

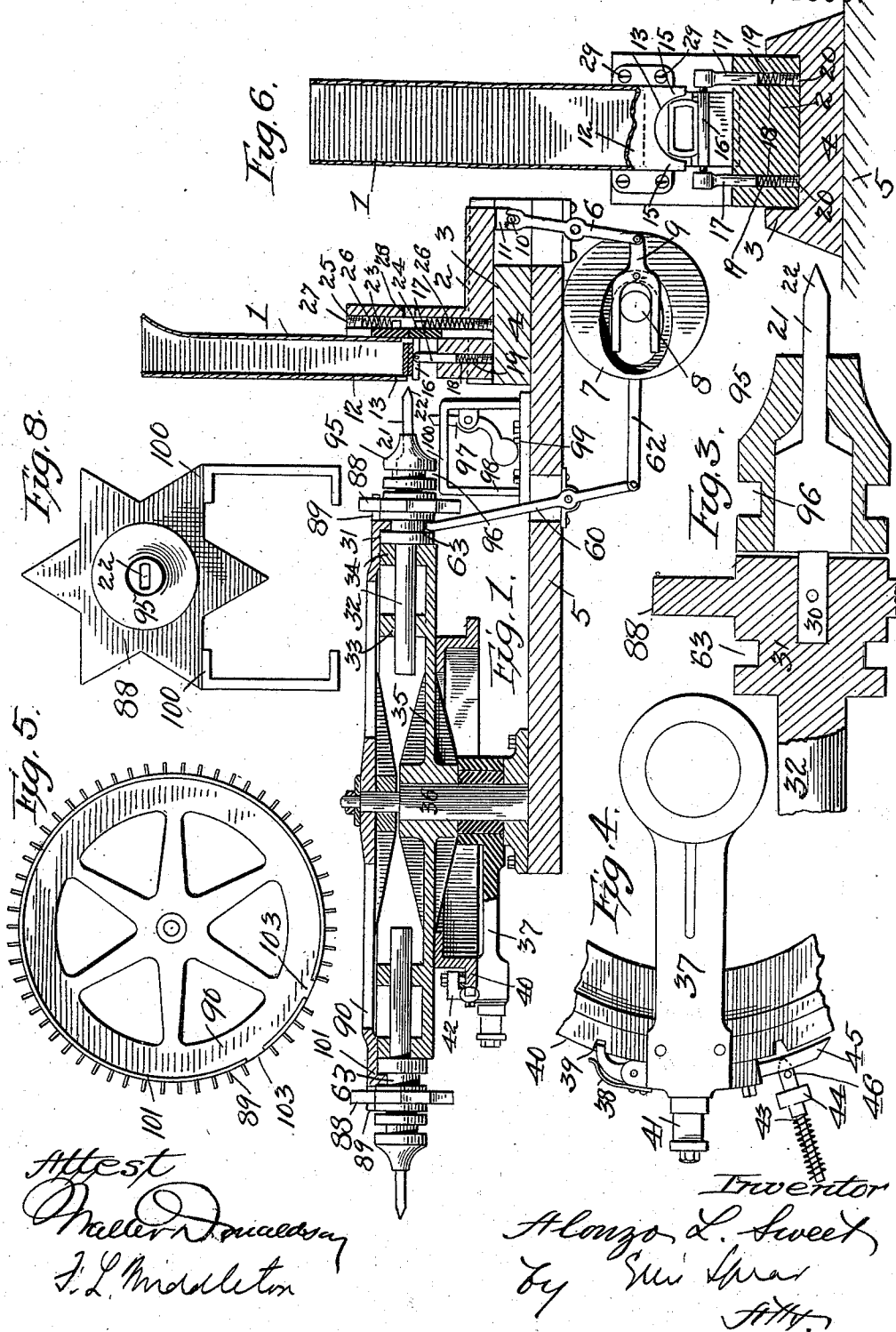
(No Model.)

3 Sheets—Sheet 1.

A. L. SWEET.
MACHINE FOR FINISHING LEATHER LOOPS.

No. 571,294.

Patented Nov. 10, 1896.



