(No Model.) 2 Sheets—Sheet 1.

P. COX.

MECHANISM FOR FORMING COUNTER STIFFENERS.

No. 385,745. Patented July 10, 1888.

Fig. 1.

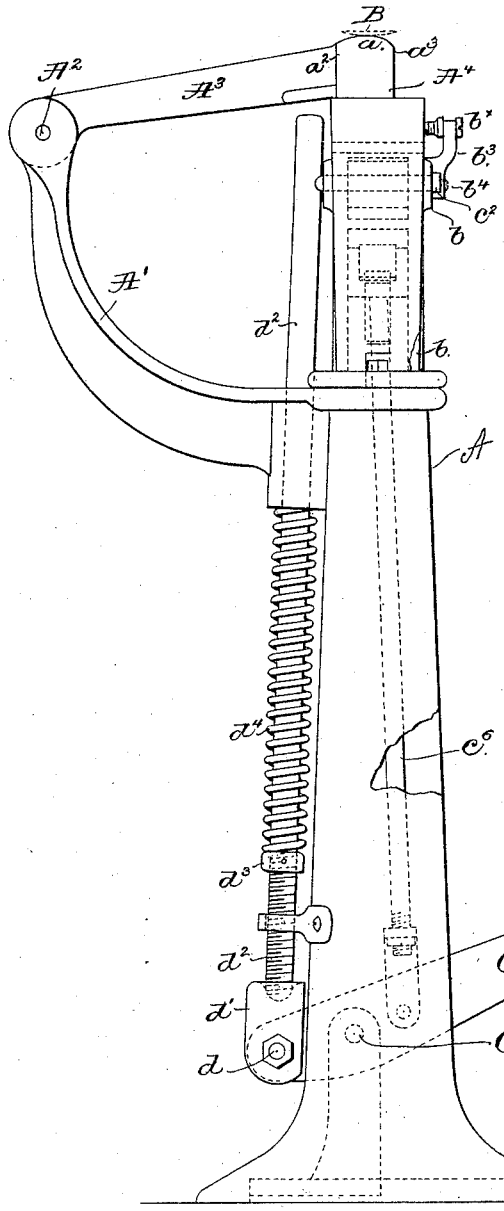


Fig. 2.

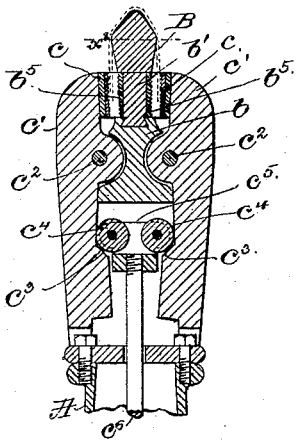


Fig. 3.

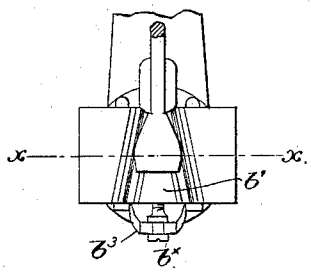
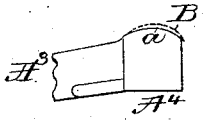


