

(No Model.)

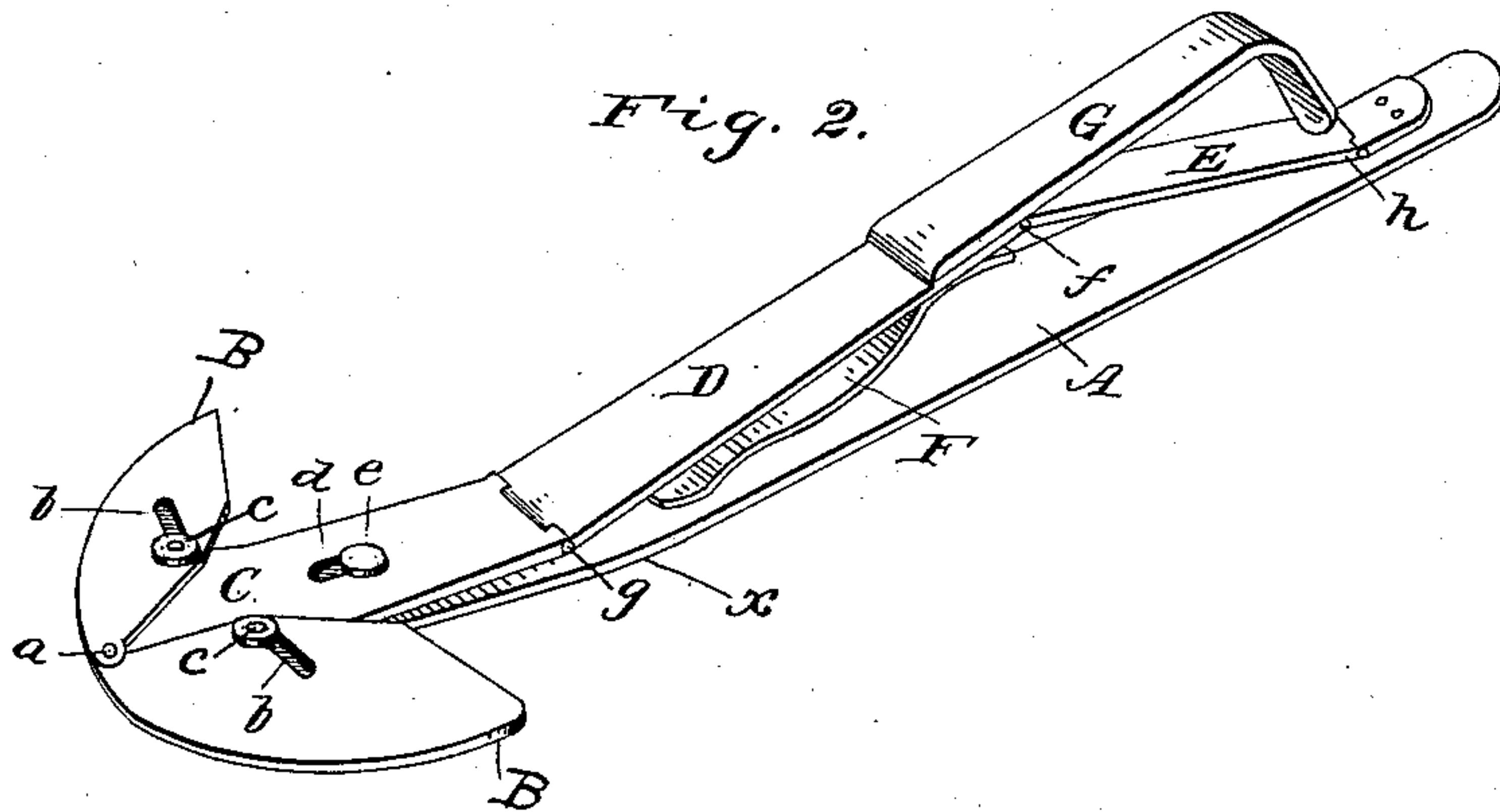
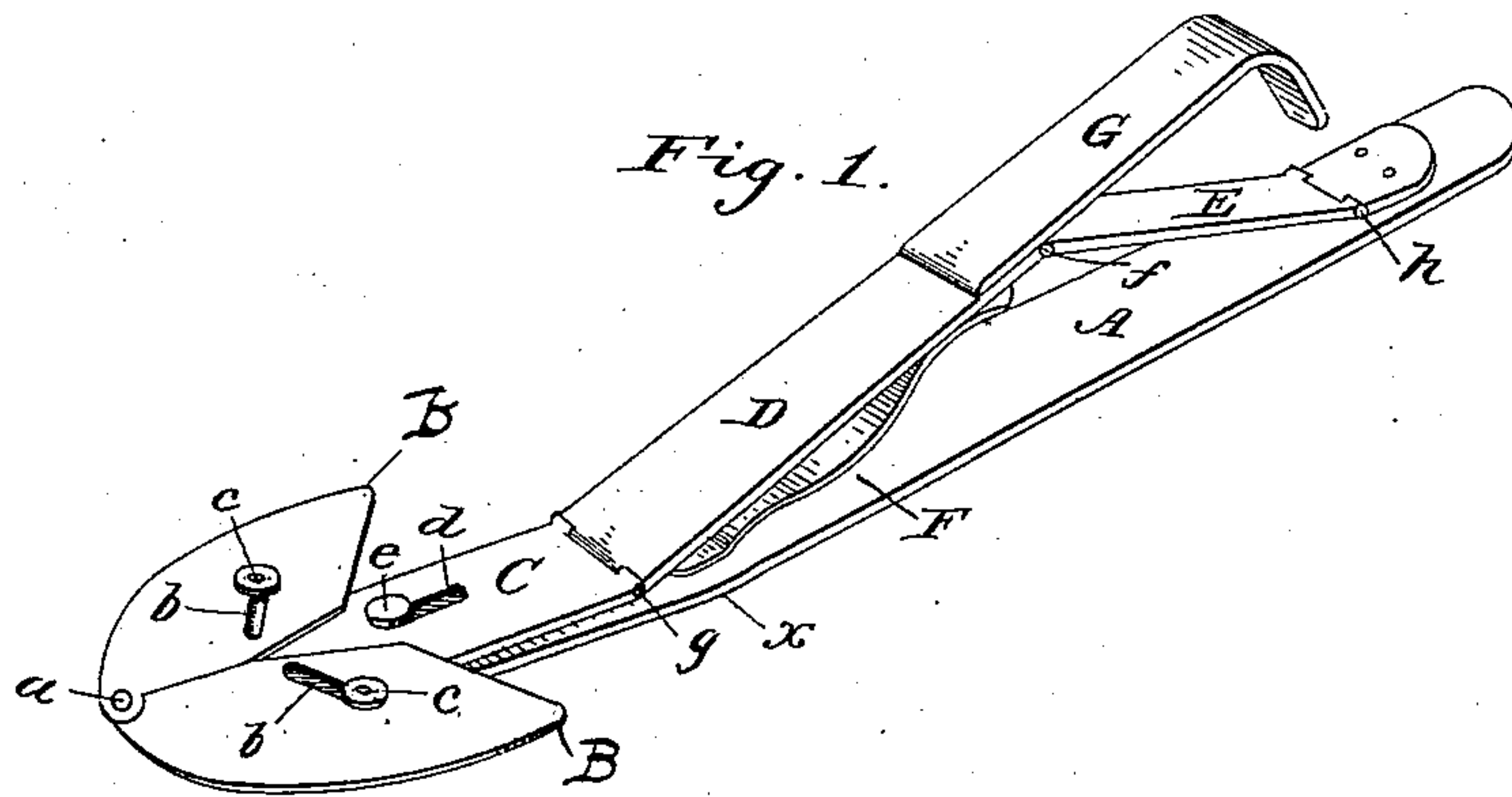
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W. C. CROSS.