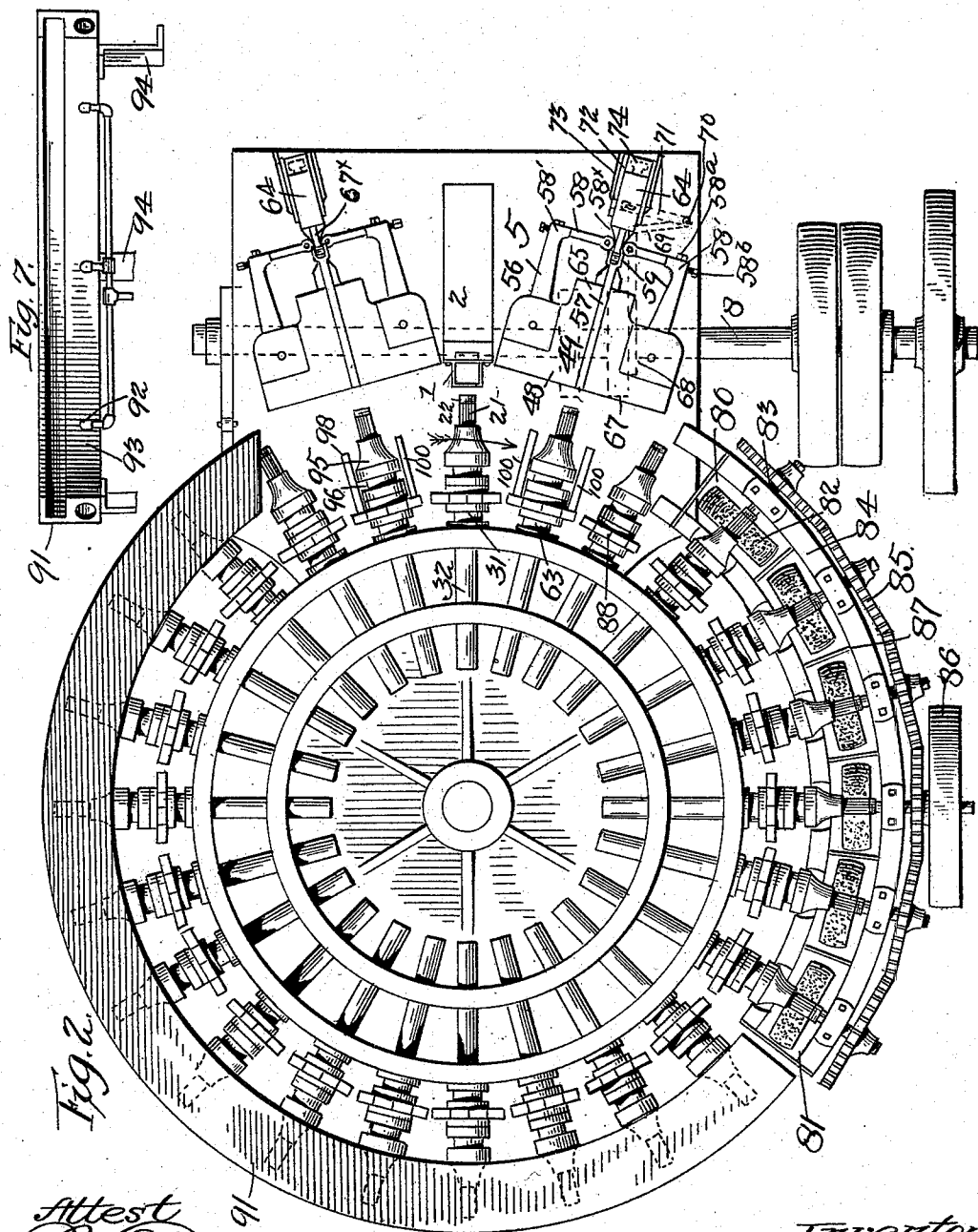
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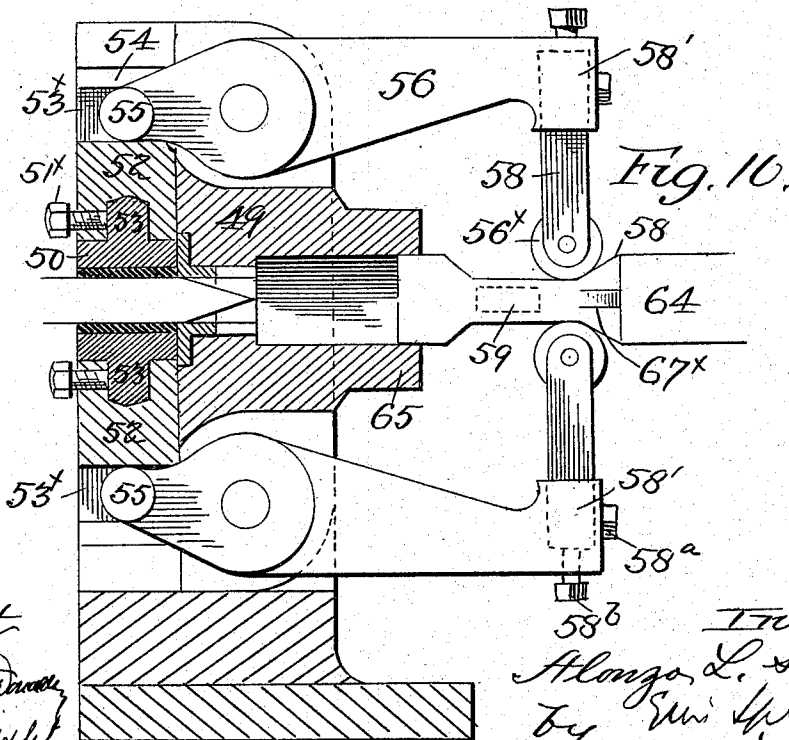