Fig. 3a



Witnesses.
Fred. L. Emery
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Inventor.
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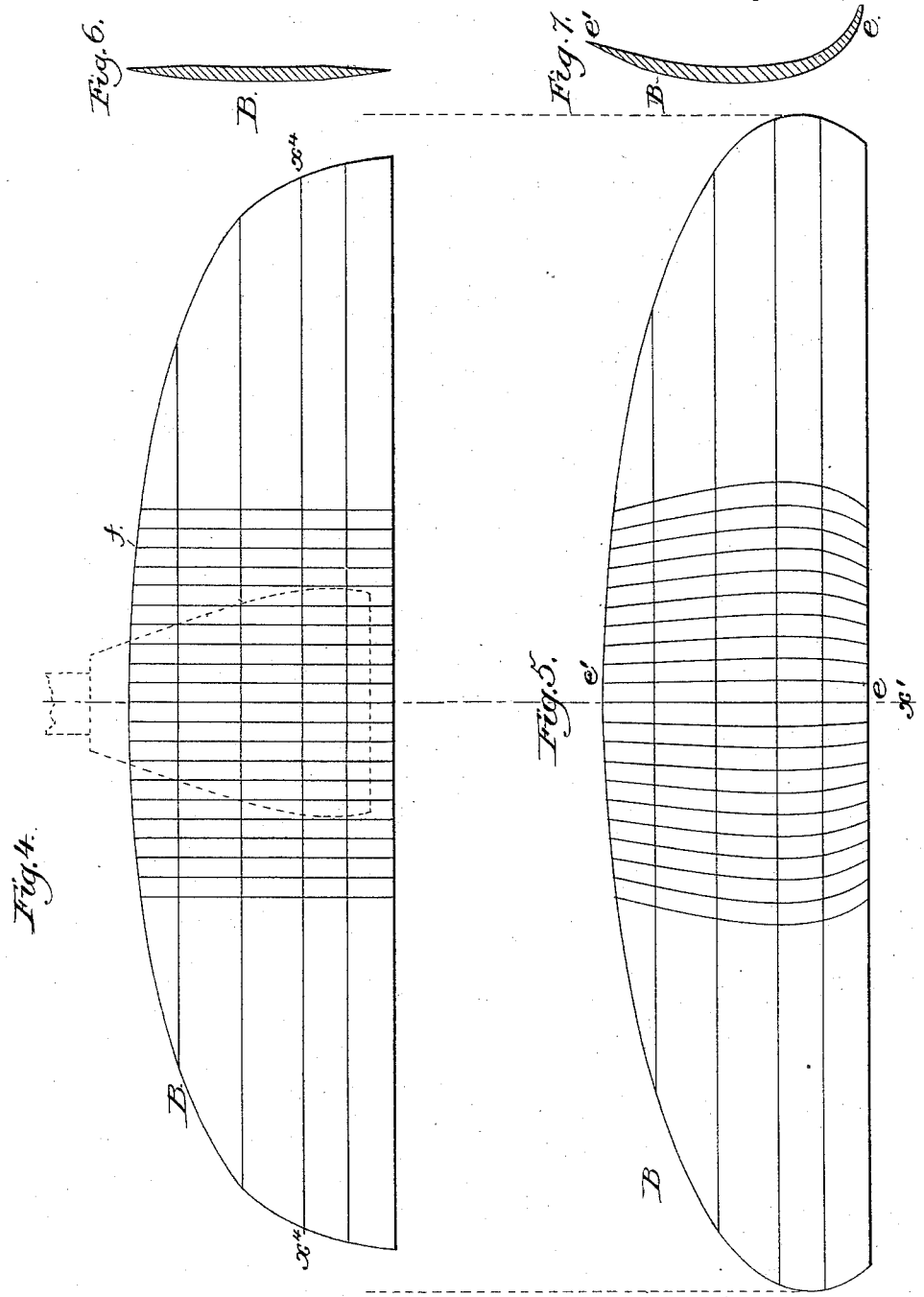
by Crosby & Gregory Attys.

(No Model.) 2 Sheets—Sheet 2.

P. COX.

MECHANISM FOR FORMING COUNTER STIFFENERS.

No. 385,745. Patented July 10, 1888.



Witnesses.
Fred. L. Emery.

Inventor.
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by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

PATRICK COX, OF ROCHESTER, NEW YORK.

MECHANISM FOR FORMING COUNTER-STIFFENERS.

SPECIFICATION forming part of Letters Patent No. 385,745, dated July 10, 1888.

Application filed October 7, 1887. Serial No. 251,713. (No model.)

To all whom it may concern:

Be it known that I, PATRICK COX, of Rochester, county of Monroe, and State of New York, have invented an Improvement in Mechanisms for and Methods of Manufacturing Counter-Stiffeners, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a novel mechanism for the production of a novel counter-stiffener from leather, the method or process of manufacturing the counter-stiffener being also novel.

Counter-stiffeners are now made from leather blanks in the following manner, viz: by pounding the leather blank laid upon the last until it conforms to or fits the heel of the last; also, by subjecting the blank to the action of molds, between the surfaces of which the blank is subjected to pressure alone or to pressure combined with a rubbing action; and so, also, a leather blank has been subjected to the action of rolls to partially shape the blank, to be thereafter treated and finally shaped in a mold, or by jaws which are made to rub upon the blank supported upon a heel-shaped form. These methods of manufacture so thicken or harden the material as to break or distort the fiber of the blank to the extent of destroying its natural resiliency, thus greatly impairing the utility of the counter-stiffener.

In those processes wherein the action of the molds, dies, or rolls hardens the blank it has been found necessary to at the same time bend the lower edge of the blank inwardly to form the heel-seat; but the flange so turned and set by pressure is so stiff and hard that it cannot be readily fitted to the heel of the last, but retains the curve given to it in its manufacture.

