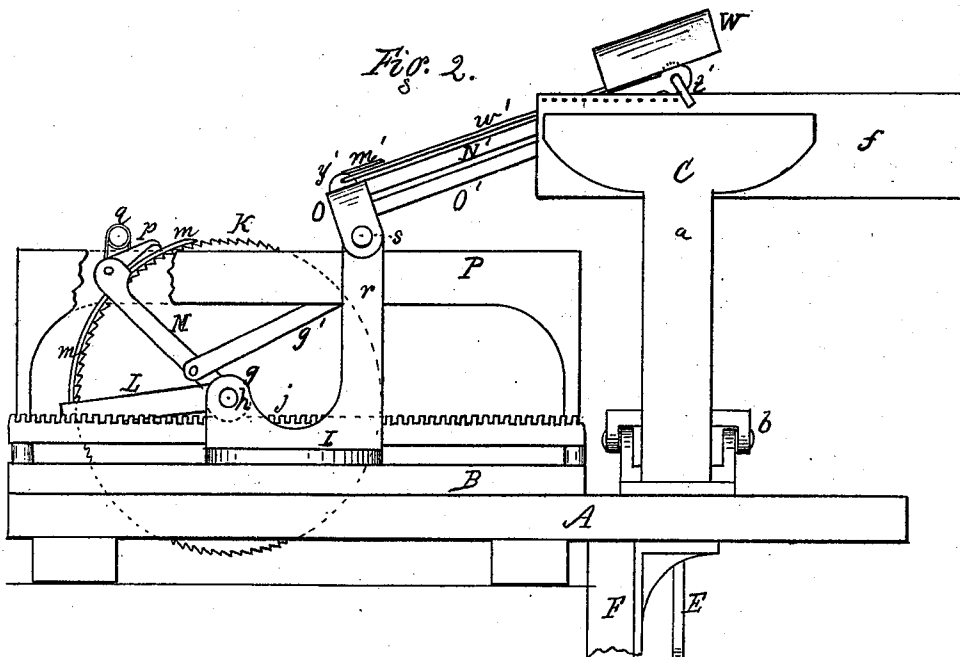
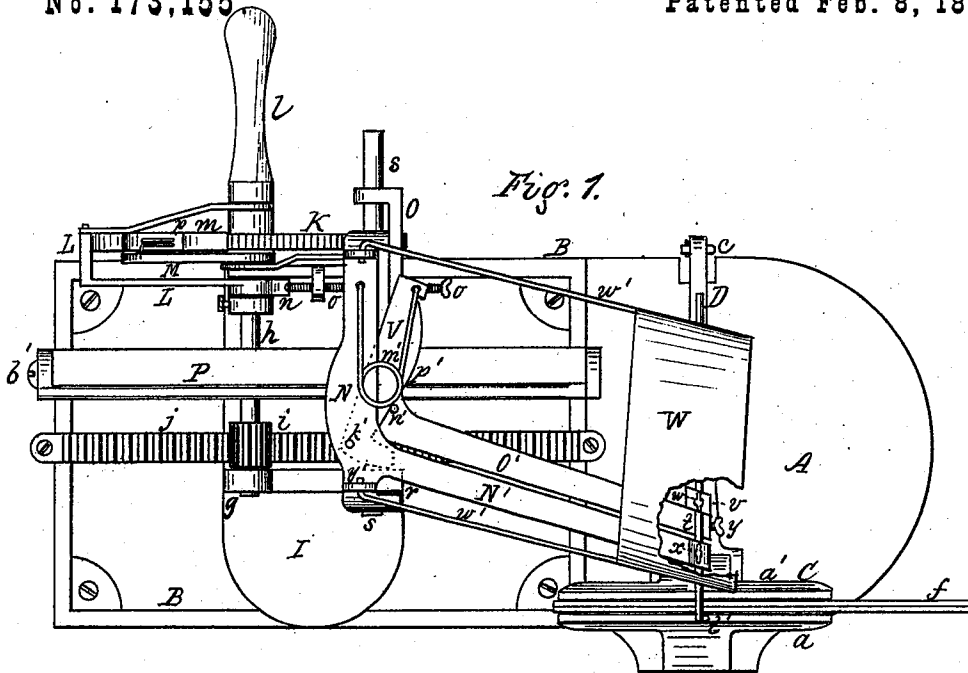


W. BARRY.
HARNESS-MACHINE.

No. 173,155

Patented Feb. 8, 1876.



