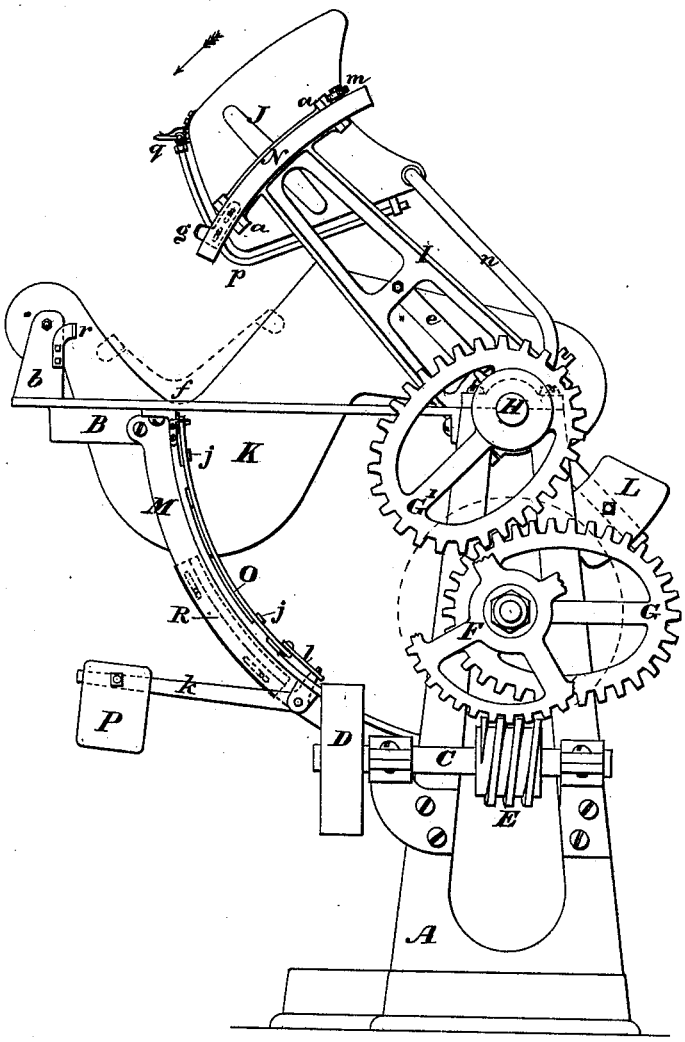
2 Sheets—Sheet 1.

C. VAN HOUSEN.
Crimping-Machine.

No. 214,972. Patented April 29, 1879.

Fig. 1.



ATTEST:

Walter W. Scott

Arthur C. Fraser.

INVENTOR:

Casper Van Housen

by his attorneys

Burke, Fraser & Bennett

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Fig. 2.

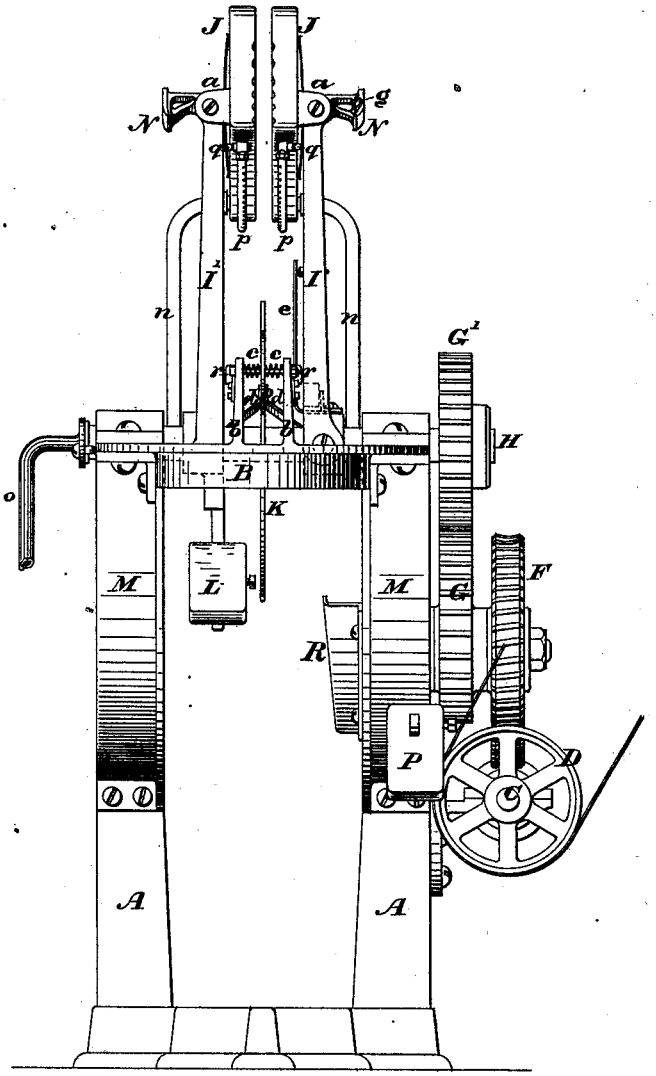
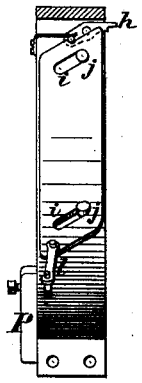


