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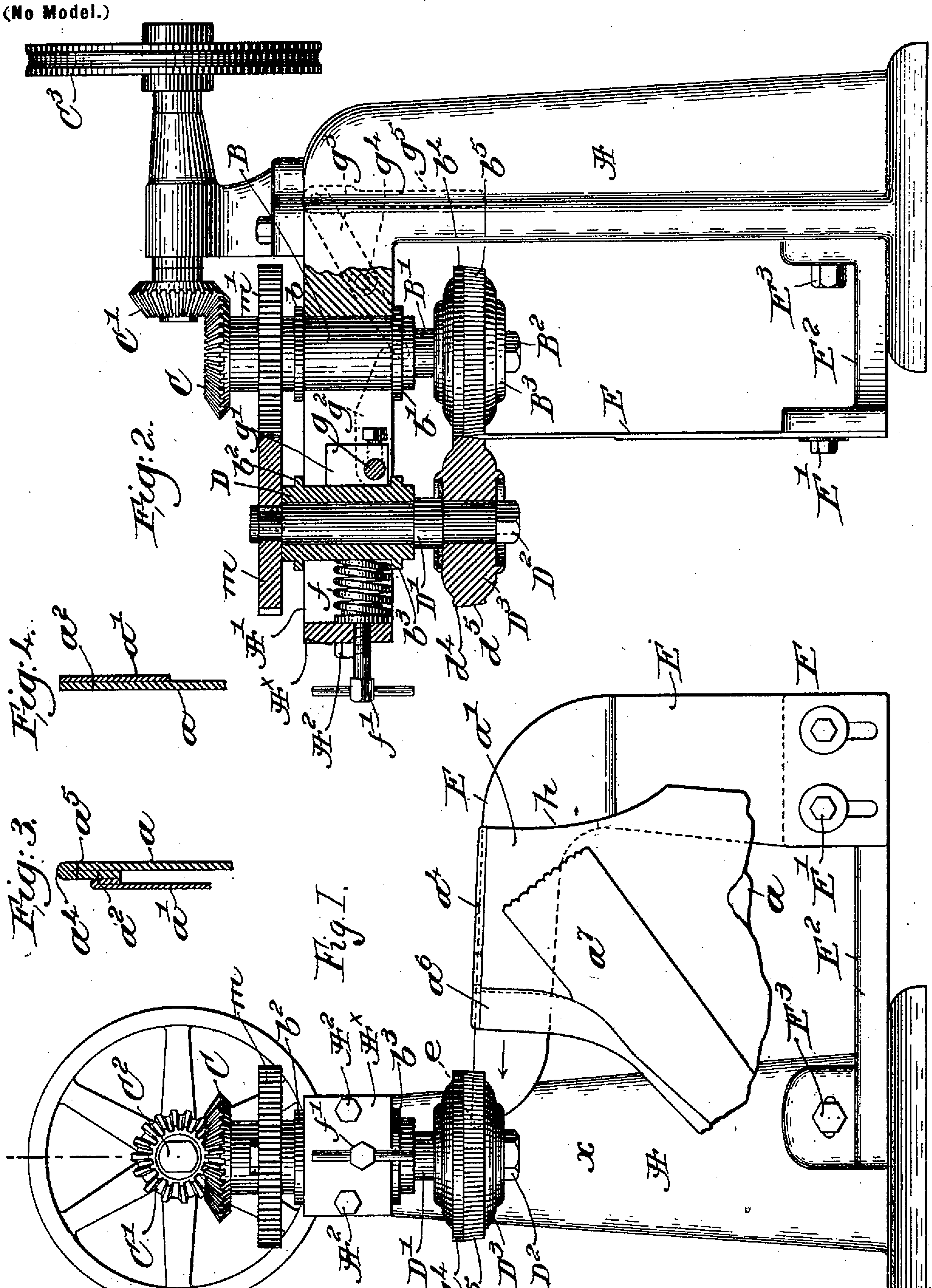
W. J. DIX.

APPARATUS FOR FOLDING TOPS OF BOOTS OR SHOES.

(Application filed June 15, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WILLIAM J. DIX, OF MILFORD, MASSACHUSETTS.

APPARATUS FOR FOLDING TOPS OF BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 640,885, dated January 9, 1900.

Application filed June 15, 1898. Serial No. 683,478. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. DIX, of Milford, in the county of Worcester and State of Massachusetts, have invented an Improvement in Apparatus for Folding the Tops of Boots or Shoes, 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 apparatus by which to fold and crimp or set the tops of shoes after the lining has been stitched to the top and preparatory to forming the bead around the top of the shoe.