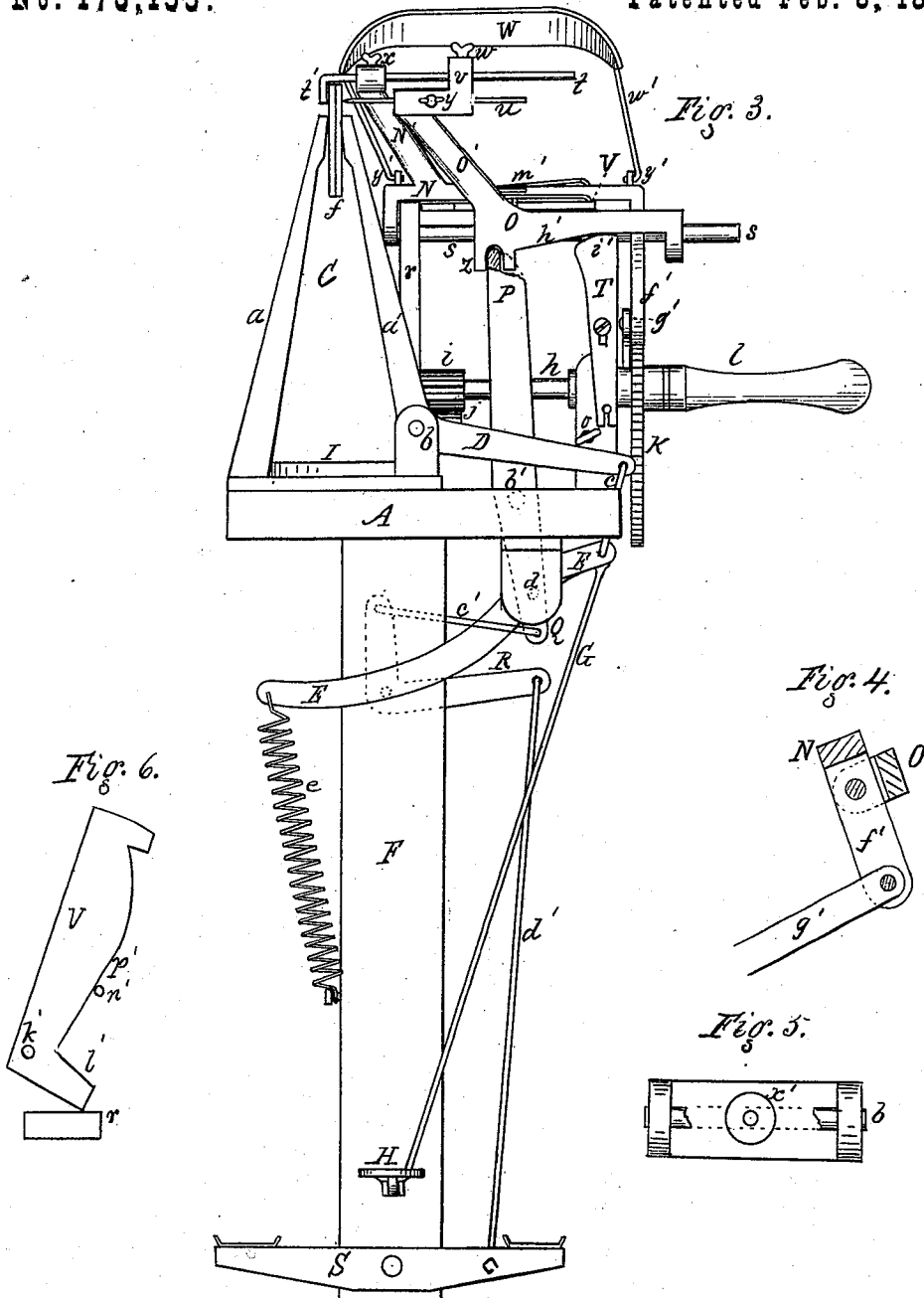
Witnesses.
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UNITED STATES PATENT OFFICE

WILLIAM BARRY, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN HARNESS-MACHINES.

Specification forming part of Letters Patent No. 173,155, dated February 8, 1876; application filed April 8, 1873.

To all whom it may concern:

Be it known that I, WILLIAM BARRY, of the city of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Punching and Stitching Leather; and I do declare that the following is a full, clear, and exact description of the construction and operation of the same.

This machine is intended for stitching heavy leather, such as harness, &c., where waxed threads are used, but it is also adapted to lighter uses. The principle involved consists in holding the leather in a clamp, while the awl is intermittently fed along the length of a single stitch at a time, and then is made to perforate the leather, after which the threads are passed through by hand; or, vice versa, the punching apparatus may be made stationary, while the clamp that holds the leather may be fed intermittently, all as hereinafter described.

In the drawings, Figure 1 is a plan of my machine; Fig. 2, a side elevation; Fig. 3, an end or front elevation; Figs. 4, 5 and 6, detail views.