LASTING THE UPPERS OF BOOTS OR SHOES.

No. 324,304.

Patented Aug. 11, 1885.



Witnesses:

H. A. Low  
E. A. Dick

Inventor:

William C. Cross  
by Marshall Bailey  
his attorney

(No Model.)

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Fig. 3.

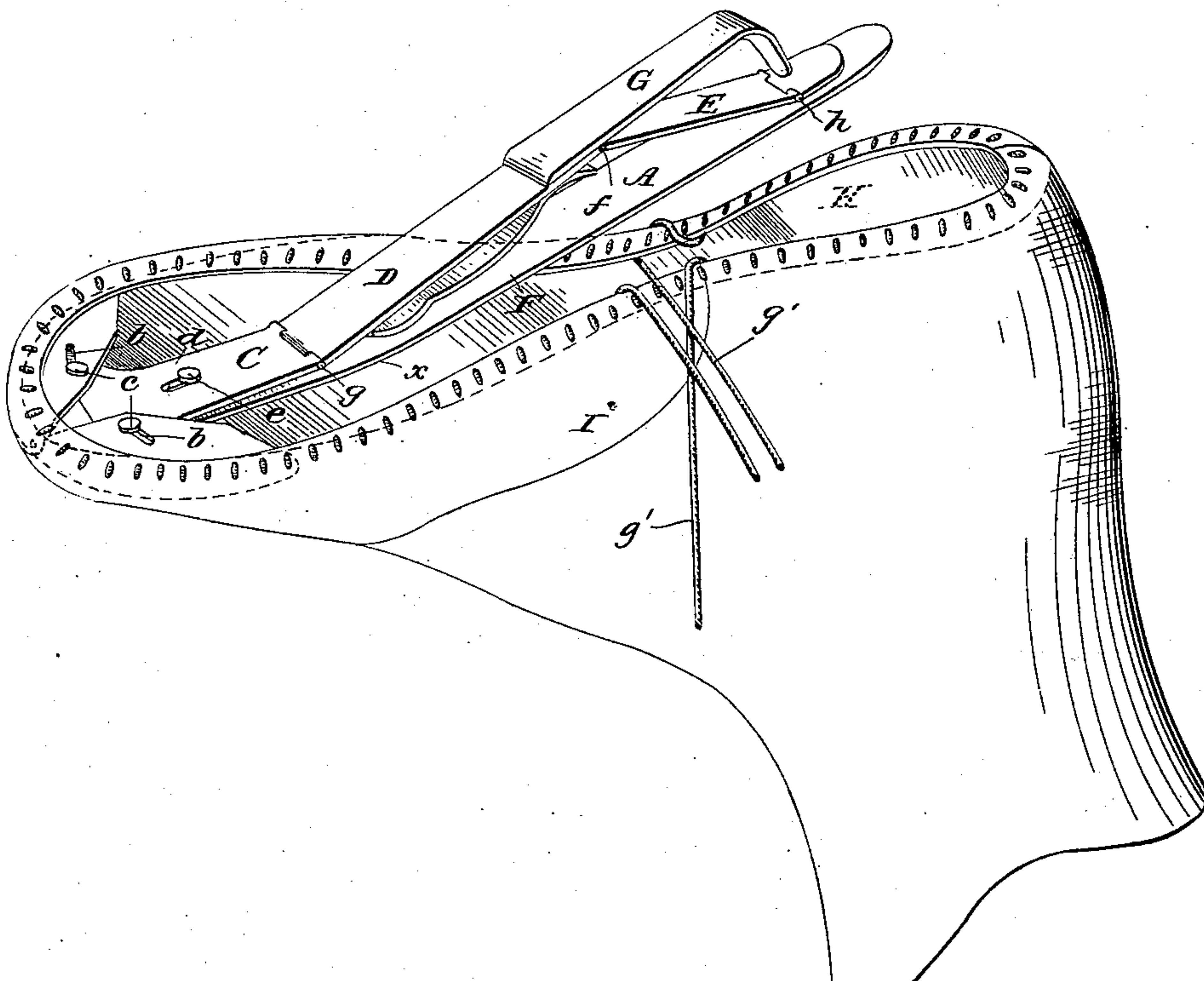
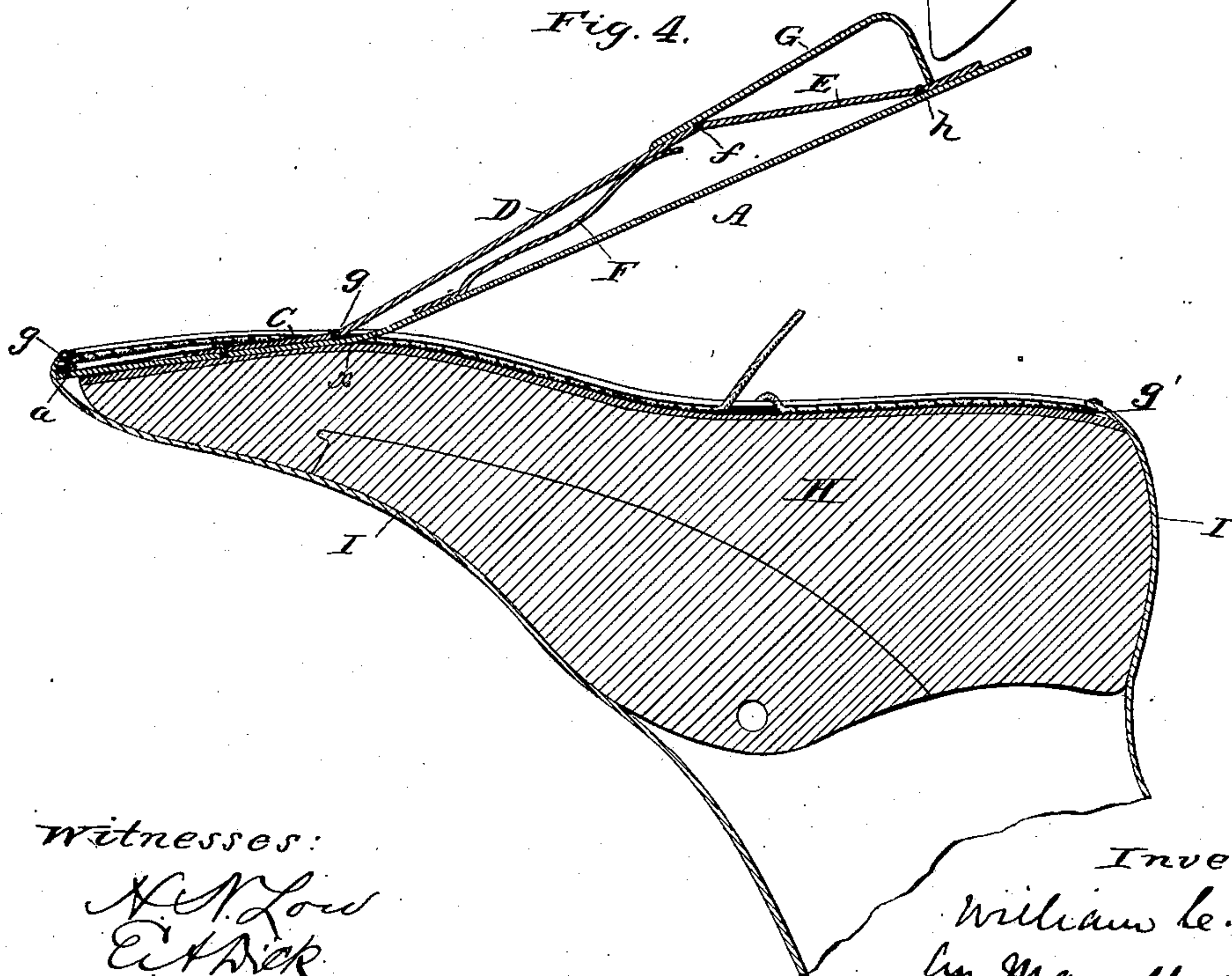