Ordinarily the top and lining are sewed together wrong side out, and after some cement has been applied to the inner side of the top or to the inner side of what is to be the lining, they being then exposed outwardly, the lining is turned into the top and the top is folded near its junction with the lining, and by a hammer, either operated by hand or by machinery, the leather is pounded to properly fold it in a crease and at the same time stick the top and lining together preparatory to stitching the same near the top to form a bead. I have provided an apparatus by which to fold and crease the top after it has been lined and preparatory to stitching the bead referred to, my apparatus working perfectly, rapidly, and economically.

One part of my invention consists of a thin-edged horn over and on which the material, as a shoe-top, is laid and stretched to thus define its point of folding, combined with a feeding device, preferably a pair of rolls, which may act upon the folded top, draw it over the horn, and crease the top in the fold-line established by the upper edge of the horn, the said rolls pinching and creasing the material firmly, so that it remains in that condition throughout the manufacture of the shoe.

Other features of my invention will be hereinafter set forth, and described in the claims at the end of this specification.

Figure 1 of the drawings represents in front elevation an apparatus embodying my invention, a shoe-top being shown as applied thereto, the lining being toward the operator. Fig. 2 is a partial section on the line x. Fig. 3 shows the work to be done, and Fig. 4 shows the top and lining as first put together.

In practice let it be supposed that a represents part of the top of a boot or shoe and a' the lining, the same lying faced together or wrong side out, and a^2 represents a line of stitches to unite the same. This top will be put into working condition by turning the lining a' over, as shown in Fig. 3, creasing the leather of the top in the line a^4, and thereafter the bead will be defined and made by a second row of stitches, as a^5.

If desired, cement may be applied to the leather of the top before it is turned or creased at a^4, so that portions of the leather of the top to come in contact may adhere by reason of the cement.

The lining a' (shown in Fig. 1) shows an attached leather facing a^6 and a tongue a^7, attached to the facing in any usual manner.

I will now describe the apparatus for creasing or crimping the top.

A represents an upright or column having an overhanging arm A', provided with an open space or slot closed at its outer end by a removable plate $A^\times$, held in place by suitable screws A^2. In this space I fix a box or bearing B, having flanges $b\ b'$, said box receiving a shaft B', provided at its lower end with a wheel B^3, held in place by a suitable nut B^2. I place a second box or bearing D, having flanges $b^2\ b^3$, in said space, it receiving a shaft D', to which is attached, by a suitable nut D^2, a wheel D^3. The shaft B' is provided at its upper end with a bevel-gear C, engaged and rotated by a bevel-gear C' on a shaft C^2, having a suitable belt or other pulley C^3, by which to apply power to the said shaft. These two wheels B^3 constitute feeding means, and they act to crease the top, and for this purpose they are shown as substantially cylindrical at their upper ends, as at $b^4\ d^4$, and somewhat beveled or truncated at their lower ends, as at $b^5\ d^5$, the beveled or truncated portions being preferably somewhat lightly scored to thereby better adapt them to engage and move the material of the upper and lining positively over and along the upper surface of the thin-edged horn or work-support E, shown as adjustably connected by suitable bolts E' to a stand E^2, attached to the column by a suitable bolt, as E^3. The front end of this horn terminates between the rolls B^3 D^3 at their truncated portions and near their

tangent lines or the points where the peripheries of the two rolls touch, as represented at or near the point *e* in Fig. 1.

The box or bar D is acted upon by a spring *f*, the stress of which is adjusted by means of a screw *f'*, threaded and inserted through the end plate $A^{\times}$ referred to, said spring normally acting on said box or bearing to keep the periphery of the roll D^3 pressed up to and substantially in contact with the periphery of the roll B^3.

The overhanging part of the column receives loosely a short stud *g*, to which is fixed a lug or projection *g'*, which normally rests against the box or bearing D, as represented in Fig. 2. This stud *g* receives upon its outer end an arm g^2, (represented by dotted lines,) the end of said arm contacting with the end of a lever g^3, (also shown by dotted lines,) pivoted at g^4 on a stud extended from the overhanging part of the column, the rear end of said lever g^3 having joined to it the upper end of a rod g^5, (also shown by dotted lines,) said rod being extended, let it be supposed, down to the floor, where it may have attached to it a treadle upon which the operator may put his foot when it is desired to turn the arm g^2 and the lug or projection *g'* and cause it to move the box or bearing D slightly against and to compress the spring *f*, this being done to enable the rolls D^3 B^3 to be separated slightly, as when the work is to be applied or withdrawn or whenever a vertical seam comes in the top which is being folded or creased, it being understood that the apparatus herein described is adapted to fold or crease a top of any form and either before or after uniting the two parts of the top into one.