In the manufacture of counter-stiffeners by the methods referred to, the operation is substantially the same whether the heel-form moves into jaws or the heel-form remains stationary and the jaws move over it, or whether a hinged or divided mold be used. In either case the shape given to the counter-stiffener is due to the slipping or rubbing of a movable surface along one side of the blank only, while the latter is supported at its other side upon a stationary surface. So, also, in all these older plans the flange of the stiffener is wiped, rubbed, or burnished over positively upon the form, follower, or roll against which rests the inner side of the blank, and by a direct pressure against the said blank from its outside; but all such methods are in my judgment hurtful and inexpedient, because the shape given to the stiffener is derived from pressure between two surfaces, which harden the material to such an extent as to practically destroy its natural resiliency or adaptability to the heel of the wearer of the boot or shoe. In none of these older methods is the blank material stretched or elongated in the direction of its length, and when the body of the blank is not so stretched, but is curved to fit the heel-form, the inturned flanged edge of the blank, as it is made to fit the bottom of the form, is very much crimped or corrugated and has to be hammered down and shaved off in the shoe, and such counters, with a hardened stiff seat, cannot be used in turned work.

A perfectly-shaped counter should be thin, so as to take up but little space in the shoe and not mark its outline against the upper, and smooth and elastic near its base, so as to be easily worked into the shoe and permit the same to be turned or reversed in the process of manufacturing, and yet the counter must be sufficiently stiff to retain the heel of the shoe in the desired position, and its lower edge should be sufficiently pliable to be easily bent or flanged around the edge of the last and lie flat against the bottom thereof and adjust itself to the configuration of the particular last upon which it is used. So, also, the upper line or edge of the counter-stiffener should be sufficiently contracted to embrace or fit that portion of the heel opposite it, and the counter-stiffener should possess and permanently retain sufficient elasticity to expand for the insertion of the foot within the shoe, and then contract to hug or grasp snugly the heel of the wearer to prevent slipping of the shoe upon the foot.

In accordance with my invention the leather blank, of usual shape and properly moistened, is placed upon a heel-form of such shape as to support the blank intermediate its ends for but a part of its width, and in such condition the ends of the blank, grasped positively be-

tween jaws, is pulled and stretched from its ends through its central part more than along its edges, thereby causing the blank to curl in the direction of its width until the previously-unsupported portions of the blank at or near its edges are made to fit and conform snugly to the heel-form. In this manner no part of the stiffener is subjected to pressure or to rubbing friction and pressure in the direction of the thickness of the blank to thus harden it; but the central part of the counter stiffener is stretched and bulged to present a concavo-convexed appearance at the middle of its length in the direction of its width, the bottom or straight part of the blank curled inwardly by stretching the blank in its median line, forming a lip or flange, which is left soft and pliable and with but few, if any, wrinkles, the flanged portion as well as the main body and upper edge of the blank retaining substantially all its natural resiliency to be readily conformable not only to the last in the manufacture of the shoe, but also to the foot of the wearer.

My invention consists in a saddle to support the blank for a portion of its width at or near the center of its length, combined with clamps to grasp the ends of the blank, and with means to change the relative positions of the saddle and clamps, whereby the blank is stretched along its median line more than along its lower or straight edges, as will be described.

My invention also comprehends that improvement in the art or method of forming heel-stiffeners, which consists in positively stretching the blank by a direct pull between its center and ends, whereby the blank is elongated in its median line more than at its lower edge, which causes the said edge to curl inwardly to constitute a flange for the stiffener, as will be described.

Figure 1, in side elevation, represents a machine embodying my invention; Fig. 2, a partial section thereof in the line *x;* Fig. 3, a partial top view of the machine shown in Fig. 1; Fig. 3ª, a detail to be referred to; Fig. 4, a plan view of a blank for the manufacture of a counter-stiffener before the same is stretched in accordance with my invention. Fig. 5 shows said blank after it has been stretched and opened out; and Figs. 6 and 7 are sections, respectively, of Figs. 4 and 5 in the dotted line x', looking to the left.

The standard or base A, to constitute the frame-work of the machine, has an arm, A′, upon which, as herein shown, is pivoted at A^2 one end of an arm or lever, A^3, having a saddle, A^4, the middle portion of which, as at *a*, is higher than at the points a^2 a^3 at each side thereof, and so, also, this saddle is widest in the line x^3, (see Fig. 2,) it being gradually tapered or contracted from the line *x* toward its junction with the arm or lever A^3.