Fig. 4.



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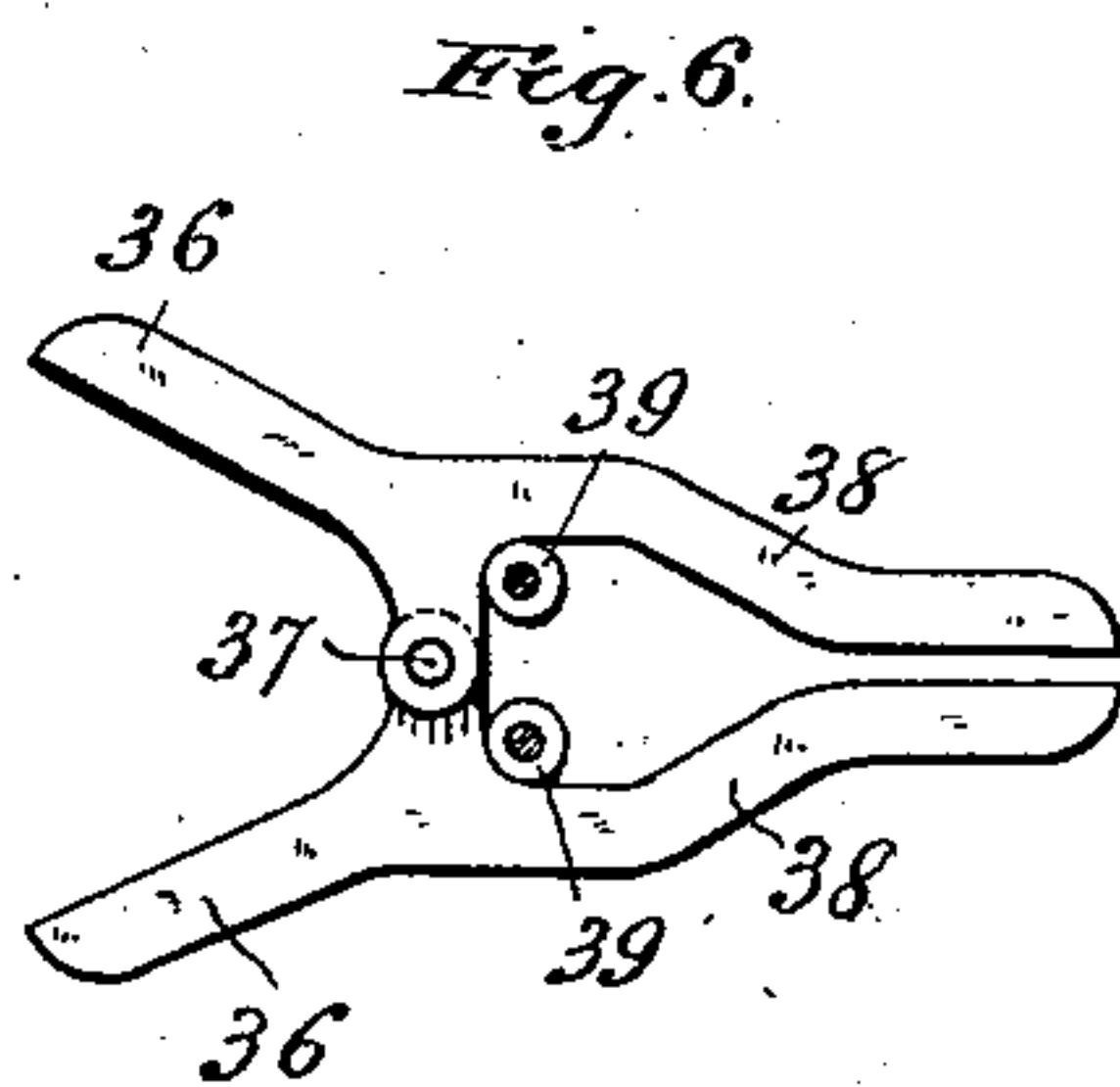
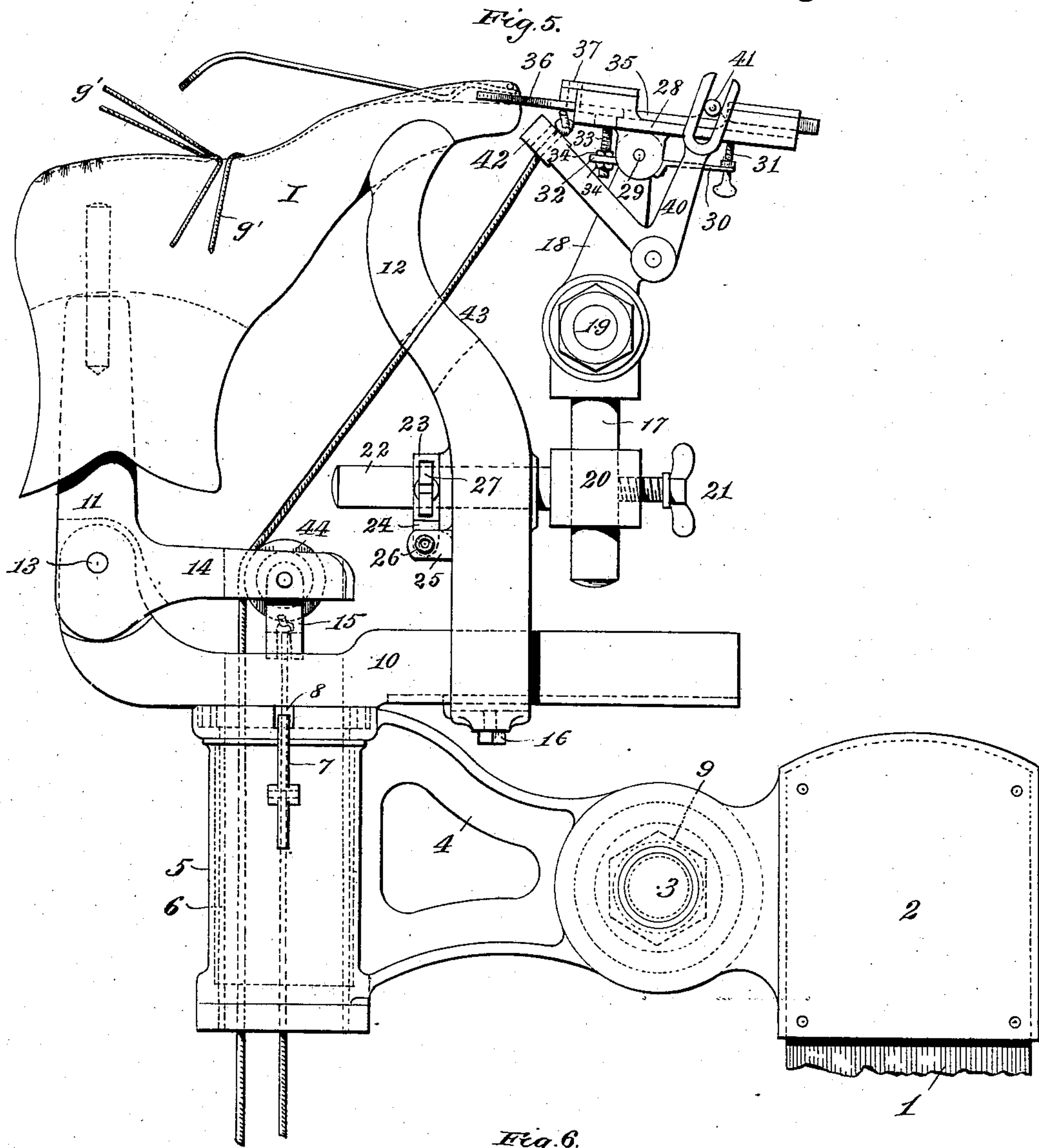
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# UNITED STATES PATENT OFFICE.