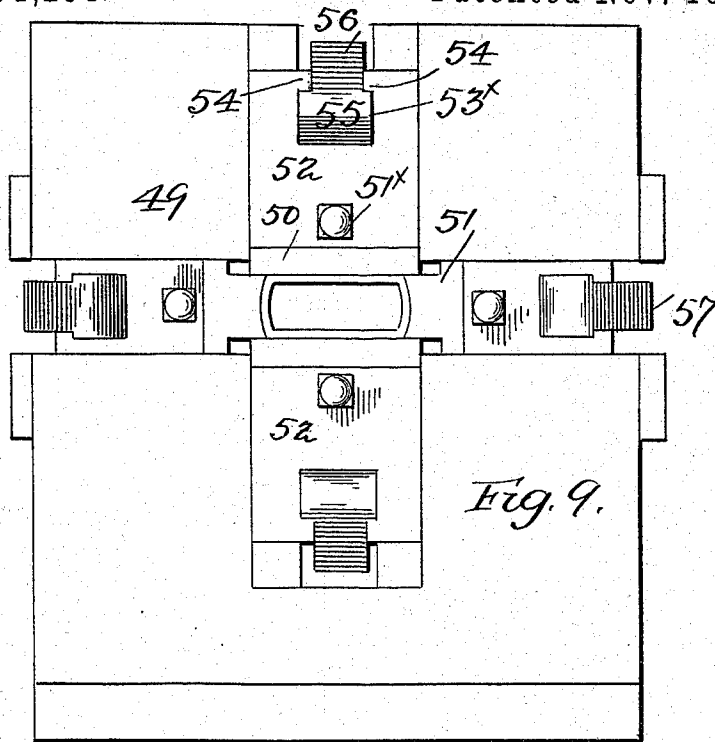
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UNITED STATES PATENT OFFICE.

