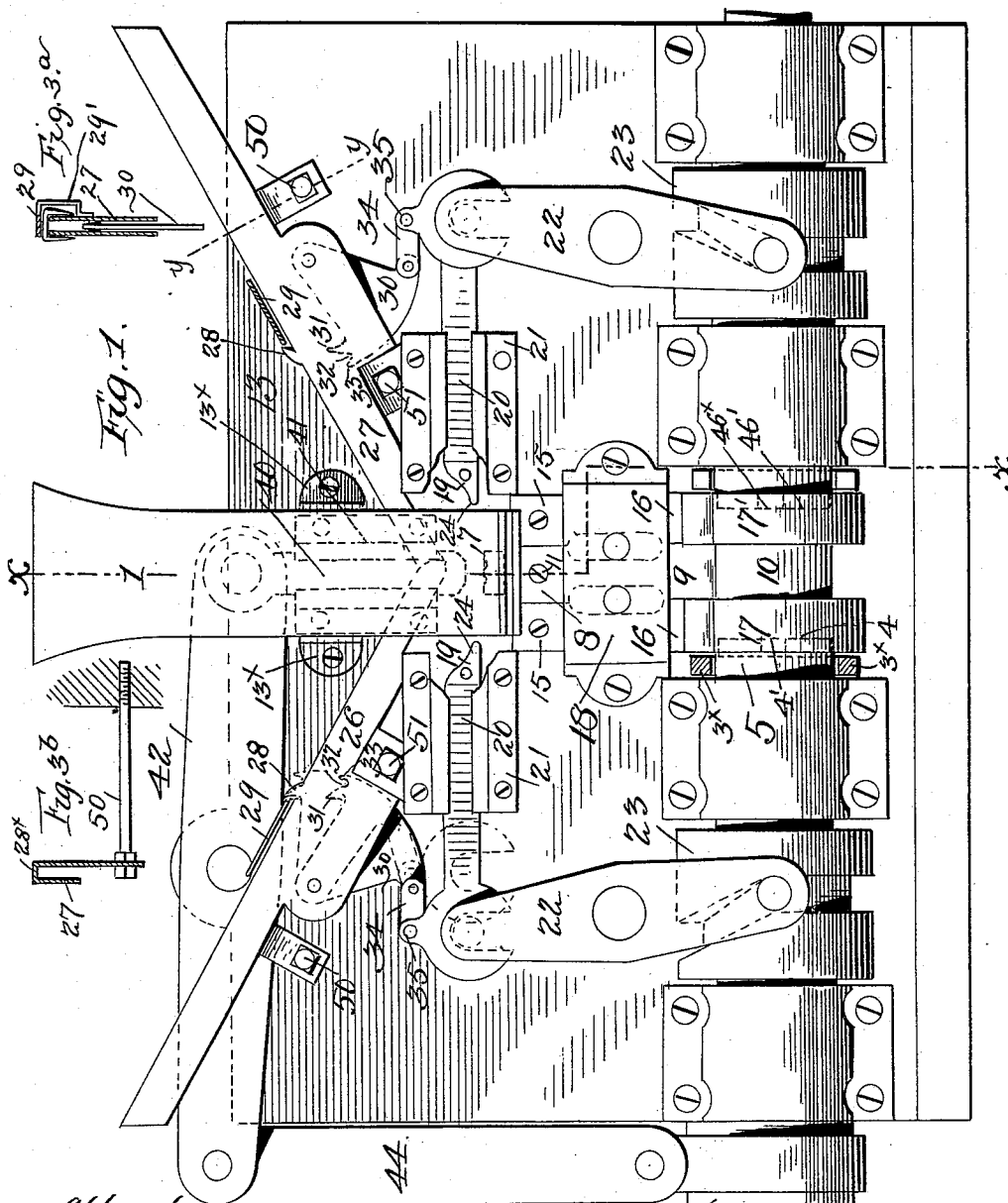


2 Sheets—Sheet 1.

MACHINE FOR MAKING CLENCH LOOPS.

Patented Sept. 29, 1896.



