

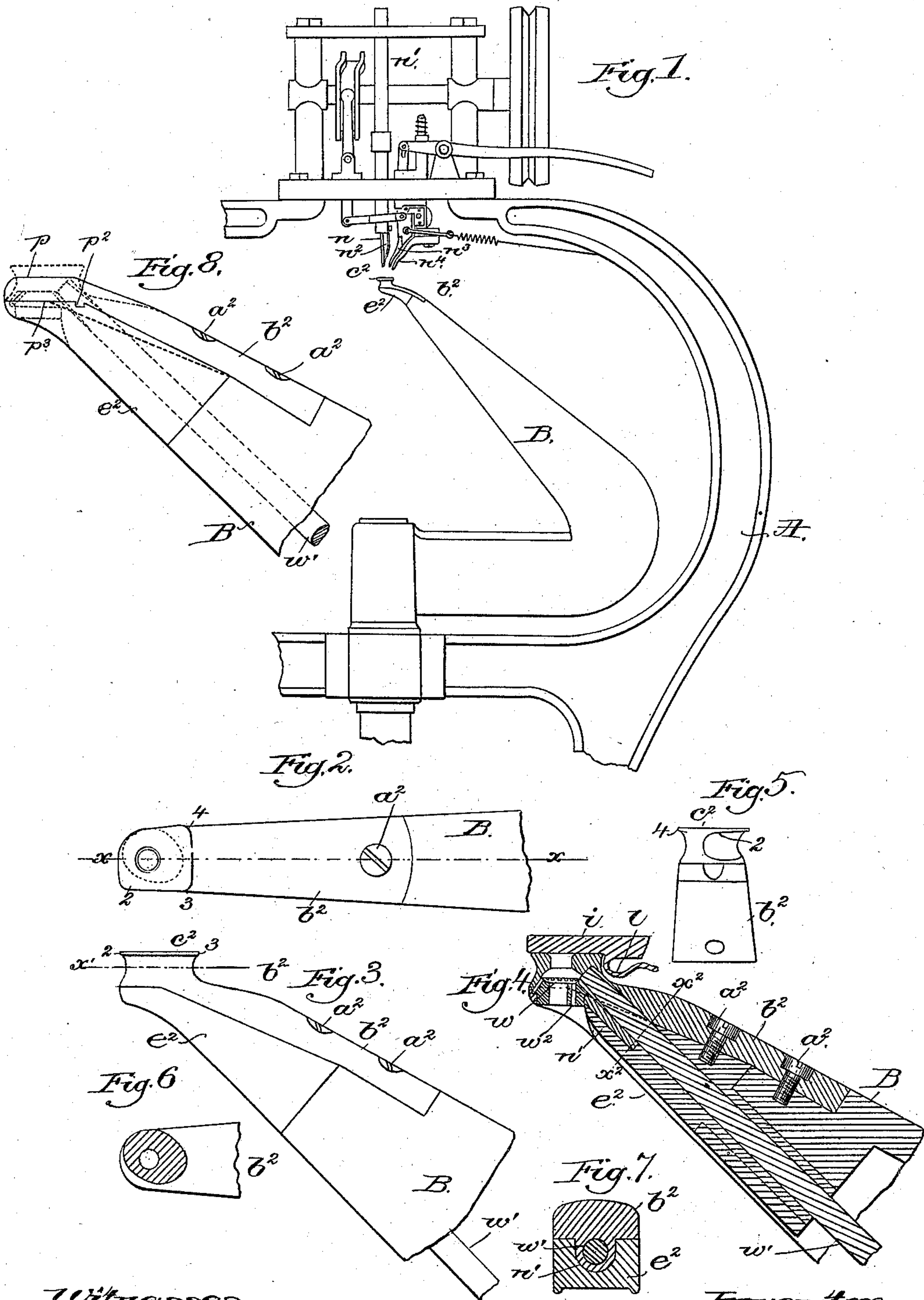
(No Model.)

E. L. SPRAGUE & G. R. PEARE.

WORK HOLDING HORN FOR SHOE SEWING MACHINES.

No. 383,546.

Patented May 29, 1888.



Witnesses.  
Fred L. Emery.  
John F. C. Pringle.

Inventor.  
Edwin L. Sprague.  
George R. Peare.  
by Crosby & Gregory Attys.



# UNITED STATES PATENT OFFICE.

EDWIN L. SPRAGUE, OF BOSTON, AND GEORGE R. PEARE, OF LYNN, MASSACHUSETTS; SAID PEARE ASSIGNOR TO SAID SPRAGUE.

## WORK-HOLDING HORN FOR SHOE-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 383,546, dated May 29, 1888.

Application filed February 18, 1887. Serial No. 228,059. (No model.)