ALONZO LOUIS SWEET, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SEAMLESS LEATHER COMPANY, OF ILLINOIS.

MACHINE FOR FINISHING LEATHER LOOPS.

SPECIFICATION forming part of Letters Patent No. 571,294, dated November 10, 1896.

Application filed August 2, 1895. Serial No. 558,013. (No model.)

To all whom it may concern:

Be it known that I, ALONZO LOUIS 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 Finishing Leather Loops, of which the following is a specification, reference being had therein to the accompanying drawings.

It is the object of my invention to provide a machine for shaping and finishing leather loops for harness and the like from blanks which have been previously split in order to produce a seamless article of one piece of leather.

In carrying out my invention the split blank is placed upon a loop-stick of a shape necessary for forming the desired loop and is first subjected to pressure while dry, is then passed through blacking or finishing baths, is then heated until the liquid from the baths has been nearly dried, and then the loop in this partially-dried state is subjected to a final pressure, which not only sets the loop into the desired form, but acts to complete the finishing or dressing of the surface of the leather. I have found that by first pressing the blank to the desired form while dry, then passing it through the baths and finally subjecting it to a drying action, and finally subjecting it to a second pressing action that the best results can be secured and the dies will be free and clean from the finishing or dressing material.

In the accompanying drawings, Figure 1 is a vertical sectional view of the machine with parts in elevation. Fig. 2 is a plan view with parts removed. Fig. 3 is a detail view of the loop-stick and its arbor. Fig. 4 is a detail view of a vibrator for operating the rotary carrier. Fig. 5 is a detail view of the stationary rack-wheel. Fig. 6 shows details of the magazine and pusher device. Fig. 7 is a detail view of a heating and drying chamber, and Fig. 8 is a detail view of the star-wheel and its guiding device. Figs. 9 and 10 show the dies.

The blanks from which the loop is made are piled in a hopper or magazine 1, carried by a reciprocating bracket 2 of right-angular form, the said bracket being operated to and

fro in guides 3 on a support 4, fixed to the stationary table 5, the movement being effected by a lever 6, pivoted to the table 5 and operated from a cam 7 on the main shaft 8 by means of a link 9, forked to embrace the shaft and having a roller working in a groove of the cam. The lever 6 is connected to the bracket by its forked end engaging a pin 10 on the depending arm 11 of the bracket, the standard 4 being slotted for this purpose. This magazine has a front wall 12, provided at its lower end with an opening 13, said opening being of less width than the length of the blanks, so that the blanks extending across from side to side of the magazine will have their ends engaging the shoulders 15 at each side of the opening. The lower blank of the pile rests upon a plate 16, pivoted to stems 17, movable vertically in sockets 18, formed in the bracket 2, the said stem being pressed upwardly by a spring 19 in the socket held by a screw-plug 20. This plate when in its extreme upper position forms a rest for the lower blank, which is thus supported with its slit in direct line with the point of the loop-stick 21, said loop-stick being of rectangular cross-sectional shape and having its end beveled at 22 upon its upper and lower faces, so that said end is wedge-shaped, and when the magazine is forced through the mechanisms described to the loop-stick the point of the wedge will enter the slit in the lowermost blank of the pile and open the same, the said blank being forced by the magazine onto the square part of the loop-stick, and for this purpose I provide pusher-plates 23 24, movable in guideways 25 of the bracket 2 directly in rear of the magazine, the said pusher-plates having their meeting ends directly in line with the slit of the blank and the point of the loop-stick, and as the blank is forced onto the loop-stick the point of said stick in the final movement enters between the pusher-plate and by reason of its wedge shape separates these, so that they will remain in contact with the upper and lower edges of the loop as it is spread, and thus place the same in proper position on the square portion of the loop-stick. These plates are forced together by springs 26, held in the bracket 2 by the plugs 27. During

this spreading action of the lower loop-blank the pivot-plate 16 will yield downwardly and also assume an inclined position, due to the wedge-shaped end of the loop-stick, and the loop-blank will thus be pressed firmly and guided accurately into position on the stick. The rear portion of the rectangular bracket 2 has an opening 28 to permit the end of the loop-stick to pass through after having received the loop thereon. This spreading action of the loop-blank will draw the ends inwardly and decrease its width from side to side of the magazine to such an extent as to become disengaged from the shoulders 15, and thus the loop will be freed entirely from the magazine and will remain on the loop-stick as the magazine retracts; but the next blank above the one which has just been spread will fall into place on the plate 16, and the ends of this blank lying behind the shoulders 15 will be retained thereby. The magazine is secured by screws or bolts 29 to the upper arm of the bracket 2. The loop-sticks have their shanks 30 fixed in the heads 31 of arbors 32, arranged radially in bearing-rims 33 34 of a carrier-wheel 35, arranged to rotate about an upright post 36, and said wheel being operated step by step by means of a vibrator 37, Figs. 1 and 4, pivoted on the post 36 and having a spring-pawl 38 adapted to engage notches or teeth 39 in a rim 40, secured to the carrier-wheel 35, the vibrator being operated by any suitable means connected therewith through the pin 41. The vibrator has an upward extension 42, adapted to rest on the rim 40, and thus its outer end is maintained and guided in its movement. The stop-pin 43, held in a standard 44, projecting up from the table 5, is adapted to enter the teeth 39, and thus center and hold the carrier-wheel after each movement, and this stop-pin is released by a cam 45, projecting from the vibrator on the opposite side from that on which the spring push-pawl is located, said cam engaging a pin 46 on the stop-pin to move the same backward against the action of its spring 47, tending to move it into the teeth.