Attest
 My Commission
 J. L. Middleton

43  Inventor
Alonso L. Sweet,
by  Wm. Sprague
Att'y.

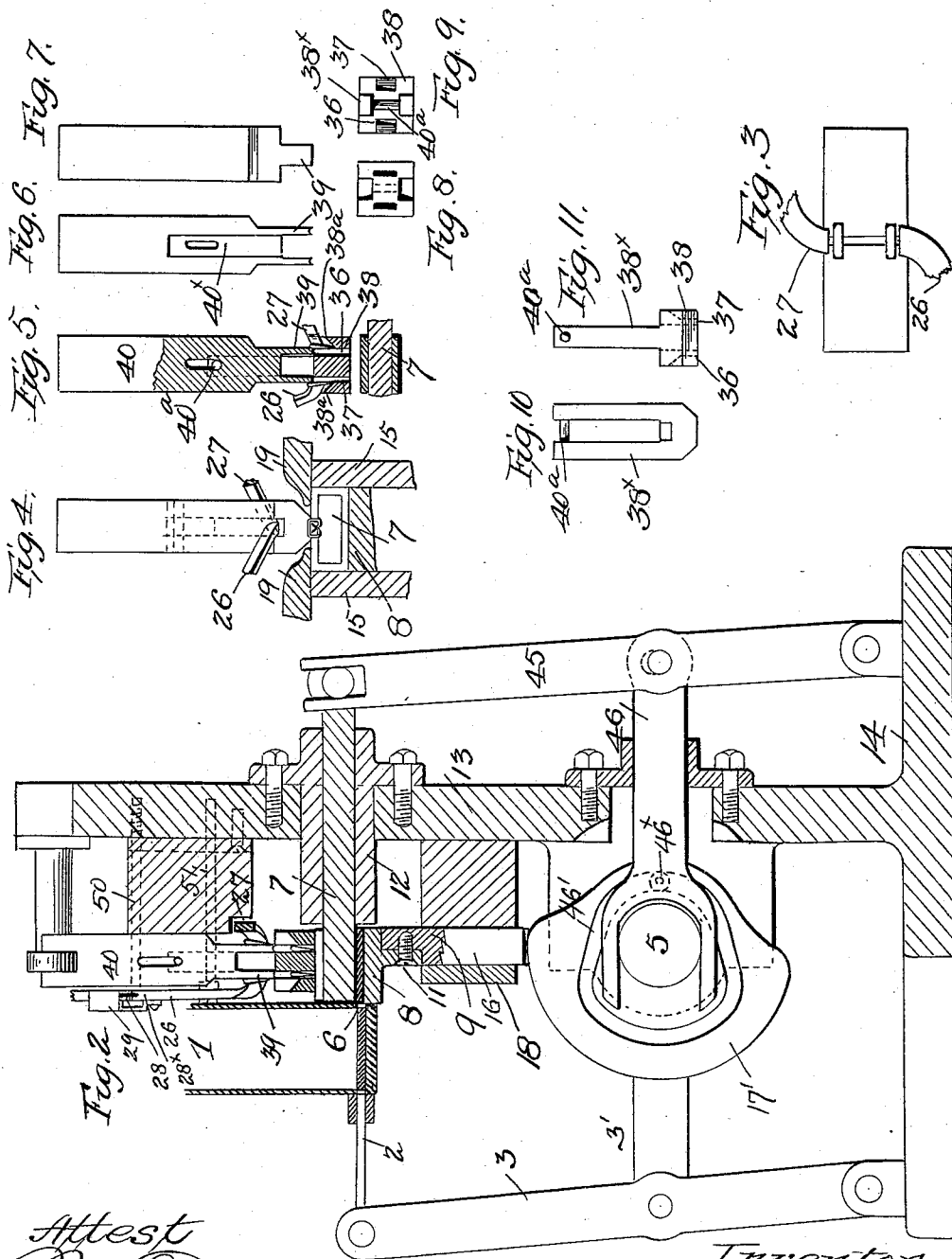
(No Model.)

2 Sheets—Sheet 2.

A. L. SWEET.
MACHINE FOR MAKING CLENCH LOOPS.

No. 568,637.

Patented Sept. 29, 1896



Attest
J. L. Mendenhall
J. L. Mendenhall

Inventor
Alonzo L. Sweet
by Ellis Sprar
Att'y.

UNITED STATES PATENT OFFICE.

