

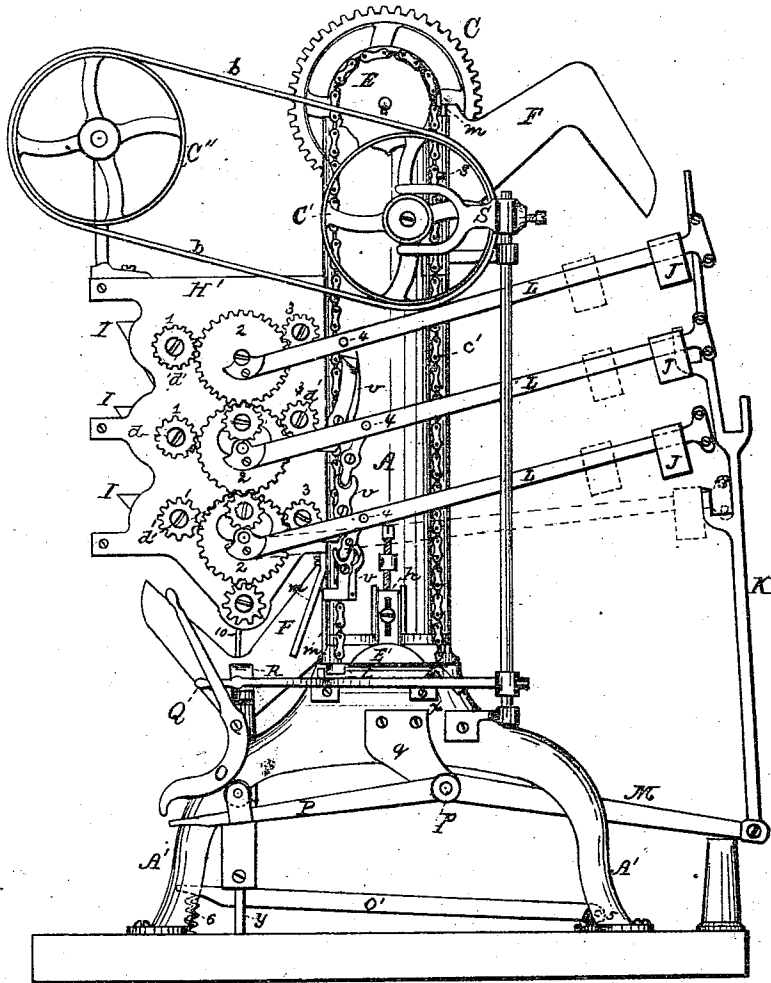
C. B. LONG.

Machine for Crimping Leather for Boots and Shoes.

No. 161,247.

Patented March 23, 1875.

Fig. 1.



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Fig. 2.

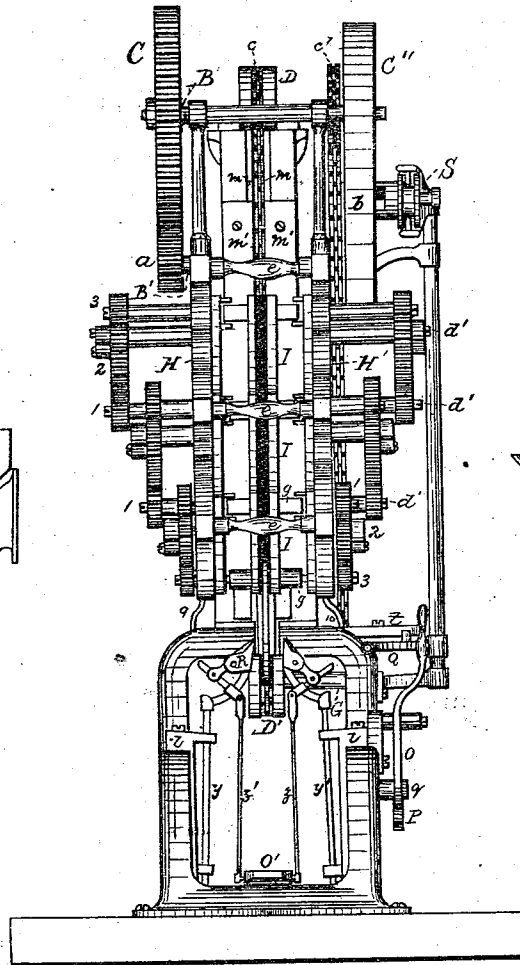


Fig. 3.