WILLIAM C. CROSS, OF BOSTON, MASSACHUSETTS.

## LASTING THE UPPERS OF BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 324,304, dated August 11, 1885.

Application filed June 8, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. CROSS, of Boston, in the State of Massachusetts, have invented certain new and useful Improvements in Lasting the Uppers of Boots and Shoes, of which the following is a specification.

My invention is directed to that method of lasting boot and shoe uppers in which the edge of the upper is gathered and drawn over upon the bottom of the last by means of a draw-cord, as illustrated, for example, in my Letters Patent No. 306,589, of October 14, 1884, and No. 309,440, of December 16, 1884.

In the practical use of this method it is at times difficult to gather the upper evenly and smoothly over the heel and toe of the last; furthermore, the draw-cord is apt to draw the edges of the upper over the sharp curves or edges of the last (particularly at the toe and heel) before the upper is drawn up tightly upon the body of the last. The consequence is that the upper binds upon these sharp curves or edges, and consequently cannot be drawn properly and tightly upon the body of the last.

The object of my invention is to obviate these and other difficulties experienced in practicing the method of lasting referred to. To this end, after putting the prepared upper on the last and getting everything in readiness for gathering or drawing in the edge of the upper, instead of drawing the same immediately over the bottom of the last, I draw it, at those points where it is likely to cramp or bind, and more particularly at the toe, over what may be termed a "temporary former," which is a lever-like instrument having a front end approximating in outline that of the toe of the last. The draw-cord is pulled enough to form around the projecting edges of the upper a shoulder, under which the toe of the temporary former will catch. The former when thus placed is pushed out beyond the toe of the last to hold the upper away from the latter, and at this time, if desired, the former can be tilted so as to elevate its front end, a tight hold being kept at the same time on the draw-cord, the result being that the former will act to draw up the under portion of the upper closely upon and around the body of the last. The draw-cord is then pulled to gather in the upper, and during this opera-

tion the former can be gradually withdrawn. The result of this operation is that the upper, while the edge is being gathered in at first, is held by the temporary former in such position that it will not cramp or bind over the toe or heel of the last, and then as the gathers are properly and evenly laid, and the draw-cord is still further pulled upon, the gradual withdrawal of the temporary former permits the upper to be drawn tightly and smoothly over the toe or heel of the last.

With some classes of work, in order to avoid putting too much strain on the draw-cord in the operation of gathering in the edges of the upper and bringing them down upon the last, it may be desirable to employ some means whereby after the former has done its work the stretched edges of the upper shall be laid over upon the last, this operation being more particularly applicable to the lasting of the toe. To this end I make use of wipers, which, when the former has properly stretched the upper, can be operated by the workman to press from the outside upon the upper at a point between the former and the bottom of the last, with the effect of carrying the edges over upon the bottom of the last and holding them there until the said edges are secured in place by pulling upon the draw-cord, or otherwise.

I prefer to use a collapsible former, because thereby I can last not only the toe, but also the sides, the collapsible former remaining in place upon the sole between the last and the edges of the upper until the lasting is finished, and then being collapsed and withdrawn with ease. Such an instrument is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the instrument in collapsed condition. Fig. 2 is a like view of the same in expanded condition. Fig. 3 illustrates the manner in which the same is used in connection with a last and upper. Fig. 4 is a longitudinal vertical central section of the parts illustrated in Fig. 3. Fig. 5 is a side elevation of a device by which the wiping over of the edges of the upper can be effected. The method of lasting by the conjoined action of the draw-cord, temporary former, and wipers is illustrated in this figure. Fig. 6 is a plan of so much of the wiper mechanism as needed for the purpose of illustration.



The collapsible former consists of a crank or handle, A, carrying at its front wings B, pivoted to it at *a*, with their exterior edges having a shape approximating that of the last at the heel or toe. Each wing has in it a diagonal slot, *b*, which is entered by a pin, *c*, on the slide C, the latter being mounted on and carried by the shank A, and having a longitudinal slot, *d*, which is entered by a pin, *e*, on the shank for the purpose of limiting the longitudinal movement of the slide. The slide is connected to the handle by connecting arms D E, hinged together at *f*. Arm D is hinged to the slide at *g*, and arm E is hinged to the shank at *h*. The arms are normally held by a spring, F, in a position in which the slide is retracted, and the former consequently is collapsed, as seen in Fig. 1. By pressing upon the arms, or the handle-extension G, carried by them, the slide is advanced, and the former consequently is expanded, as seen in Fig. 2.