ALONZO L. SWEET, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SEAMLESS LEATHER COMPANY, OF SAME PLACE.

MACHINE FOR MAKING CLENCH-LOOPS.

SPECIFICATION forming part of Letters Patent No. 568,637, dated September 29, 1896.

Application filed July 5, 1895. Serial No. 555,001. (No model.)

To all whom it may concern:

Be it known that I, ALONZO L. SWEET, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Making Clench-Loops, of which the following is a specification, reference being had therein to the accompanying drawings.

10 It is the object of my invention to provide a machine for making clench-loops composed of a flat blank bent into rectangular form, the meeting ends of which are secured together by staples driven therein and clenched
15 on the inner side.

I aim to provide a machine to carry on the work expeditiously and which will be of simple construction and efficient in operation.

20 In the accompanying drawings, Figure 1 is a front view of the machine with the feed-plunger and its operating mechanism shown in Fig. 2 omitted for clearness of illustration. Fig. 2 is a view on the staggered section-line *x x* of Fig. 1 with parts in section
25 and parts in side elevation; Fig. 3, a detail plan view. Fig. 3^a is a detail sectional view of one of the raceways, showing one of the feed-levers in place. Fig. 3^b is a detail sectional view on line *y y* of Fig. 1. Figs. 4, 5,
30 6, 7, 8, 9, 10, and 11 show details of the driving-plunger.

The blanks from which the loops are formed are stacked in a magazine 1, located at the front of the machine and supported by suitable brackets 13^x from the standard 13, (see
35 Fig. 1,) and are fed therefrom to the forming mechanism by a feed-plunger 2, operated by a lever 3 from a cam-groove 4 in the side of a cam 17, Fig. 1, arranged on the main
40 cam-shaft 5, the connection between the cam-groove and the lever 3 being formed by a link 3', forked at its rear end to embrace the shaft 5, the forks 3^x of which are shown in section in Fig. 1, while the cam-groove
45 and the roller carried by the lever and running in said cam-grooves are indicated at 4'. This construction is similar to that shown in Fig. 2 in connection with the link 46, hereinafter described. This plunger moves the lower
50 blank of the pile through a rear opening 6 in the magazine into position directly below a

loop-stick or mandrel 7, the front end of which abuts against the rear side of the magazine. The blank is gripped and held to the under side of the loop-stick by a vertically-
55 operating clamping-head 8 on a plunger 9, operated vertically from a central cam 10 on the shaft 5. This head is removably secured to the plunger by a screw 11, so that the head may be removed and replaced when desired.
60 The loop-stick extends through a bushing 12, bolted to a main standard-plate 13, which forms the main frame of the machine and has laterally-extending base portions 14 to support all the working parts. The blank
65 having been moved into position below the loop-stick and clamped there by the head 8, with its ends projecting beyond the loop-stick on each side, is bent upwardly by heads 15
70 on the ends of vertically-moving plungers 16, so that the ends of the blank will be turned upwardly on each side of the loop-stick, the heads 8 and 15 being so proportioned, as shown
75 in Fig. 1, that when the heads 15 rise alongside the loop-stick there will be sufficient space between the sides of said heads and the loop-stick for the thickness of the blank.

The plungers 16 are operated from cams 17 17' on the shaft 5 upon each side of the central cam 10, and all these vertically-moving
80 plungers, *i. e.*, the plungers 9 and 16, are guided in a box 18, secured to the main standard 13. The upturned ends of the blank are now acted upon by heads 19, carried by laterally-moving plungers 20, working in
85 boxes 21 on the main standard, said plungers being operated through levers 22, pivoted to the main standard, and actuated by grooved cams 23 on the shaft 5. The rear ends of the plungers are bifurcated to form depending
90 forks, which are connected by pins to the levers 22. These heads 19 have their lower edges above the upper surface of the mandrel or loop-stick a distance equal to the thickness of the leather, so that as the heads
95 19 move inwardly they bend the upturned ends of the blank over the mandrel and then press the same and hold said turned ends down in position ready to receive the staples. These heads 19 have their upper surfaces
100 beveled to the points 24, and these backwardly-inclining surfaces will leave an angu-

lar space between the heads in their inward position to allow space in which the staple-driving plunger may work, as shown in Fig. 4. The loop as now bent about the loop-stick and held by the heads 19 is in condition to receive the staples, and these are fed into position along the raceways 26 27, extending into position over the loop-stick.