*To all whom it may concern:*

Be it known that we, EDWIN L. SPRAGUE, of Boston, county of Suffolk, and State of Massachusetts, and GEORGE R. PEARE, of Lynn, county of Essex, and State of Massachusetts, have invented an Improvement in Machines for Uniting Soles to Uppers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates chiefly to improvements in the horn which enters the shoe, the tip of the horn being shaped to enter the channel in the inner sole and enable the stitches or fastenings employed to unite the inner sole and upper to be made in the channel of the inner sole about the toe, as well as along the sides of the shoe, the stitches or fasteners in the channel of the inner sole being concealed by the covering lip or flap of the channel.

We have herein selected the well-known McKay machine as one upon which to illustrate our invention. The shoe most commonly made on the McKay sewing-machine has a plain inner sole, which is stitched through and through, and the stitches at the inner side of the inner sole are afterward covered by a sock-sole pasted into the shoe. It has been attempted to make a shoe on a sole-sewing machine so that the stitches should lie in a channel not only along the sides, but also about the toe of the inner sole; but to do this involves very considerable expense, because the lip of the channel of the inner sole, before the latter is applied to the last in lasting, has to be previously turned back and hammered down to set it so that it will remain in its turned-back position while the stitches or fastenings are being inserted to join the inner sole and upper, and thereafter the channel-flap of the inner sole has to be turned over to occupy its original position. In this process the set given to the channel lip or flap of the inner sole when hammering it back is detrimental, for it is very difficult to turn the flap over the stitches or fastenings and leave a smooth surface, and this difficulty is greatly enhanced by reason of the small space in the toe in which the operative has to work.

In our experiments aiming to the production cheaply of a shoe having a channeled inner sole in which the stitches or fastenings used should lie in the channel not only along the sides, but about the toe of the inner sole, we have devised a tip for the horn, which tip is of such shape as to readily enter and follow in the channel along one side of the inner sole, then about the toe, and into and through the channel at the opposite edge of the inner sole as the shoe is moved on the horn, the said tip being of such shape in cross section as to lay back the lip or flap of the channel just in advance of or at the point where the stitch or fastening is being inserted, the lip of the channel falling down into its natural position behind the tip of the horn as the shoe is moved thereon, leaving the channel lip smooth and in position to cover the stitches or fastenings inserted in the channel.

Figure 1 is a partial front elevation of a sufficient portion of a McKay sewing-machine of usual construction to enable our invention to be understood. Fig. 2 is an enlarged top view of the upper end of the horn. Fig. 3 is a side view of Fig. 2; Fig. 4, a section of Fig. 2 in the dotted line  $x$ . Fig. 5 is an end view of the horn-cap removed, Fig. 3. Fig. 6 is a section in the line  $x'$ , Fig. 3. Fig. 7 is a section in the line  $x''$ ; and Fig. 8 in full lines shows the upper end of the McKay horn, the dotted lines showing our improvement, to thus enable the shape of both to be compared one with the other.

The frame A, the main part of the horn B, the needle  $n$ , needle-bar  $n'$ , the cast-off  $n''$ , the bar to move it, the feeding device  $n^3$ , the presser-foot  $n^4$ , the whirl  $w$ , and the whirl-actuating shaft  $w'$  and pinion  $w^2$  are all common to the so-called "McKay" sewing-machine represented in United States Patent No. 36,163, dated August 12, 1862, to which reference may be had.

The horn B has applied to it by screws  $a^2$  a cap,  $b^2$ , which, in accordance with our invention, has a novel tip,  $c^2$ , which is of such shape as to follow in and automatically lay back the channel-flap along the sides and about the toe of the inner sole,  $i$ , and also around



the heel thereof, the tip acting somewhat as a plow to gradually turn over and back out of the way of the descending needle the lip or flap 7 of the said sole, so that the stitch formed may be made in the channel at all parts of the inner sole.

Referring more particularly to our invention, it will be seen that the extremity  $e^2$  of the horn, as well as the cap  $b^2$  between the tip  $c^2$  and the screw  $a^2$  next to it, is changed in shape from that of the McKay horn and cap, the shape of the latter being shown by full lines in Fig. 8, the cap in our invention between the points mentioned being cut away, as shown by dotted lines, Fig. 8, and full lines, Figs. 4 and 5, to afford space down into which the lip of the channel may roll or move as it is being turned back by the tip, especially when the tip crosses or is made to travel in the channel about the curved end of the inner sole at the toe and heel. The tip  $c^2$  is of peculiar construction—as, for instance, as herein shown, it is elevated at its rear side for a considerable distance above the surface of the cap, as best represented in Figs. 3 and 4, and the central part of the tip (see Fig. 6) is of smaller area than is the top of the tip, which enters the channel in the inner sole, and serves as a support for the material while the stitch is being made. The upper part or top of the tip  $c^2$  is so beveled outwardly as to leave irregular projecting flanges or portions 2 3 4, which enter in succession the space at the junction of the channel-flap with the main body of the inner sole, such projecting flanges or overhanging edges acting beneath and so as to lift the channel-flap 7 of the inner sole as the shoe is being moved longitudinally or upon the horn in usual manner.