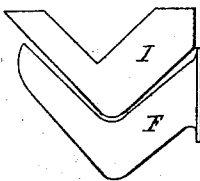
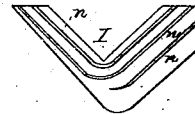


Fig. 4.



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Fig. 5.

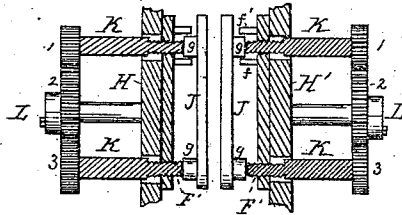


Fig. 6.

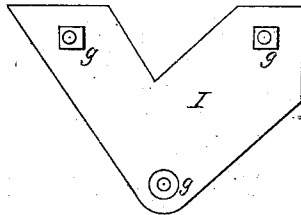


Fig. 9.

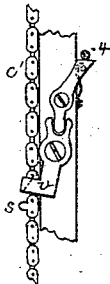


Fig. 10.

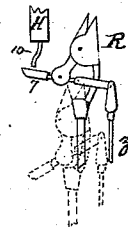


Fig. 7.

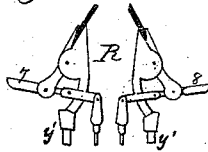
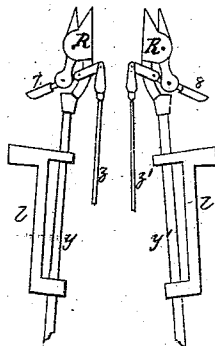


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES B. LONG, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF THREE-FOURTHS HIS RIGHT TO C. D. PERIAM AND JOHN D. FAITONTE, OF NEW-ARK, NEW JERSEY, AND GEORGE W. SWICK.

IMPROVEMENT IN MACHINES FOR CRIMPING LEATHER FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **161,247**, dated March 23, 1875; application filed January 28, 1875.

To all whom it may concern :

Be it known that I, CHARLES B. LONG, of Worcester, county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Crimping Leather for Boots and Shoes; and I do hereby declare that the following is a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings forming part of this specification :

The object of this invention relates to a crimping-machine for forming leather or other material for boots, shoes, and other similar purposes, so constructed that one handling of the same will be sufficient to complete the form desired, without being obliged to submit the material to the number of operations as has been the practice heretofore; also, to dispense with the use of the small projecting slides which have been applied to formers, and which not only injure the surface of the material but cause the same to stretch unevenly, and sometimes to tear; also, the arrangement of the series of compressing-jaws which I have adapted and so arranged that irregular or uneven pieces of material may be passed through the machine and out of the same in a finished condition, the first set of jaws being set a trifle wider apart than the next succeeding set, and so on, so that the last set will perfectly finish any grade of material, from the thickest cowhide to the finest calf-skin or kid without injury to it. Another important feature is the means which serve not only as a clamp to hold the material for the moving forms, but also as a guide to regulate the position of the material to be crimped, so that it may be received properly by the jaws, in order to prevent the edges from overlapping.

My invention consists, first, in a novel means for expanding and compressing the crimping jaws or plates between which the leather to be crimped is drawn by suitable forms; second, in a device for holding the leather to be crimped in the proper position to be received by the moving forms; third, in an

automatic throw-off gear for stopping the formers at the proper point for receiving the material to be crimped; and, fourth, in the devices for operating the weighted levers which expand and compress the crimping-jaws.