The raceways consist of two flat bars arranged with a space between them, said bars being inclined and having about midway of their length an inclined spur 28, which catches the staples as they move down the inclined edge of the raceway and under a shield or guard-plate 29, placed above the inclined edge and parallel thereto a sufficient distance to allow the bridge portion of the staple or bridge tack to pass between it and the raceway.

The guard-plate is supported from the raceway, as shown in Fig. 3^a, by a bracket 29'. This guard 29 ends a little short of the hook 28, so that the staples can be lifted one at a time through the space between the hook and the end of the guard to be discharged over the hook and thus fed to the clenching mechanism. The staples are lifted one by one through this space by means of feed-levers 30, pivoted between the plates of the raceway and having a finger 31, moving through the space in the raceway to contact with the bridge of the tack and lift the same above the hook 28. The end of the lever, adjacent to the finger 31, is formed with a depression 32 and a second finger 33, which, when the staple is lifted over the hook 28 of the raceway, catches the staple and holds it until the feed-lever 30 is retracted, when the staple will be deposited upon the raceway with its points or side portions straddling the same. These feed-levers are operated by links 34, connected with the rear ends of the plungers 20 by pivots 35, so that the same levers 22 serve to actuate the bending-plungers 20 and also the staple-feed mechanism.

The machine is designed to secure each loop by means of two staples, one located at each end of the loop, and for this purpose the raceway 26 at its lower end is curved and bent laterally, as shown in Fig. 3, toward one end of the loop, while the other raceway is curved and bent in the opposite direction toward the other end of the loop, and these raceways terminate at the edges of vertical openings 36 37, formed through a guide-block 38, supported by the driving-plunger 40 by means of arms 38^x of the block fitting in grooves or ways 40^x of the plunger, a cross-pin 40^a passing through a slot in the plunger, by which the guide-block is allowed vertical movement.

Figs. 3, 4, and 5 show that the raceways 26 and 27 extend to opposite ends of the loop and upon the front and rear sides, respectively, of the plunger 40, and these raceways are supported by arms 50 51, (shown in Figs. 1, 3^b, and 2,) extending therefrom and secured to the plate 13. The staples as they run down the

raceways will drop from the curved ends thereof into the openings 36 37, and these openings, being over the opposite ends of the loop, will direct the staples into the proper position relative to the ends of the loops for the clenching action, and the clenching is done by means of staple-drivers 39 on the vertically-moving plunger 40, guided in a box 41 (shown in dotted lines, Fig. 1) and operated from a cam 43 on the shaft 5 through a lever 42, pivoted to the standard 13, and a link 44 between the cam and the lever 42. These staple-drivers 39 extend down on each side directly adjacent to the raceways and through the openings 36 37, into which the staples have been deposited, and force said staples down through the turned-in ends of the blank as held by the heads 19, and the staple when driven by these staple-drivers passes through the ends of the loop and into semicircular or curved recesses in the upper face of the loop-stick or mandrel, which turns the points inwardly and upwardly again to embed themselves in the leather, thus completing the formation and the clenching of the loop. The loop-stick is movable through the bushing 12 and is reciprocated by a lever 45, pivoted to the base 14 and operated through a push-bar 46 from the cam 17' of the shaft 5. This bar, as shown in dotted lines in Fig. 2, has a forked end embracing the shaft 5, and a roller 46^x on this bar enters a groove 46' in the side of the cam 17'. The ends of the fork are shown in Fig. 1, and the cam-groove and roller are shown in dotted lines. When the loop has been formed and clenched, the bar retracts, as do also the other plungers, and the loop is discharged.

The feeding mechanisms for the staples operate simultaneously on each side of the machine, as do also the plungers 20 and the bending-up heads 15, the two sides of the machine being duplicates of each other so far as these parts are concerned. The various plunger-heads are secured to their plungers removably, so that any or all of the heads may be removed and replaced when worn or for using heads of different sizes.