After the loop-stick receives the loop-blank, as described, the carrier-table is given one step to bring the same to the dies or pressing device 48. This press comprises a series of dies arranged to move radially in a die-frame 49, the dies 50 being larger and adapted to the sides of the loop, while the dies 51, operating at right angles to the dies 50, are smaller and are adapted to the ends of the loop, being slightly curved on their opposing faces. The dies are carried by blocks, being secured thereto by screws 51^x, extending through the blocks 52 and engaging the shanks 53 of the dies. The blocks 52 are notched at their outer ends to provide sockets 53^x with overhanging lips 54, adapted to receive the pins 55 on the die-levers 56 57, said levers being pivoted to the die-frame 49 and having their rear ends operated by arms 58 59, respectively. When the loop-stick with the loop-

blank thereon has arrived opposite the press, by the carrier taking a step in the direction of the arrow, Fig. 2, the arbor, with the loop-stick, is moved radially while at this station in front of the press by a lever 60, pivoted to the bed 5 and operated from a cam on the main cam-shaft 8 through a link 62, the lever 60 engaging a groove 63 in the head 31 of the arbor, it being understood that the rotary movement of the carrier has moved the grooved head 31 of the arbor into engagement with the upper end of the lever 60, and when this takes place the lever is operated to thrust the arbor outwardly, thus moving the loop-stick, with the loop-blank thereon, into the die-cavity formed between the retracted die members 50 51. The die-levers 56, with their adjustable arms for operating the dies 50, are actuated by a sliding shaft 64, the front end of which is guided in a boss 65 on the rear of the die-frame, and this shaft has the inclines 58^x thereon to operate the arms and levers by engaging the rollers 56^x of the adjustable arm 58' of the lever, said arms fitting in sockets 58^x of the die-levers and being held by bolts 58^a and set-screws 58^b. The shaft is operated longitudinally by a cam 67 on the cam-shaft 8, the groove of which operates a bar 68, connected to a lever 69 of a vertical rock-shaft 70, having at its upper end a lever 71, engaging a pin on a slide 72, movable in guides 73 of the table 5, said slide having a standard 74, in which the rear end of the sliding shaft 64 is fixed. The side dies 51 are operated through their levers 57, which also have adjustable portions provided with rollers 59^a, engaging cams 67^x on the sliding shaft, the rollers for these levers and dies being arranged relatively to their cams, so as to operate after the dies 50 have been moved.

The sliding shaft 64 operates radially of the rotary carrier, and the dies are so arranged that the axis of the die-cavity is coincident with the axis of the loop-stick and the sliding shaft. These dies press the blank about the loop-stick and shape the same while in a dry state, and after the compression has been effected the lever 60 returns the arbor with the loop-stick to normal position, and the machine then takes another step, bringing a new blank on a loop-stick into position before the pressing-dies and carrying the pressed loop toward the finishing and dressing baths arranged in a series between the stations. (Shown at 80 81.) These baths contain the finishing and dressing material, consisting of blacking, glue, or any desired material, and they have brushes arranged therein adapted to rotate and spread the dressing or finishing material onto the pressed loop, said brushes 82 being carried on shafts 83, journaled in stationary bearing 84 of the table or frame and operated through gears 85 from a belt-wheel 86. The baths are separated from each other by partitions 87.

As the loop-stick with the loop is passing the finishing and dressing baths it is given a

