

CHARLES R. JOHNSTON, OF EUREKA, CALIFORNIA, ASSIGNOR TO THE JOHNSTON CALKING AND SOLE STRETCHING MACHINE COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

MACHINE FOR STRETCHING THE SOLES OF BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 744,078, dated November 17, 1903.

Application filed September 19, 1902. Serial No. 123,987. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. JOHNSTON, a citizen of the United States, residing at Eureka, in the county of Humbolt and State of California, have invented certain new and useful Improvements in Machines for Stretching the Soles of Boots or Shoes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in a machine for stretching the soles of boots and shoes.

Heretofore, so far as I am aware of the state of the art, the stretching of shoes to fit the feet of the wearer has been accomplished solely by stretching portions of the upper. It often occurs, however, that some tenderness of a part of the sole of the foot or some deformity of the foot or irregularity of the shape or position of the toes makes it desirable to conform the insole of the shoe to the inequalities of the foot or to shape the insole so that the malformations of the foot may be gradually removed by compelling a position of the parts of the foot such as to restore it to its natural shape. As shoes are ordinarily constructed, the insole is made of leather which is, compared with the outsole, soft and spongy and which may therefore be compressed and distorted and thereby shaped to conform it as desired to fit the foot of the wearer. Moreover, it is usual in welt-shoes to provide a filling frequently made of ground cork and cement, which fills the space between the insole and the outsole, and this material also is capable of being distorted and displaced, as above described.

The present invention contemplates a machine for stretching or distorting the insole and the filling, which may be considered to be a part of the insole for the purpose of this application, so as to shape the insole to the foot of the wearer without distortion of the bottom of the outsole.

To the above end the present invention consists in the machine hereinafter described, and particularly defined in the claims.

In the accompanying drawings, illustrating a form of my invention, Figure 1 is a side elevation of the machine. Fig. 2 is a sectional elevation of a shoe, showing the tools of the machine in operation upon the insole of the shoe; and Fig. 3 is a transverse sectional elevation of a shoe, showing other tools in operation upon the shoe.

Referring to the accompanying drawings, the machine is provided with a frame consisting of a table 1, provided with legs 2 for supporting it, upon which table is mounted an overhanging arm 3. The frame and the arm carry the operative parts of the machine. The horn 4 is supported upon the table 1 and carries upon its upper end one of the operative tools of the machine. The other tool is slidingly mounted upon the slide 5, received in a bearing in the overhanging arm 3. The upper tool is movable and the lower tool is stationary, the slide 5 being provided with a pin 6, which engages a slot 7 in the lever 8, pivoted at 9 to the end of the overhanging arm. The upper end of the lever 8 is connected by a rod 10 with the lever 11, pivoted at 12 to the frame of the machine, which lever 11 is in turn connected by the rod 13 to the treadle-lever 14, pivoted at 15 to the frame of the machine. A spring 16 is attached at one end to the under side of the table 1 and at the other end to the treadle 14. The spring 16 normally holds the treadle raised and as a consequence normally holds the slide 5 and its tool in raised position. The connections between the treadle 14 and the tool B constitute, it will be noted, pressure-increasing connections, by virtue of which adequate pressure may be secured to do the work required of the tools.

The operation of the machine as thus far described consists in placing the shoe on the horn 4, with the tool A in the proper position on the inside of the shoe to engage the spot or place of the insole desired to be pressed, and then in depressing the treadle 14, so as to force the tool B against the bottom of the outsole, as shown, thereby to compress the insole between the two tools without distortion of the bottom of the outsole.