Having thus in general terms premised the principal features of the present invention, I will now proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a crimping-machine which embodies my improvements. Fig. 2 is a front view of the same. Fig. 3 is a detail view of one of the crimping-jaws and one of the forms. Fig. 4 is a detail side view of one of the crimping-jaws, showing the grooves in the side of the same. Fig. 5 is a section of the frame-work of the machine, showing the mode of the attachment of the crimping-jaws within the same, and their operation by means of the male and female screws. Fig. 6 is a detail side view of one of the forms, showing position of lugs upon the same. Figs. 7, 8, and 10 are detail views of the gripping-jaws for holding the leather to be crimped in a position to be received by the moving forms. Fig. 9 is a detail view of the pivoted crank for operating the weighted levers.

Similar letters of reference occurring on the several figures indicate like parts.

A represents a hollow vertical post supported by legs A' in such a manner as to leave an open space below the bottom of the post, so that the forms moving continuously in one direction—up on one side and down on the other side of the post—clear the floor when swinging around the lower end of the machine. This post carries, at its extreme upper end, a horizontal shaft, B, which is revolved by means of a large spur-wheel, C, attached to one end of said shaft, and which is operated, in its turn, by the pinion *a*, attached to the end of horizontal shaft B'. The shaft B' is provided with a pulley, C', or its equivalent, arranged on the end of said shaft opposite the pinion *a*, and which is put in motion by the driving-wheel C'', carrying the belt *b*. At the center of the upper shaft B, and in

the middle of the post A, is secured a chain-wheel, D, which moves an endless chain, (represented in the drawings at *c* as flat links,) which runs down on one side of the interior of the post over said wheel D, and upon the other side over the chain-wheel D', arranged on a shaft, G, at the bottom of the post. To this endless chain are fastened forms, (represented at F,) equal distanced, and which move with the chain. They are represented as about three-sixteenths of an inch thick, although they may be varied in accordance with the different degrees of thickness of the material which is to be crimped. They have the shape on their front edge that the leather will have after crimping—one leg of the angle for the foot part, and the other leg for the leg part of the boot or shoe. The part *m* of the forms nearest to the post moves up and down in a long straight groove, *m'*, in the same, and are guided by slides *n'*, bolted on the post A, so that the forms F, in their downward and upward passage, have to pass between these two slides, as shown in Figs. 1 and 2. To the end of the upper shaft B, on the outside of the post A, and opposite the gear-wheel C, is secured a chain-wheel, E, which moves an endless chain, *c'*, which runs down on one side over said wheel, and up on the opposite side over the chain-wheel E', arranged on the shaft G, at the bottom of the post A. The endless chains *c* and *c'* are stretched when the same becomes loose by means of the adjustable bearings *h*, in which the roller-shaft G, at the foot of the post A, is supported. A frame for holding the crimping jaws or plates I in their proper position is arranged at the front of the machine, above the legs A', and is composed of the two sides H H', the inner ends of which are secured to the post A, and the outer ends braced by cross-rods *e*. The inner faces of these sides are provided with lugs *f f'*, one above the other, and having sufficient space between them to allow the lugs *g* on the crimping jaws or plates I to rest therein.

The peculiar arrangement and adjustment of the crimping jaws or plates I within the frames H H' is the subject of a closer description. The jaws or plates I are solid, and their faces, which are turned toward each other, have grooves *n n n*, Fig. 4, cast in them; but the faces are preferably planed and smooth, so that the leather will not be scratched. These plates I are provided, at each angle and end, with lugs *g*, as shown in Fig. 6, cast thereon, and which are adapted to fit loosely between the two smaller lugs *f f'* on the inner faces of the sides H H', said plates being pressed inwardly toward each other, when the machine is in operation, by means of male and female screws, represented at F' in Fig. 5, arranged on the inner ends of the shafts K, which pass through suitable openings in the sides H H', and press against the lugs *g* of the plates. The shafts K are provided with spur-and-pinion wheels 1, 2, and 3, on their outer ends, and are operated by the