The standard supports a head, *b*, herein shown as provided at its upper side with a dovetailed groove, into which is fitted the correspondingly-shaped shank of a block, *b′*, of wedge shape, the said block being made adjustable longitudinally with relation to the said head by means of an adjusting device, shown as a screw, b^2, provided near its head with an annular groove, which receives the upper forked end of a leg, b^3, attached by screws b^4 to the head *b*. The outer sides of this block *b′* are serrated, as shown at b^5, to co-operate with correspondingly-serrated surfaces *c* at the upper ends of levers *c′*, pivoted by bolts c^2, extended through ears of the head *b*, the said levers near their lower ends being provided with cam projections or surfaces, as c^3, which are acted upon by rolls c^4, attached to a block or cross-head, c^5, secured to the upper end of a rod, c^6, attached to a treadle or lever, C, pivoted at C′. The levers *c′*, their serrated surfaces *c*, and the serrated surfaces b^5 of the block *b′* constitute clamps to grasp and hold positively the ends of the blank B when the same is to be stretched.

The rollers c^4, when depressed through the action of the treadle C, act upon the cam-surfaces c^3 and force the upper serrated ends of the levers *c′* against the ends of the blank laid over the saddle *a*, the double dotted line in Fig. 1 immediately above the saddle being supposed to represent the blank in section when it is first laid upon the saddle and before the blank is at all stretched.

The rear end of the treadle or lever C has jointed to it at *d* the foot *d′* of a rod, d^2, which is extended upward loosely through suitable bearings and terminates normally near the under side of the lever or arm A^3. This rod is surrounded by a spiral spring, d^4, one end of which rests against a collar, d^3, made adjustable on a threaded portion of the said rod, while the upper end of the spring rests against a fixed part of the frame-work, the said spring acting normally to keep the longer end of the treadle C elevated, as shown in Fig. 1.

With the parts as represented in the drawings, a moistened blank, B, of leather, of substantially the shape shown in Fig. 4, is laid over the saddle A^4, and the ends of the blank are placed in open spaces between the serrated surfaces of the clamps referred to, as shown in Fig. 2 by dotted lines, the inside of the blank (see dotted lines, Fig. 1) resting upon the high part of the saddle and not touching the portions a^2 a^3 thereof, especially not touching the portion a^3. In this condition the operator places his foot upon the treadle C and depresses the same, he at the same time raising the rod d^2 up; but as or before the upper end of the said rod meets the lever or arm A^3 the rollers c^3 referred to act to close the clamps upon and so as to firmly hold the ends of the blank. The operator continues to depress the treadle after the clamps have been closed, as described, and, through the rod d^2, it meeting the lever A^3, lifts the said lever and saddle A^4, which results in stretching the blank by a strain applied to its cen-

tral part, its ends being clamped, and the said blank is stretched in the direction of its length along the median line x^4 (see Fig. 4) until the edges of the blank by curling downward meet and conform to and fit the top a^2 a^3 of the saddle snugly, the part of the blank marked *e* in Fig. 7 being thereby turned in to constitute the flange for the stiffener, the upper edge, *e'*, of the blank being also somewhat turned in, leaving a concavo-convexed counter stiffener, as best shown in Fig. 7, all the parts of which retain the natural resiliency due to the leather, so that the blank so shaped may be readily applied to a last in the manufacture of a shoe and be made to readily conform to the curvature of the last, as has been described.

I do not desire to limit my invention to a machine in which the saddle is moved positively away from the clamps, as I consider the reversal of this operation would come within the scope of my invention.

In accordance with my invention it will be noticed that the main part of the counter stiffener is not hardened or compressed between metallic or other surfaces.

In Fig. 4 I have marked upon the blank a series of vertical lines, as *f*, and in practice when the blank is stretched these vertical lines assume substantially the direction shown in Fig. 5, such lines being shown to delineate the curvature which is put into the blank by stretching the same.

Fig. 3ª shows the counter-stiffener as pulled and stretched to conform to the saddle.

The method or process herein described forms the subject-matter of an application for patent, Serial No. 257,110, filed on the 6th day of December, 1887.

I claim—

1. In a machine for the manufacture of counter-stiffeners, a saddle to support a blank for a portion only of its width at or near its center between its ends, and clamps to grasp the ends of the blank, combined with means to change the relative positions of the saddle and clamps to pull and stretch the blank in its median line in the direction of its length and cause the edges of the blank while being pulled and stretched to conform to the shape of the saddle, substantially as described.

2. The saddle A^4, having a surface, as a a^2 a^3, to support the central part of the counter-stiffener blank, and the block *b'*, combined with the jaws *c' c'*, to co-operate with the said block *b'*, and constitute clamps to grasp the ends of the said block, and with means, substantially as described, to operate the said jaws and saddle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK COX.

Witnesses:
POMEROY MCKINSON,
WILLIAM J. MORAN.