Fig. 3.



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UNITED STATES PATENT OFFICE.

CASPER VAN HOUSEN, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND WILLIAM F. STARK, OF SAME PLACE.

IMPROVEMENT IN CRIMPING-MACHINES.

Specification forming part of Letters Patent No. **214,972**, dated April 29, 1879; application filed February 14, 1879.

To all whom it may concern:

Be it known that I, CASPER VAN HOUSEN, of the city, county, and State of New York, have invented certain Improvements in Crimping-Machines, of which the following is a specification.

This invention relates to a machine for crimping the leather for the uppers of boots and shoes, or for other purposes in which the crimping-jaws borne upon radial arms traverse a circle, performing the operation of crimping while passing on either side of a stationary forming or crimping plate upon which the leather or material to be crimped rests.

By suitable mechanism the crimping-jaws are caused to close automatically upon the forming-plate at the proper time, and to move at different rates of speed at different points of their circle of travel, so as to move most rapidly when not employed.

The invention also contains other important features, all of which will be more fully hereinafter set forth.

In the drawings, Figure 1 is a side elevation of my improved crimping-machine. Fig. 2 is a front elevation of the same. Fig. 3 is a detail adapted to illustrate the mechanism for moving the jaw laterally.

A represents a strong supporting-frame for the operative mechanism, and B a bracket-frame projecting therefrom. C is the driving-shaft, which has suitable bearings in brackets bolted to the main frame, and bears the driving-pulley D and a worm, E. This worm meshes with a worm-wheel, F, to the boss of which is fixed an elliptic gear-wheel, G, the two rotating on a shaft or stud projecting from the main frame.

The elliptic gear G meshes with another, G′, of the same kind, mounted on the extremity of a shaft, H, which has bearings at the top of the main frame, and extends across the same. On this shaft are mounted two arms, I I′. One of these is shown as fixed rigidly on the shaft, and the other pivoted, hinged, or swiveled to the shaft, or to a collar or boss fixed rigidly thereon. The object of this is to give the arm some lateral movement. Both arms may, however, be swiveled in this manner if desired; but I have only shown one, I, so arranged.

J J are the crimping-jaws, each of which is provided with a pair of lugs, by means of which the jaws are hung to the arms I I′, as at *a a*. These pivoting-points are arranged at the same distance from the center of the shaft H, so that a circle drawn with the axis of said shaft as a center may be made to pass through both. The jaws thus hung will have some play on the pivots, and will be the better enabled to adjust themselves to the leather in crimping.

K is the forming or crimping plate. This plate rests upon and is supported by the shaft H at its rear end between the arms I I′, and at the front end it rests upon a pin or bolt which passes through two lugs, *b b*, on the bracket-frame B.

The forming-plate has room for considerable lateral movement or adjustment, and I prefer to arrange spiral or other suitable springs *c c* on each side of it at the front end, to preserve, measurably, its central arrangement with respect to the jaws. At the rear end, where it rests upon the shaft, it may be provided with elastic braces *d d* for the same purpose.

L is a counter-weight, to balance the weight of the arms I I′ and the crimping-jaws J J. M M are curved braces, which support the frame B, the inner faces of which serve as guides for the bearing-plates N N, affixed to or forming a part of the arms I I′. The swiveled or pivoted arm I is pressed outwardly by the spring *e*, and rests against a stop. (Shown in dotted lines in Fig. 2.)

So far as described the operation is as follows: We will assume that at starting the arms I I′ stand erect, as in Fig. 2. The machine is started, the jaws moving in the direction of the arrow in Fig. 1, and the leather to be crimped is placed upon the forming-plate at *f*, being held in position by the hands until the jaws descend far enough to clasp it. When the jaws descend far enough to compress the leather and begin to crimp they are brought together upon the forming-plate by means of a mechanism which I will now describe.