weighted-lever arm L, attached at one end to the spur-wheel 2. The weighted levers L are provided with the adjustable weights J, which may be set on the lever at any point requisite for any degree of pressure which may be desired. The levers are raised to the position shown in Fig. 1 by the upright forked arm K', which is pivoted in the end of the horizontal bar M, attached rigidly to the shaft *p*, arranged in bearings *q*, and which may be operated by the levers O P, either in combination or separately. In raising the weighted levers L the spur-wheel 2, to which it is attached, revolves the pinions 1 3, thereby withdrawing the pressure of the screws from the crimping jaws or plates I. The space between the crimping-jaws I may be regulated more or less by turning the screws 1 and 3 either out or in, as the case requires, by slipping the gear 2, or by loosening the clamping-screws which secure the pinions to the shaft K. I do not confine myself to the particular devices shown for automatically operating the said screws, as a rack would serve to operate the same, actuated by an eccentric, weight, or other suitable means. To the endless chain *c'* are attached projecting lugs *s*, equal distanced, and moving with the chain. At the time when the form arrives under the gripping-jaws R the projecting lug *s*, operating against the spring-catch *t*, releases the hand-lever Q, which is provided with a spring, *x*, thereby throwing off the coupling-gear S from the pulley C', which immediately stops the upward motion of the form F until the leather is received and properly adjusted thereon. The lever Q is then pushed back to its place, which operates and causes the clutch or coupling S to engage in its proper connection, and, the machine being put in motion thereby, the lug *s* continues its ascent until it strikes the pivoted crank *v*, which draws the same back and allows the pin 4 on the weighted lever L to slip off, which causes the weighted lever to drop, as shown in dotted lines in Fig. 1, which operation revolves the wheels 1, 2, and 3, thus causing the jaws or plates I to press in and against the moving form F, which carries the leather. The construction of the series of crimping jaws or plates I and their mode of operation, through the medium of the right-and-left-hand-threaded screw, weighted levers L, and lugs *s* on endless chain *c'*, are substantially the same in the whole as in a single pair, and the number may be increased or diminished, as the nature of the work may seem to require. It is desirable that the crimping jaws or plates I should be constructed with a sharper angle than the form, as shown in Fig. 3, although I do not limit myself to any specific degree of angle. The object of so constructing the same is such that, in the operation of my invention, the lower angle of the plate I first presses upon the leather on the center of the form F as it ascends, thereby stretching or carrying all inequalities of the leather out toward the ends of the form when

the angles of the forms and the pressing-jaws I vary, substantially as shown.

To the front part of the machine, and situated directly under the frame-work H H', is placed a pair of gripping jaws or clamps, R, of peculiar construction. The stationary jaw of the grippers are arranged at the upper end of the sliding rods *y y'*, which move in the frame or bearings *l* attached to the legs A', as shown in Fig. 2, while the clamping-jaws of the same are operated by rods *z z'* attached to the foot-lever O'. This foot-lever may be pivoted to the rear of the machine, as indicated at 5, and is provided at the front with a spring, 6, to keep that end in a raised position, as shown, and has a groove or slot extending through the center of the same, so as to allow of the passage of the forms F, although the same may be formed and arranged in any other manner that would serve the purpose intended. I would also remark that the gripping device may be varied in its application.

In the operation of the above-described machine, the sides of the leather to be crimped are placed in the proper position in the gripping-jaws R, and secured therein by pressing down the foot-lever O'. The weighted levers L are then raised to the position shown in Fig. 2 by means of the hand or foot levers O P, the machine put in motion, and the form F, carrying the leather, commences its ascent between the series of compressing-jaws I. As the form moves up, and between the jaws I, the clamping-jaws R, holding the edges of the leather, also move up with the form until the same is fairly within the crimping-jaws I, and until the pivoted handles 7 8 of the clamping-jaws strike the projecting pins 9 10 arranged on the bottom of the frames H H', thereby throwing the jaws open and releasing the leather. The gripping-jaws R then fall back to their former position, to receive the leather for the next form. At the time when the form F, carrying the leather to be crimped, is fairly within and between the crimping-plates I, the lug *s*, moving with the chain, strikes the pivoted crank *v*, which operation releases the pin 4 on the weighted lever, thereby causing it to drop in the fork of the arm K', thus setting in motion the wheels 1, 2, and 3, which operate the threaded right and left hand screws, which press against the plates I.