It will be noticed from Fig. 5 that the staple-drivers 39, which drive the staples, act as the cut-off means to automatically control the feed of the staples from the raceway into the movable guide-block, and, in conjunction with the movable guide-block, to accurately place and drive the staples. In the position shown in Fig. 5 it will be noticed that the staples are still held on the ends of the raceways. Slight upward movement of the plunger and prongs 39 will release these staples and allow the same to fall through the guide-block onto the loop, and in the descent of the driving-plunger the guide-block will rest on the loop and accurately hold and guide the staples. While the staple-drivers are down another pair of staples are fed down to rest on the ends of the raceways until the

plunger again rises. The guide-block, by reason of the slotted or sliding connection with the plunger, falls in relation to the staple-drivers as the same move up and thus open the pockets or recesses to receive the staples from the ends of the raceways. These recesses have inclined bottoms 38^a to direct the staples to the vertical openings 36 37. As the plunger rises the guide-block is lifted to permit the turning inwardly of the ends of the loop-blank. This position is shown at Fig. 5, and in this position also the staple-drivers hold the staples back until the loop is formed. The ends of the staple-drivers 39 are slightly concaved.

I claim—

1. In a machine for making clench-loops, a loop-stick or mandrel, means for feeding the loop-blanks thereto on one side thereof, a clamping-head to press and hold the blank in place, bending-up heads with means for operating the same to fold up the projecting ends of the blank on opposite sides of the loop-stick, heads for engaging the upturned ends of the blank and bending the same inwardly, said heads operating at right angles to the bending-up heads, clenching mechanism and staple-feed mechanism, substantially as described.

2. In combination, in a machine for making clench-loops, a loop-stick or mandrel, means for feeding the loop-blanks thereto, means for bending the blank about the mandrel, and means for holding the blank in place against the loop-stick while being bent, and staple-feed and staple-driving mechanism, the said loop-stick remaining stationary while the blank is fed thereto and is being bent about the same, substantially as described.

3. In combination, a loop-stick, a clamping-head and means for operating the same to hold the loop-blank on the under side of the stick, turning-up heads operating on each side of the clamp with means for raising the said heads along the sides of the loop-stick, turning-in heads with means for operating them, staple-feed mechanism and staple-driving mechanism, substantially as described.

4. In combination with a mandrel, the blank-bending mechanism comprising the vertically-moving heads 15, the heads 19 for bending the blank over the top of the loop-stick, operating at right angles to the heads 15 raceways over the loop-stick for directing the staple to the opposite ends of the loop and the drivers 39 for driving the staple, substantially as described.

5. In combination, in a clench-loop machine forming mechanism for the loop, means for feeding the staple thereto comprising the raceways having the hooks, the guards 29, and the feed-fingers for lifting the staples between the said guards and hooks to discharge the same over the hooks, substantially as described.

6. In combination, a forming mechanism for the loops, the staple-guiding means comprising the raceway, the hooks thereon, and the feeding-finger, with means for operating the same to lift the staple from the hook, substantially as described.

7. In combination, the loop-forming mechanism, the staple-raceway having the hooks, the lifting-finger 31, for lifting the staple over the hook, and the finger 33 for retaining the staple until the said finger is retracted, substantially as described.

8. In combination, the forming mechanism for the loop, the raceway having a recess therein and hook 28, a guard 29, and a lever 30 having a finger 31, operating in said recess to lift the staple over the hook, substantially as described.

9. In combination, the mandrel, the loop-forming mechanism comprising the plunger 20 for bending the loop-blank, the lever 22 for operating the plunger, the raceway for the staples, the lever 30 having the feed-finger 31 and the connection between the said lever 30 and the plunger 20, substantially as described.

10. In combination, the mandrel, the clamp 8, moving vertically, the heads 15, for bending the blank, moving vertically, the plungers 20 for turning in the blank and movable horizontally the shaft 5, the cams 10, 17 on said shaft for operating the clamp and the heads 15, the cams 23 also on said shaft, and the levers 22, operated thereby for operating the plungers 20, substantially as described.

11. In combination, the plunger, having the recesses in its sides and the slot, the guiding-block movable toward and from the plunger and having arms extending in the recesses the cross-pin connecting the arms through the slot and the raceways leading to the guiding-block, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALONZO L. SWEET.

Witnesses:

F. E. STULL,
W. R. ANGELL.