Heretofore the jaws have stood apart, as shown in Fig. 2, in which position the bearing-plates N N fit and play between the inner faces of the curved braces M M; but at the point

in their descent above mentioned a tappet, *g*, on the plate N strikes a spring-lever detent, *h*, (see detail, Fig. 3,) on the rear curved face of the brace M. A pin on this detent, which has heretofore rested behind a shoulder on a sliding plate, O, is now raised, and the said plate is left free to slide. This plate has oblique slots *i i*, engaged by fixed screws or pins *j j*, and is arranged, when freed, to move laterally and obliquely inward, its edge remaining parallel with the inner face of the brace M. The movement of the plate is effected by means of a weight, P, on an actuating-lever, *k*, the short end of which connects, by a link, *l*, with the lower end of the plate O. The weight P, which is adjustable along the lever so as to exert only the force required for the particular kind of work in hand, forces the plate O inward, and it, in turn, presses the arm I inward, thus bringing the jaws J J together upon the material to be crimped. The jaws J J, clamped firmly upon the leather, continue to move on down until they pass the leather, and the work is accomplished. As the jaws move on down a friction-roller, *m*, or some equivalent projection, engages the obliquely-arranged rim or flange of a plate, R, fixed to the inside of the brace M. This forces the bearing-plate N, to which the roller *m* is attached, outward, pushing back the plate O to its former position, and raising the weight P. When the plate is back far enough the pin on the detent *h* drops into its place, and holds it until the jaws come round again. The crimped leather is removed from the forming-plate, and another put in its place for crimping, while the jaws are making the remainder of their circuit of travel. Then the same operation as above described is repeated.

To cause the jaws to travel more rapidly during that part of their revolution in which they are not operating on the leather, I prefer to employ the elliptic gears G G′, the latter arranged with its major axis approximately at right angles to the radial arms I I′, as shown in Fig. 1; but eccentric or other irregular gears may be substituted with measurably good results.

The jaws J J are made or cast hollow, and are connected by pipes *n n* with the shaft H, which is also hollow, and arranged to receive steam from some steam-generator through a pipe, *o*. The steam—or it may be hot water, but steam is preferable—serves to keep the jaws warm, in which condition they act with better effect upon the leather.

Attached to each of the jaws J, and tapping the hollow of the same at one end, are pipes or tubes *p p*, bent to conform to the lower contour of the jaws, and arranged close to the same. These tubes have fine perforations arranged to throw jets of steam or spray upon the leather just as the crimping operation commences. These tubes are provided with spring-cocks *q q* at or near the points where they tap the jaws, which cocks are arranged to be opened for an instant by tappets or projections *r r*, affixed to the lugs *b b*, or to some other fixed part of the frame. The tappets are arranged to open the cocks and permit jets of steam or spray to be thrown upon the leather at the proper moment, which moistens the material just enough to cause it to crimp properly, but not enough to injure its surface.

I contemplate employing this jet device most particularly when crimping fine and delicate leathers; but it may be used with all leathers to good advantage. When I do not wish to employ it I remove the tappets temporarily.

To avoid the necessity of providing a number of forming-plates, K, having different degrees of curvature at *f*, I contemplate, in some cases, mounting a supplementary plate at *f* upon the plate K, the said supplementary plate having a different degree of curvature or concavity, and this plate may be attached to the main plate in any convenient manner.

As the tappet *g* and cam-plate R are both capable of adjustment within limits they may be set to trip and set the weight P and its attachments at any desired moment or any point in the travel of the jaws that may be practical or desirable.

It will be seen that the lower extremities of the bearing-plates N N project beyond the lower points of the crimping-jaws. This insures their engaging the faces of the guiding-braces M M or the sliding plate O before the jaws are brought together upon the material to be crimped, and prevents their being forced out of parallelism by wedging on the leather. The arms I I′ are liable to twist by the torsional strain and permit the jaws to open at the bottom unless measures are taken to prevent it. The jaws being hung or pivoted approximately in the center of their width, and at points at equal distances from the center of their orbits, it will be seen that there is little tendency for them to turn when forced upon the crimping-plate. The pivot-points *a a* are in the same transverse plane with the bearing-plates N.

It will be noticed that when the weight P is released the jaws are suddenly and forcibly closed upon the crimping-plate, and with considerable impact from momentum. This is an important feature, and possesses many advantages over a gradual pressure.