By this operation of parts, the crimping-plates I are forced toward each other, and against the moving form F, thereby causing the leather to be spread, stretched, and evenly compressed over the said form. The same operation is repeated by the next succeeding set of jaws, and their similar attachments, and so on, until the leather is carried out, and automatically released in the rear of the machine.

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

1. The pressure-plates I within the frames

H H', provided with projections *f f'*, in combination with the right and left hand screws F', all substantially as and for the purpose set forth.

2. The presser-plates I within the frames H H', operated automatically by the right and left hand screws F', in combination with the gears 1, 2, and 3, and the weighted levers L, all arranged substantially as and for the purpose set forth.

3. In a leather-crimping machine, a series of crimping-jaws, I, arranged one above the other, in combination with a series of levers adapted to vary the gripping power of the jaws, and to act independently upon each pair of jaws, all substantially as and for the purpose described.

4. The jaws or plates I, provided with right and left threaded devices for their positive adjustment, in combination with the weighted levers L, substantially as described and shown.

5. The clamping-jaws R, provided with the stems *y y'* and levers 7 and 8, and adapted to be operated by rods *z z'*, all substantially as and for the purpose set forth.

6. In combination with the clamping-jaws R, provided with a suitable guide for direction, the ear-lever 7, connecting-rod *z*, and lever O', substantially as and for the purpose set forth.

7. The combination of the lug *s*, spring-catch *t*, lever Q, and upright shaft, provided with a forked device for operating the clutch for engaging or releasing the pulley C', all substantially as described, and for the purpose set forth.

8. The combination of hand-lever O and pivoted lever P, forked arm K' and weighted lever L, all arranged substantially as and for the purpose set forth.

9. In a crimping-machine, in combination, the endless chain *c'*, provided with projections *s* and the pivoted cranks *v*, all arranged substantially as and for the purpose set forth.

10. In a crimping-machine, the combination, with the presser-plates I, of the projections *f f'*, right and left hand screws F', gears 1, 2, and 3, levers L, and weights J, substantially as and for the purpose set forth.

11. In a crimping-machine, the combination of the plates I, projections *f f'*, right and left screws F', gears 1, 2, and 3, levers L, forked upright K', and pivoted levers P and M, substantially as herein set forth.

12. In combination with the plates I and their supporting projections *f f'*, right and left screws for operating said plates, and the forms F, substantially as and for the purpose set forth.

13. The combination of the forms F, of the plates I, right and left screws F', gears 1, 2, and 3, weighted levers L, pivoted cranks *v*, and endless chain *c'*, provided with projections for automatically operating or applying pressure to the material in its passage between the jaws, all substantially as set forth.

14. The combination, with the form or forms

F, of the plates I, right and left screws F', gears 1, 2, and 3, weighted levers L, pivoted cranks *v*, projection 4, endless chain *c'*, provided with ears *s*, chain-wheel E, gear C, and driving-shaft B', substantially as and for the purpose set forth.

15. The combination, with the form F, of plates I, right and left screws F', gears 1, 2, and 3, levers L, pivoted cranks *v*, chain *c'*, provided with lugs or ears *s*, chain-wheel E, gear C, driving-shaft B', and clutch and lever S, substantially as and for the purpose set forth.

16. The combination of the presser-plates I, pressure-screws F', gears 1, 2, and 3, lever L, forked rod K, levers P and M, lever O', clutch-

wheel C', gear C, chain-wheel E, chain *c'*, lug *s*, and pivoted cranks *v*, all arranged substantially as and for the purpose set forth.

17. The combination of clamping-jaws R, pivoted ear or lever 7 8, rods Z Z', foot lever or treadle O', with projections 9, 10, for automatic disengagement of the material, substantially as set forth.

In testimony that I claim the foregoing described invention I have hereunto signed my name before two subscribing witnesses.

CHARLES B. LONG.

Witnesses:

JOHN DANE, Jr.,
M. M. COOKE.