It will be seen that it would not be possible to take the McKay cap shown in Fig. 8 and cut it away to leave a tip of the shape shown in Figs. 3 and 4 and by dotted lines, Fig. 8, for in doing so the McKay cap would be cut into two pieces at a point back of the tip. So to enable us to make a tip in accordance with our invention it became necessary to not only somewhat differently shape the end  $e^2$  of the arm of the horn, but also we had to devise a new shape for the cap.

To enable us to obtain for the cap the necessary strength, and also to afford the proper space for the operation of the whirl and the pinion to move it, and to also insure the firm holding of the cap in place, we have provided the under side of the cap near its center with a lug or ear,  $n'$ , (shown best in the cross-section, Figs. 4 and 7,) which enters a space made in the upper end of the horn-arm, such lug or ear being bored to receive the upper end of the pinion, the lug or ear co-operating with the upper end of the horn to prevent any lateral turning of the cap on the horn, thus reducing strain on the screws  $a^2$ .

In Fig. 4 by dotted lines we have shown a part of the toe of the inner sole with the lip of the channel turned back.

It will be noticed in our invention that the rear wall of the tip is carried backward and curved and that the top of the cap next the rear wall of the tip is inclined downwardly toward the base of the horn.

Referring to Fig. 8, it will be seen that a portion of the horn-arm of the McKay class (shown by full lines) has a flat or horizontal surface in the line  $p$ , which extends back practically to the point  $p^2$ , which is at the rear side of the pinion  $w^2$ , or of the teeth cut at the upper end of the shaft  $w'$  for rotating the whirl  $w$ . In the said Fig. 8 it will be observed that in accordance with our invention the horizontal portion of the horn-arm is materially shortened; that it is extended only to the point  $p^3$ , which is at the opposite side of the said pinion  $w^2$ , such construction enabling us to thicken the horn-cap at a point at the rear side of the tip, to thus give to the cap proper strength after cutting the cap away at its upper side, as we have done at the rear side of the tip. In this way it will be seen that the shortening of the horizontal surface  $p$  is very material, and that without such change in the shape of the part  $e^2$  as compared with the usual McKay horn it would be impossible to mount a tip such as shown upon and so as to form an integral part of the cap.

We shall designate the upper side of the pinion  $w^2$ , or that at the left in Fig. 8, as the rear side of the pinion, and it will be seen that the termination  $p^3$  of the horizontal surface  $p$ , in accordance with our invention, is short of the rear side of the said pinion.

In the practice of our invention we do not desire to limit the same to the employment of an inner sole in which the lip or flange 7 is formed by cutting into the said sole from at or near its upper edge; but we desire to include as within the scope of our invention any usual form of inner sole having a lip or flap under which the stitches or fasteners may be inserted—as, for instance, such a lip or flange as shown in United States Patent No. 146,992.

Were the tip  $e^2$  like a cone, with its base made circular at top, the said tip could not act to gradually lift and turn back a channel-flap; and, further, such a tip would be inoperative in any form of shoe known to us, provided the height of the tip from the top of the cap was equal to the thickness of the salient end of the usual cap employed on the horn of a usual sole-sewing machine; and, further, should the upper end of the tip be roughened or serrated, as in United States Patent No. 255,009, it would be impossible, in our judgment, to feed the stock over the horn-tip, and such would be true even were the tip shaped as shown in this present application.

We claim—

1. The combination, with the horn-arm, of the cap having a tip,  $e^2$ , provided with irregular flanges extended outwardly at its top, the said flanges acting in and laying or turning back the lip or flap of an inner sole as the latter is moved over the horn, the tip following



in the said channel and operating substantially as described.

2. A horn-arm having a substantially horizontal surface,  $p$ , which terminates short of  
5 the rear side of the pinion used to rotate the whirl, combined with a cap having an attached tip,  $e^2$ , concaved at its sides irregularly, substantially as described, to gradually lay back or lift the channel-covering lip or flap of the  
10 inner sole both along its sides and about its

ends as the sole is moved on the horn, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWIN L. SPRAGUE.

GEO. R. PEARE.

Witnesses:

GEO. W. GREGORY,

F. L. EMERY.