Having thus described my invention as embodied in the preferred form, I wish it understood that I do not confine myself strictly to the mechanical construction shown, as some of the parts may be varied in form and equivalents be substituted without materially departing from my invention—as, for instance, both arms may be swiveled on the shaft H, and each be provided with means for automatically pressing it inward upon the plate K.

For the weight P a spring may be substituted, and some known equivalent for the lever *h* may be employed.

It is also obvious that in lieu of a spring-cock, *q*, that will close of itself, and a single

tappet or trip, *r*, to open it, one tappet may be employed to open and one to close the valve, and these might be adjustable, so as to leave the valve open for a greater or less period of time, according to the kind of material operated upon.

In lieu of a single driving-pulley, D, tight and loose pulleys might be employed, and I contemplate providing the shaft H, or some one of the gears, with a trip arranged to automatically shift the driving-belt and stop the machine while the jaws are yet above the forming-plate, or at some point in the inoperative part of their circuit.

I claim—

1. In a crimping-machine, a non-rotative forming-plate, K, in combination with crimping-jaws J J, arranged to be carried around and concentric with a rotating shaft, H, so as to pass on opposite sides of the forming-plate, the said jaws being hung or attached to radial bearing-arms by means of two pivots arranged concentric with the shaft H, substantially as set forth.

2. In a crimping-machine, the crimping-jaws hung or attached to radial arms I I′ on pivots *a a*, arranged concentrically with reference to the shaft H, which bears said radial arms, and the said jaws arranged to be carried around in a circle, in combination with a non-rotative forming-plate and an automatic mechanism whereby the said jaws are caused to close upon the said plate or the material to be crimped, substantially as set forth.

3. In a crimping-machine, the combination of the crimping-jaws J J, arranged to be carried around in a circle, as set forth, the shaft H, the elliptic gears G G′, or their equivalents, arranged substantially as shown, and suitable gearing for communicating motion from the driving-shaft to the gear G, substantially as set forth.

4. The combination of the rotating shaft H, the radial arms I I′, the jaws J J, pivoted or hung thereto, as at *a a*, and the forming-plate K, all arranged substantially as set forth.

5. The combination, in a crimping-machine, of the arms I I′, one or both swiveled on the shaft H, and bearing jaws J J, and an automatic device or mechanism, substantially as shown, whereby the said jaws are caused to close upon the forming-plate at the proper moment, substantially as set forth.

6. In a crimping-machine, the automatic mechanism for causing the jaw or jaws to close upon the forming-plate, which consists of the sliding plate O, the adjustable weight P, or its equivalent, the trip or tappet *g*, and the lever *h*, or its equivalent, all arranged to operate substantially as set forth.

7. In a crimping-machine, the combination of the hollow shaft H, pipe *o*, pipes or tubes *n n*, and hollow jaws J J, all arranged to operate substantially as set forth.

8. In a crimping-machine, the spray-pipes *p p*, provided with valves or cocks *q q*, and tappets *r r* or other projections or fixed parts to operate the cocks, all arranged to operate substantially as set forth.

9. The combination of the hollow jaws J J, adapted to receive steam or water during their operation, and the pipes *p p*, connected therewith and adapted and arranged to throw jets or sprays upon the material being crimped, substantially as set forth.

10. The forming-plate K of a crimping-machine, arranged to rest upon the shaft H at its rear end, and adapted to be maintained in a central position between the arms I I′, and with respect to the jaws J J, by means of braces *d d* and springs *c c*, substantially as set forth.

11. In a crimping-machine, the crimping-jaws J J, hung upon the radial arms I I′ by means of pivots *a a*, the pivotal axis being at right angles to the arms I I′, and the pivot-points *a a* at equal distances from the center of the shaft H, from which the arms radiate, substantially as set forth.

12. In a crimping-machine, the combination of the shaft H, arms I I′, bearing-plates N N, jaws J J, forming-plate K, and guides M M, when arranged with respect to each other substantially as shown—that is to say, the bearing-plates arranged to engage or pass between the guides M M before the advancing points of the jaws engage the material to be crimped, as and for the purpose set forth.

13. In a crimping-machine, the combination of the weight P, or its substantial equivalent, a suitable intermediate mechanism whereby the weight when tripped is caused to act upon and close the jaws, and the tappet *g*, arranged to be adjusted so as to trip the weight and release it when the jaws have reached the desired position in their circle of travel, substantially as shown.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CASPER VAN HOUSEN.

Witnesses:

HENRY CONNETT,

WALTER W. SCOTT.