The method of lasting in connection with the instrument will be readily understood by reference to Figs. 3 and 4. The upper is prepared for lasting by having a draw-cord applied around its edge in any suitable way, as illustrated, for example, in the patents hereinbefore referred to, and it is then fitted upon the last in the usual way. In Figs. 3 and 4, H is the last, I is the upper, and *g'* is the draw-cord. In lasting at the toe, as illustrated in the figures referred to, the former, before the draw-cord is pulled and while the edge of the upper is yet ungathered to any material extent at that point, is inserted, and is pushed forward and expanded against the upper at the toe, its edge lying just beneath the draw-cord. Simultaneously with this pushing forward of the former, which has the effect of relieving the upper of any tendency to bind over the toe of the last, the draw-cord is pulled upon. At the same time it will be found desirable, by increasing and decreasing the tightness of the grip of the hand on the handle of the instrument, to alternately expand and collapse the instrument, still continuing to pull on the draw-cord, the effect of this being to facilitate the operation of getting the upper in place. In this way the tendency to cramp at the toe is relieved, and the gathers at the toe are laid smoothly and evenly. In order to draw the upper closely over the instep and under side of the last, the former can be tilted on the point *x* as an axis, thus lifting its toe or front end and drawing and stretching the upper properly. The former is kept pushed forward until the body of the upper is drawn up tight upon the body of the last beneath. It is then drawn back, the pull on the draw-cord being continued until the edge of the upper is pulled tightly and smoothly over the toe and down upon the sole of the last. The effect of pressing the former against the inside of the upper and simultaneously drawing on the upper by means of the draw-cord is to shape or crimp the toe or heel (as the case may be) of the upper before it gets to the last. The di-

menitions imparted by the former are larger than required; but by drawing the former back on the last, and at the same time drawing in the upper and keeping it against the former, I bring the preliminarily-shaped part down to the proper shape on the last. In some cases I prefer to serrate the edges of the former, so as to more surely hold the leather in place and keep it from slipping.

The wings of the former can be made removable, and in practice I provide interchangeable sets of wings for different sizes and shapes of boots and shoes.

The collapsible former can be used to advantage in cases when the workman draws all around the upper or the front of the upper from the shank, the effect of this operation being to gather and draw in not only the toe but the side edges of the upper. In this event, after the lasting is completed, the former can be allowed to collapse, and in this condition can be conveniently removed. For this and other reasons hereinbefore stated, I prefer on the whole to use a collapsible former; but I can also use a non-collapsible former of any proper size or shape, particularly in case I desire to last only the toe of the upper before lasting the side edges. Thus the temporary former can be any suitable device, whether collapsible or not, which can be placed on the bottom of the last, inside of the upper, or between the upper and the bottom of the last, and which, when thus placed and pushed forward against the upper, will hold it to the requisite extent away from the last to relieve the tendency to cramp or bind during the operation of drawing the edges of the upper down in place.

In some cases, after employing the temporary former to draw and stretch the upper around the body of the last, it will be found desirable to bring the edges of the upper over upon the bottom of the last by some mechanical means other than the draw-cord, using the latter as auxiliary to those means, or simply as an instrumentality to gather in and hold in place the edges after they have been wiped down upon the bottom of the last. Mechanism for this purpose is represented in Figs. 4 and 5, comprising a jack and a wiper mechanism for the toe of the lasted upper.

The devices are supported upon a post or standard, 1, which fits in a socket-piece, 2. To the latter is jointed, on a horizontal axis, 3, a bracket-arm, 4, carrying a tubular vertical bearing-piece, 5, at its outer end, in which is supported and adapted to rotate the hollow stem 6, which carries the jack and wiper mechanism. A spring-dog, 7, engaging notches 8 in the stem, holds the latter in any position to which it may be turned. A tightening-nut, 9, at the joint 3 holds the two parts 2 4 in their adjusted position.

To the upper end of the swiveling-stem 6 is fixed the base 10 of the jack, which carries at its rear end the heel-post 11, and at its front end the toe-rest 12. The heel-post is jointed



at 13 to the base, and is provided with a horizontal arm, 14, having a horizontal swiveled hanger, 15, to which is attached the cord by which the heel-post is tilted forward so as to jam the last up into place against the toe-rest. This cord extends down through the hollow stem 6, and is connected in the usual way to a treadle, which when depressed is held in place by a notched rack or ratchet-and-pawl mechanism, as customary in this class of machines. The toe-rest 12 fits and is adapted to slide back and forth upon the base 10, and is held in its adjusted position by a set-screw, 16.