The drawings show but one part of the top; but the apparatus would work equally well if the rear edge *h* of the lining and top were united to a back strip or in a back seam, as commonly practiced in the manufacture of boots and shoes.

In order that the two rolls B^3 and D^3 may move together in unison, the shaft B' has been provided with a pinion *m'*, which engages with a pinion *m* of the same size applied to the shaft D'.

Let it be supposed that the lining and top have been united, as stated, wrong side out, by a line of stitching, as at a^2, and that the lining has been turned inwardly, as represented in Fig. 3, so that the lining conceals the stitching a^2. In this condition the top will be applied to the horn E, and, as shown, the lining will occupy a position in a lower horizonital plane, leaving the leather part *a* of the top lying directly on the upper edge of the horn, so that only the leather part will be creased in the line a^4. In this condition the operator, holding the lining in one hand and the leather part of the top in the other hand, will strain the same down onto the thin edge of the top of the horn and will move the top on the horn in the direction of the arrow, Fig. 1, until the lining and top come into the bight of the rolls, and as soon as the rolls get hold of the top and lining the said rolls rotate rapidly and feed the top and lining positively along the horn, while the operator yet continues to hold the same down firmly on the thin upper edge of the horn, the rolls acting to fold and crease in a defined manner the leather of the upper, the crease being so thoroughly defined that it will retain its position while another operator takes the folded top to a sewing-machine to receive the stitching a^5 to define the bead about the upper edge of the top.

The thin-edged horn or work-support is made adjustable vertically and horizontally to thereby accommodate for folding material of different thicknesses or as the requirements of the work may demand.

The rolls D^3 B^3 constitute feeding mechanism to draw the material over the horn, and the space between the rolls where they normally contact together is tapering, so that the material lying upon the top of the horn may have proper entrance between the rolls to be pressed, folded, and creased.

It will be noticed that the upper sides of the roll (see roll D^3) are chambered, and in the chamber I may place a bit of felt, so that any oil used to lubricate the shafts *b'* or *d'* running down said shafts may come upon said packing, and owing to the groove the oil will not escape and get onto the work.

Preferably the inner wall of the chamber will be somewhat inclined or tapered from its top outwardly and downwardly.

The apparatus described may be used to fold and crease leather for any purpose.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for setting the crease in the tops of boots or shoes, a thin-edged work-support or horn adapted to receive upon it and support the material to be folded and creased combined with mechanism near the end of said horn to engage the folded material only at or near the line of said crease to pinch and flatten the same; substantially as described.

2. A thin-edged horn adapted to receive upon it and support the material to be folded, and creased, combined with rolls located on opposite sides of said horn and near the end thereof to engage the folded material only at or near the crease thereof to pinch and flatten the same, a spring-controlled bearing supporting the shaft of one of said rolls and normally acting to keep the rolls pressed one toward the other; substantially as described.

3. A thin-edged horn adapted to receive upon it the material to be folded and creased, combined with a pair of rolls having their peripheries somewhat cut away or reduced to leave a tapering opening between them in which the folded part of the material may enter readily and be pinched, said rolls also acting to feed the material off from said horn, substantially as described.

4. In an apparatus for creasing leather, a work-support or horn having its upper edge beveled to receive upon it and support a fold of the material, combined with feeding-rolls to nip the material only at the crease or fold thereof and at a point close to the line of said edge to flatten and pinch the material in the line of the upper beveled edge of said horn, substantially as described.

5. In a machine of the class described, two shafts, each having a roll, a portion of the surface of each roll, being truncated, gearing applied to said shafts and meshing together to insure their rotation in unison, means to move one of said shafts positively, and a thin-edged horn to support the material to be folded and start the fold preparatory to the material being acted upon by the said rolls, substantially as described.

6. In a machine of the class described, a pair of rolls each having a truncated periphery, means to cause said rolls to be borne one toward the other by a yielding pressure, combined with an adjustable thin-edged horn, the adjustment of said horn vertically enabling the apparatus to be adapted to fold material of any thickness, substantially as described.

7. In a machine of the class described, two vertical shafts each provided with a roll having at its upper side a chamber to receive oil which may drip down from the shafts, said chambers obviating the escape of oil onto the exterior of the rolls, substantially as described.

8. A thin-edged work-support or horn adapted to receive upon it the material to be folded or creased, combined with rolls located on opposite sides of said horn to engage said material and pinch, flatten, and crease it together, the axes of said rolls being parallel to the plane of the horn; substantially as described.

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

WILLIAM J. DIX.

Witnesses:
GUY STANLEY,
JOHN B. KING, Jr.