rotary step-by-step movement by means of a star-wheel 88 on the head 31 of the arbor engaging pins 89 of the rack-wheel 90, fixed rigidly to the central post 36 above the carrier, the said pins 89 engaging the upper portions of the star-wheel. This rack-wheel being stationary, its pins, engaging the star-wheel, will turn the same with the arbor step by step, thus presenting different portions of the loop to the action of the finishing and dressing brushes, and after the finishing and dressing material has been applied the loop is carried by the loop-stick into a heating and drying chamber 91, extending about half-way around the carrier, said chamber being heated by gas-jets or other suitable means 92 in a hot box 93 immediately below the heating-chamber 91, said hot box with the heating-chamber being supported by brackets 94 from the table 5. In this heating-chamber the dressing and finishing material which has been applied to the loop is almost dried, and as the loop emerges from this chamber it is nearly dried, and has only enough moisture in it as is necessary to aid in the final compression and to insure the perfect formation of the loop. After leaving the heating-chamber the loop-stick arrives in front of a second die or press similar in all respects to that already described, at which point the head of the arbor is engaged by a lever similar to the lever 60, before described, and the loop-stick thereon is thrust into the press, which is then operated through mechanism similar to that described for the first press, and the final compression is then effected, this not only setting the loop into rigid rectangular or other form, but acting to polish and complete the dressing and finishing of the surface. As the arbor is retracted the complete loop is discharged by a pusher 95, arranged to slide on the loop-stick and having a groove 96, which in the forward movement of the arbor with the loop-stick is engaged by a weighted dog 97, pivoted in a frame 98, and as the loop-stick is retracted from the press this dog, being held rigid by a stop 99, will arrest the retracting movement of the pusher, and the continued retracting movement of the arbor with the loop-stick will discharge the loop therefrom. The pusher will remain in this position and will not be returned to normal position until its loop-stick arrives opposite the magazine and said magazine has forced a fresh loop-blank onto the loop-stick, this action serving to return the pusher to normal position. In the advancing and retracting movements of the arbor with the loop-stick the said parts are held against rotary movement by the star-wheels engaging guides 100, fixed to the table 5. The pins 89 are so arranged that the star-wheels with the arbors will be turned to present the loop-stick accurately to the dies and to the feeding mechanism, and in the reciprocation of the arbor with the loop-stick the star-wheel will again serve to keep the loop-

stick accurately and positively in proper position.

The arbors are held against reciprocating movement by a rib 101, depending from the rack-wheel 90 and entering the grooves 63 of the arbor-heads, and at the points where the arbor must be reciprocated, as, for instance, at the presses, the rib 101 is cut away at 103, as shown in Fig. 5.

The star-wheel and the pins of the rack-wheel serve to turn the arbors with the loops in the heating-chamber to secure the best drying effect.

I claim as my invention—

1. In combination, in a machine for finishing loops, means for shaping the slitted blanks, means for applying dressing thereto, means for drying the loop and means for giving the loop a final pressure independent of the first pressing means, substantially as described.

2. In combination, the carrier having loop-sticks, the press arranged to act on the loop on the loop-stick, means for applying dressing to the loop, drying means and a second press for giving a final pressure to the loop on the stick, independent of the first press, substantially as described.

3. In combination, the carrier having loop-sticks to receive and spread the slitted blanks, a press, the finishing-bath arranged in the path of the loop-stick, a heating-chamber through which the loop-stick with the loop thereon moves and a press for giving a final pressure to the loop, substantially as described.

4. In combination, the carrier having the loop-sticks, a pressing mechanism for the loop, means for applying the finishing or dressing material to the loop after it is pressed and means for drying the loop in its pressed state with the dressing applied thereto, substantially as described.

5. In combination, the carrier having loop-sticks, means for pressing the loops, and means for applying the dressing material comprising the baths or tanks arranged below the path of the loop-sticks and the brushes in the baths with operating means therefor to apply the dressing to the loops, substantially as described.

6. In combination, the carrier, the loop-stick, and means for placing the loop onto the stick comprising the spring pusher-plates arranged to move toward and from each other, means for holding the loop-blanks in front of the plates, and in line with the point of the loop-stick, and means for moving the pusher-plates and loop-stick together, substantially as described.

7. In combination, the loop-stick having a wedge-shaped end, the yielding pusher, the magazine for feeding the blanks to the pusher and means for operating the pusher and loop-stick together.

8. In combination, the loop-stick having a wedge-shaped end, the pusher comprising

yielding members to press on the blanks, substantially as described.

9. In combination, a carrier, the loop-stick having a wedge-shaped end, the pusher comprising the yielding members and means for feeding the loop-blanks thereto, substantially as described.

10. In combination, the loop-stick, the carrier therefor a magazine, the yielding pusher-plates and the yielding supporting-plate for the lower blank, substantially as described.

11. In combination, the loop-stick, the carrier, a magazine, the pusher-plates, and the yielding and pivoted supporting-plate, substantially as described.