Referring more particularly to Fig. 2, in which the inside tool A, mounted in the horn

4, is shown as a convex-faced tool, located inside of the shoe and forming a depression or a concavity on the upper side of the insole by compressing the insole and the filling and distorting the same, so as to conform the shoe to the foot of the wearer, the outsole-tool B is substantially a flat-faced tool, its face being made to conform substantially to the curvature of the outside of the sole of a shoe. This is an important feature of my invention, as it avoids any distortion of the bottom surface of the outsole, which would otherwise impair its shape, so as to render it uncomfortable to walk in, and it also preserves its even and uniform appearance and prevents any injury to the bottom of the outsole. It is to be noted that the shape of the tools is such that they operate when pressed together to compress the insole and give it the desired shape or configuration without distorting the bottom of the outsole. By this means a tender portion of the sole of the foot may be relieved of the pressure of the weight of the wearer thereon and gradually restored to a condition of health. It is also possible to restore crooked toes to their normal shape by providing the person afflicted with successive pairs of shoes having concavities in the insoles thereof at successive positions, whereby the crooked toe may be gradually restored to its proper shape. It is also to be noted that the shape of the insole of the shoe may be transformed at any desired place on the inside of the shoe, so that wherever a change in the shape of the insole is desired such change may be effected by my machine.

It sometimes happens that the shoes are so shaped that in order to secure the correct width of sole the wearer is obliged to obtain shoes in which the vamp is too large, thereby compelling the person to wear shoes with a larger vamp than is necessary for the width of sole desired. Again, the variations in the shape of the human foot are such that it is often desirable in order to make shoes made on a standard last fit a certain form of foot to make the sole wider at some parts than at others. At the present day comparatively few shoes are made for the particular wearer; but persons have to obtain a shoe which most nearly fits their foot and then shape or conform the shoe to their particular needs. My invention enables the shoe manufacturers to make shoes on standard lasts and at the same time to fit them to the purchaser with approximately the accuracy and comfort of custom shoes. For example, one person might need a shoe of a certain width of toe with a width of ball portion slightly larger than that of the standard last. In order to secure such a shoe, the stock shoe would be presented to my machine, and the entire width of the insole across the ball of the shoe would be compressed between two such tools as those illustrated in Fig. 3, in which the inside tool C is provided with a substantially flat face. By successive compressions extended across the ball of the shoe it will be seen that the insole may be stretched laterally, thereby fitting the shoe to the needs of the purchaser.

It is to be understood, of course, that various-shaped tools may be substituted for those illustrated in the drawings in order to form the desired shape or configuration of the insole and to avoid injury or distortion of the bottom of the outsole.

In the claims I have used the expression "flat-faced" to define the shape of the face of the outside tool, and it is to be understood that I intend thereby to include such tools as have plane faces or faces departing but slightly from a plane surface, so that no material projections or depressions will be formed on the sole-bottom.

I believe I am the first to make a machine for stretching the soles of boots and shoes embodying a tool to engage the bottom of the outsole and a tool to engage the upper side of the insole, which tools are so shaped as to compress or stretch the insole and without distorting the bottom of the outsole, and provided with efficient means for operating the tools to cause them to exert the required pressure upon the materials between them to effect the change in shape desired.

I am aware that various devices have been employed for stretching the uppers of boots and shoes; but my machine is clearly differentiated therefrom, as is apparent to those skilled in the art.

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

1. A machine for stretching the soles of boots and shoes, having, in combination, a substantially flat-faced tool to engage the bottom of the outsole, a coöperating tool to engage the upper side of the insole, and means for actuating the tools to compress and distort the insole without substantially distorting the bottom of the outsole, substantially as described.

2. A machine for stretching the soles of boots and shoes, having, in combination, a flat-faced tool to engage the bottom of the outsole, a coöperating convex-faced tool to engage the upper side of the insole, and means for pressing the tools together to compress the insole, substantially as described.

3. A machine for stretching the soles of boots and shoes, having, in combination, a horn 4, the insole-tool A mounted on the horn, the substantially flat-faced outsole-tool B mounted to reciprocate above the horn, the treadle 14, and pressure-increasing connections between the treadle and the tool B to actuate said tool, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES R. JOHNSTON.

Witnesses:
HORACE VAN EVEREN,
FRED O. FISH.