The wiper mechanism is carried by the toe-rest, and may briefly be described as follows: The upright which carries the wiper mechanism proper consists of two parts, 17 18, jointed at 19, and having at that point a tightening-nut, by which the joint can be fixed at any desired angle. The lower part, 17, is made cylindrical, and passes through a cylindrical socket, 20, in which it can both rotate and slide up and down, being therein locked in any required position by a set-screw, 21. The socket 20 is provided with a horizontal cylindrical stem, 22, which is supported and adapted both to slide and to rotate in a bearing in the toe-rest, being held therein in any desired position by a collar, 23, provided with a tail-piece, 24, extending down between ears 25 on the toe-rest, in which are set-screws 26, the collar itself having a set-screw, 27, which can be used to engage and lock the stem 22 and the collar together. All these various joints are useful, in order to adjust the position of the wiper mechanism with reference to the last. The wiper mechanism proper consists of a bed, 28, jointed at 29 to the upper end of the upright 18. To the latter is fixed a spring, 30, carrying at its outer end an adjustable pin, 31, which bears against the under side of the bed 28 and tends to tilt it forward. On the opposite side of the pivot 29 is fastened a projecting ledge, 32, through which passes a stop-pin, 33, vertically adjustable by means of nuts 34, said stop-pin limiting the extent to which the bed can be tilted by the spring 30. This mechanism is provided in order to allow the front end of the bed to yield in an upward direction to accommodate the wipers to varying thicknesses of leather or other irregularities in the bottom of the last. On the bed is supported, in a proper guideway, the slide 35, which carries the wiper-jaws 36, the latter being pivoted together and to the slide at 37, and being provided with legs 38, which coact with roller-studs 39, adjustably fixed to the bed of the machine to cause the wiper-jaws (which normally stand open or apart) to close to the proper extent during the forward movement of the slide. The slide is operated to move by a forked angle-lever, 40, the slotted arms of which engage roller-studs 41 on the slide. The other end of the angle-lever has an eye, 42, to receive the cord which operates it, said cord being fastened in the eye, and thence extending through an opening, 43,

in the toe-rest, down over a guide-pulley, 44, on the horizontal arm of the rocking heel-post, and thence through the hollow stem 6 to a treadle provided with rack or detent mechanism to hold it in the position to which it may be depressed.

The foregoing description of the wiper mechanism will suffice to explain it to those skilled in the art to which my invention relates. It is a type of a variety of mechanisms that may be employed for the purpose. The manner of using it in the practice of my method of lasting the uppers of boots and shoes is as follows: The last, with the upper thereon, is jacked upon the heel-post and toe-rest as usual, the draw-cord is pulled to form around the edges of the upper at and in the vicinity of the toe the shoulder against which the temporary former, is to bear, and the temporary former inserted in place, as hereinbefore described, is pushed forward and tilted and worked by the operator, as already set forth, in order to draw and stretch the upper upon the under face of the last. The parts are represented in this position in Fig. 5, the temporary former (in this instance a non-collapsible one) being illustrated as tilted, so as to raise its front end, and thus to hold the edge of the upper around the toe taut and stretched. The workman, still holding the former in this position, advances the wiper-slide by depressing its actuating-treadle and as the slide advances the wipers close around the toe, and meeting that portion of the stretched edge of the upper between the bottom of the last and the elevated front end of the former wipe the same over and down upon the bottom of the last, the former, after the wipers once get a bearing upon the leather, being withdrawn as the wipers advance. The edge of the upper around and in the vicinity of the toe is thus wiped down upon the last, and is held there until secured in place either by drawing up and tying the draw-cord or by other suitable means, after which the wipers can be withdrawn. This method is particularly effective and useful in lasting the toe portions of uppers, especially when the leather is heavy and stiff, and the work can be done both expeditiously and well, all that is necessary being to form a shoulder on the inner face of the upper against which the former can bear, to then pull and stretch the upper by pressure applied to the inner face of the same through the instrumentality of the former, and then, while holding the upper thus stretched, to wipe the taut edges from the outside down upon the bottom of the last.

Having described my improvements and the manner in which the same are or may be carried into effect, what I claim herein as new and of my own invention is as follows:

1. In that process of lasting boot and shoe uppers in which the edge of the upper is gathered and drawn over upon the bottom of the last by a draw-cord, as hereinbefore specified, the method of facilitating the gathering of the



upper over the heel and toe or other sharp curves or edges of the last, and of preventing the upper from binding upon such parts of the last before being drawn into place by means of pressure applied through the instrumentality of a temporary former during the lasting operation beneath the intumed portions or edges of the upper, substantially as and for the purposes hereinbefore set forth.

10 2. The hereinbefore-described improvement in the art of lasting the toes of uppers of boots and shoes, consisting in stretching and drawing the upper over the last by means of press-

ure applied beneath the intumed portion of the upper, and then, while said portion is maintained stretched and taut, wiping it down from the outside upon the bottom of the last and securing it in place thereon, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 18th day of May, 1885.

WILLIAM C. CROSS.

Witnesses:

EWELL A. DICK,

J. WALTER BLANDFORD.