A represents a table, which is firmly screwed to a bench or other support. B is a frame screwed upon the table and holding the working parts. C is the clamp for holding the leather. This clamp is similar to an ordinary vise, having one side, *a*, stationary, while the other side, *a'*, is jointed at *b*, so as to be opened for inserting or removing the leather. The movable part of the clamp is swiveled or jointed, as shown at *a'*, Fig. 5, so as to turn horizontally, to adapt the clamp to holding leather of varying thickness. D is a stiff arm connected with the hinged side of the clamp. To the end of this arm is connected a link or connection, *c*, which extends to the end of a lever, E, Fig. 3. The lever E is pivoted at *d*, and with its long arm is connected a coiled spring, or equivalent, *e*, attached to the standard F, by which the proper reaction is produced to act through the medium of the lever E, link *c*, and arm D, to press the clamp together.

Instead of this, any equivalent arrangement may be used to close the clamp. G is a rod connecting the end of the lever E with

the treadle H, pivoted at the foot of the standard. By depressing the treadle with the foot, the clamp will be opened. Different means may also be used for opening the clamp.

The leather, *f*, is simply placed in the clamp, edge up, and in line for sewing, as shown, and as soon as the clamped length is punched and sewed, it is unclamped and moved forward a new length, when the same operation is gone through again, the carriage being moved back at the same time to start anew.

I is a carriage resting crosswise of the frame B, and carrying the awl and other working parts by which the punching is done. At the rear it has bearings *g, g*, in which rests a shaft, *h*. At one end of the shaft is a pinion, *i*, which engages with a cog-rack, *j*, bolted fast to the frame B. When the shaft is turned the pinion, engaging with the cog-rack, gives motion to the carriage, and feeds it forward or backward. At the opposite end of the shaft is a ratchet-wheel, K, rigidly fastened thereon, and provided with an axial handle, *l*, by which the carriage is moved back when required.

Over the rear part of the ratchet-wheel is a gage-shield, *m*, attached to a frame, L, which is swiveled upon the shaft *h*, so as to turn up and down freely, and thereby throw the shield farther forward or back. The hub of the frame L has a tang or lug, *n*, against which rests the end of a gage-screw, *o*, for the setting of the position of the shield, which is done by bearing said tang in, or letting it out. A coiled spring, or equivalent, is also attached to the under side of the frame L, connecting it with the carriage I, to hold the shield down properly.

A rock-arm, M, is also swiveled upon the shaft *h*, and extends upward outside the periphery of the ratchet-wheel, and has pivoted to the head a pawl, *p*, pressed down by a spring, *q*, or equivalent. The point of this pawl plays over both the end of the shield and the ratchet-teeth of the wheel, and serves to give motion to the latter to feed the carriage forward. The length of the stitch will be regulated, therefore, by moving the shield up to cover more or less of the stroke of the pawl in passing over. When the shield is thrown up the pawl expends more of its stroke upon its smooth

surface and less upon the wheel, and when thrown back the reverse is the result. The length of the stitch there is adjusted with great ease and exactness. At the front the carriage I has bearings *r r*, in which rests a shaft, *s*. On this shaft are jointed two cross-heads, N and O, so arranged as to turn independently of each other. The head N turns up and down vertically, and has a slight end movement; but the head O has, in addition to the vertical movement, an end sliding movement of considerable extent upon the shaft *s*, to insert and withdraw the awl, as will presently be described. These heads have, respectively, arms N' and O', the one carrying a gage, *t*, and the other the punch or awl *u*. The gage is simply a wire or rod, which has a bent end, *t'*, overlapping and turning down over the outer edge of the leather, and nearly opposite the point of the awl, but leaving space enough for it to pass by through the leather. The object of the gage is to hold the edge of the leather in position against the pressure of the awl, and thereby insure perfect work. Something of the kind is necessary, for the leather, of itself, has not always sufficient stiffness and rigidity to oppose the pressure of the awl and keep its place. The shank of the gage is passed through a vertical slot in the head *v* of the arm O', and a set-screw, *w*, is made to bear upon it. By turning this set-screw up or down the distance between the gage and the awl is varied, and consequently the awl is made to enter the leather nearer to or farther from its edge, thus varying the position of the seam in the same degree. This is an important feature in my invention. The gage, therefore, in addition to holding the leather against the pressure of the awl, gages the width of the seam from the edge, whether that be in a straight line or curved. This arrangement also raises the arm O' when the arm N' is raised, as will be readily seen, thereby giving motion to the pawl by which the carriage is moved forward. This connection of the arms N' and O' may be produced by other means than that described, and with a similar effect. The gage is also held in position by a set-screw, *x*, in the end of the arm N'. The awl is simply straight, and held in the end of the arm O' by the set-screw *y*. On the under side of the arm O' is a fork, Z, Fig. 3, which embraces the upper edge of a rock-frame, P, which is pivoted, at *b' b'*, to the end of the frame B. At the front this rock-frame has an arm, Q, Fig. 3, which extends downward, and is connected by a link, *c'*, with the short end of an elbow, R, pivoted to the standard F. A connecting-rod, *d'*, connects the other end of the elbow with a double-acting treadle, S, pivoted at the bottom of the standard. The feet of the operator are placed upon this treadle, and the power communicated, through the parts *d'*, R, and Q, gives a reciprocating movement to the rock-frame P, and consequently throws the head O out and in. The end of the head N has an arm, *f'*, which is connected by a pitman, *g'*, with