12. In combination, the loop-stick, its carrier, a magazine having an opening at its lower end for the exit of the loop-blank of less width than that of the blank with retaining-shoulders 15 at the sides of the opening, a support for the lower blank of the pile and the yielding pusher, substantially as described.

13. In combination, the movable carrier having a series of radially-movable loop-sticks, a press, arranged adjacent to the path of the loop-sticks and independent of the carrier and means for moving the loop-stick with the loop longitudinally into and out of the press when it arrives before the same, substantially as described.

14. In combination, the loop-stick, the carrier, a press arranged independent of but adjacent to the path of the loop-sticks on the carrier, said press comprising a frame, a series of dies movable radially therein, a series of levers projecting rearwardly and connected with the dies at their front ends and means engaging the rear ends of the levers for operating them, substantially as described.

15. In combination, the loop-stick, the carrier, and the press comprising the dies movable toward and from each other, the die-levers pivoted to the frame and extending rearwardly, the sliding shaft or cam-carrier, having the cam-surfaces for operating the levers, and means for operating the sliding shaft, substantially as described.

16. In combination, the loop-stick, the die, the die-blocks having notched upper ends with overhanging portions and the levers having pins or studs engaging said notched ends, and projecting laterally beneath the overhanging portion, substantially as described.

17. In combination, the movable carrier, the series of loop-sticks, movable longitudinally therein, means for moving the loop-sticks longitudinally at certain stations and means for positively holding the loop-sticks against longitudinal movement between said stations, substantially as described.

18. In combination, the movable carrier the press, the series of longitudinally-movable loop-sticks on the carrier arranged to be brought in succession in front of the press

and means for holding the loop-sticks against longitudinal movement consisting of the flange or rim to engage a longitudinally-movable part of the loop-stick, said rim being cut away in line with the press, to allow the longitudinal movement of the loop-stick, substantially as described.

19. In combination, the movable carrier, the longitudinally-movable loop-sticks and means arranged at one or more stations to engage the loop-stick to operate the same longitudinally, substantially as described.

20. In combination, the movable carrier, the longitudinally-movable loop-stick comprising the arbor with the grooved head, the flange or rim engaging the said groove and cut away at intervals and the lever arranged to engage the grooved head with means for operating the lever, substantially as described.

21. In combination, the carrier, the series of loop-sticks arranged to rotate, means adjacent to the path of the loop-sticks to operate on the loops carried thereby and means for rotating the loop-sticks, substantially as described.

22. In combination, the carrier, the series of longitudinally-movable loop-sticks arranged to rotate, means for rotating said sticks, means for operating the same longitudinally and means for holding the loop-sticks against rotary movement as they are moved longitudinally, substantially as described.

23. In combination, the carrier, the rotary loop-sticks having star-wheels, means arranged adjacent to the path of the loop-stick for operating on the loop and the stationary rack engaging the star-wheel to rotate the same with the loop-stick, substantially as described.

24. In combination, the carrier, the loop-sticks, means arranged adjacent to the loop-stick path to operate thereon, a vibrator-lever having a pawl on one side, a stop-pin, and a dog on the other side of the vibrator for controlling the stop-pin, substantially as described.

25. In combination, the carrier, the rotary loop-sticks, the star-wheels, the rack, means for operating the loop-sticks longitudinally, and the guides engaging the star-wheels to prevent rotary movement, and means for acting on the loop in the advanced position of the loop-stick, substantially as described.

26. In combination, the carrier, the loop-sticks having longitudinal movement, the pusher on the loop-stick, and the dog for retarding the pusher, substantially as described.

27. In combination, the carrier, the loop-sticks having longitudinal movements, the pusher on the loop-stick, means for retarding the pusher, and means for placing a fresh blank on the loop-stick and for returning the pusher to normal position, substantially as described.

28. In combination, the loop-stick, the se-

ries of dies the reciprocating shaft, the cams thereon and adjustable connections between the same and dies radiating from the shaft, substantially as described.

5 29. In combination, the loop-stick, the series of dies, the cams, the sliding carrier therefor, and the die-levers having adjustable portions to be operated by the sliding cams, said adjustable connection radiating

from the sliding carrier substantially as described.

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

ALONZO LOUIS SWEET.

Witnesses:

JAS. S. SANDERS,

A. LOUIS SWEET, Jr.