the rock-arm M, by which means the movement is transferred to the pawl *p*, to feed the carriage along. On the under side of the head O is an incline, *h'*, which, when the said head is thrown outward, rides upon the cam-head *i'* of a vertically-adjustable bar, T. This action causes the arm O' to turn up, and with it the arm N', by which means free space is left for the operator to pass the threads through the holes punched in the leather, thereby making the stitch.

Between the heads N and O is located a flat plate, V, which is pivoted to the head N, as shown at *k'*, Fig. 1, and has an elbow end, *l'*, which rests against the bearing *r* of the carriage. The long arm of this plate swings free, and is connected by a spring, *m'*, with the head in such a manner that the tendency of the spring is to throw the long end of the plate outward. The upper surface of the head O has a pin, *n'*, which bears against the outer cam-surface *p'* of the plate. In the outward movement of the head O upon the shaft *s*, the pin, sliding against the plate, forces the same in against the spring *m'*, and withdraws the end *l'* from contact with the bearing *r*. In the back movement of the head upon the shaft, the head N (which also has a slight end movement) is slid endwise far enough for the gage *t* to drop sufficiently beyond the edge of the leather for its bent end *t'* to be sure to engage, when the pin *n'* releases from the cam-edge of the plate, the spring throws it out, and the elbow end *l'*, coming in contact with the bearing *r* as a fulcrum, forces the head N back upon the shaft, and thereby draws the end *t'* of the gage in contact with the leather.

If the edges of the leather always retained their upright form, and never spread apart or turned over, this movement would not be necessary; but sometimes they become spread or turned over, and it is necessary to throw the gage far enough over to properly engage, and then draw it up so as to hold firm against the pressure of the awl. Any equivalent arrangement which will produce the same effect may be used. For instance, an arm might be fastened to the carriage to extend outside the clamp *a*, with a rest and support for the edge of the leather in front of the stitch, and moved along with the carriage, so as not to interfere with the sewing, with a similar effect.

I employ over the awl and gage a shield or bonnet, W, so arranged as to prevent the catching of the loops of the thread, which frequently fly upward, as the threads are drawn by the hands of the operator, and are liable to catch on the projecting parts. I prefer to attach this shield to the rods *w' w'*, which are hinged in the bearings *y' y'* on top of the head N. By this means the shield may be elevated or thrown back at any time.

In this machine it will be noticed that the punching is done automatically, while the stitching or passing the threads through is done by hand, and the punching is done intermittently by the feeding up either of the punch-

ing apparatus or the clamp, while the other part remains stationary. Leather sewing can be done more practically this way than by giving a constant feeding motion to the leather by running it through rollers or otherwise, as, in the latter case, it is difficult to keep the edges of the leather in position and hold them properly against the pressure of the awl.

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

1. In a machine for punching and stitching leather, the combination of the fixed clamp C, the carriage I, and jointed arms N' and O', carrying the gage and awl, the whole operating substantially as described.

2. The combination, with the ratchet-wheel K, of the shield m, swinging frame L, and pawl p, with rock-arm M, all arranged to operate substantially as described.

3. The combination of the gage and awl heads and arms N N' O O', arranged upon the same shaft s, and having a vertical movement to raise and lower the gage and awl, produced by the horizontal sliding of the head O upon the shaft, substantially as described.

4. The combination of the head O, the incline h', and adjustable cam-bar T, arranged and operated substantially as described.

5. The combination of the head O, which receives an end movement on the shaft s, the

pivoted rock-frame P, having a flange which fits the fork z, and an arm, Q, connected with a rod reaching to the treadle, by which the motion is given, substantially as described.

6. The combination of the two arms N' O' and the gage t, connecting the two arms, and so arranged that the two arms carrying the gage and awl rise and fall simultaneously, substantially as described.

7. The combination of the awl u and the gage t, when arranged to rest upon the opposite side of the leather from the entrance of the awl, and resist its pressure, substantially as described.

8. The combination of the heads N O and the plate V, arranged to produce a reaction upon the gage to draw it to place on the leather, substantially as described.

9. In combination with the stationary jaw a, the movable jaw a', extension D, bearing b, and swivel-bearing a', all constructed and arranged substantially as described, for the purpose specified.

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

WM. BARRY.

Witnesses:

WILLIAM A. LODER,
R. F. OSGOOD.