

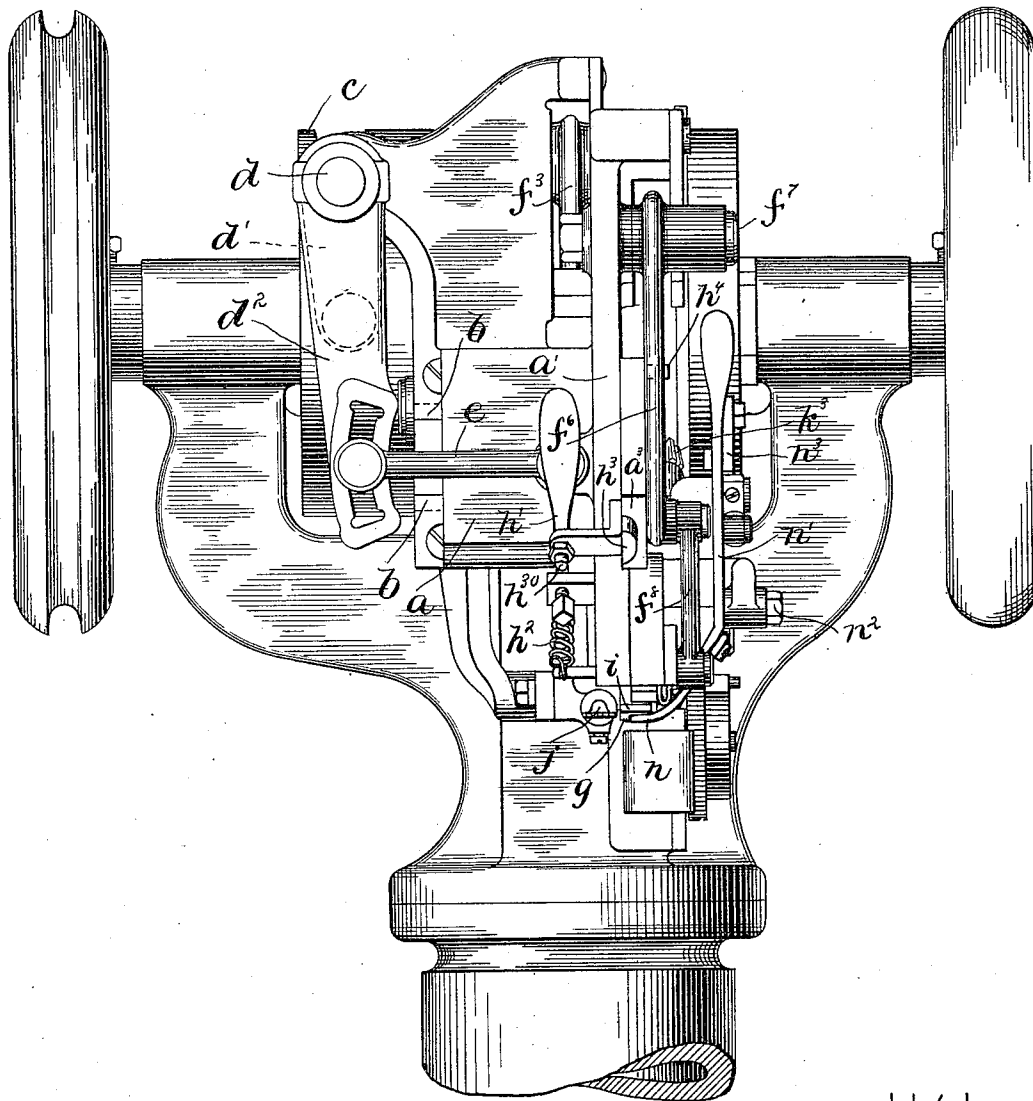
(No Model.)

6 Sheets—Sheet 1.

P. A. COUPAL.
SHOE SEWING MACHINE.

No. 579,697.

Patented Mar. 30, 1897.



WITNESSES -

A. D. Harrison.

P. W. Pezzetta.

FIG. 1.

INVENTOR-

P. A. Coupal

by Knight Brown & Quincy
attys.

(No Model.)

6 Sheets—Sheet 2.

P. A. COUPAL.
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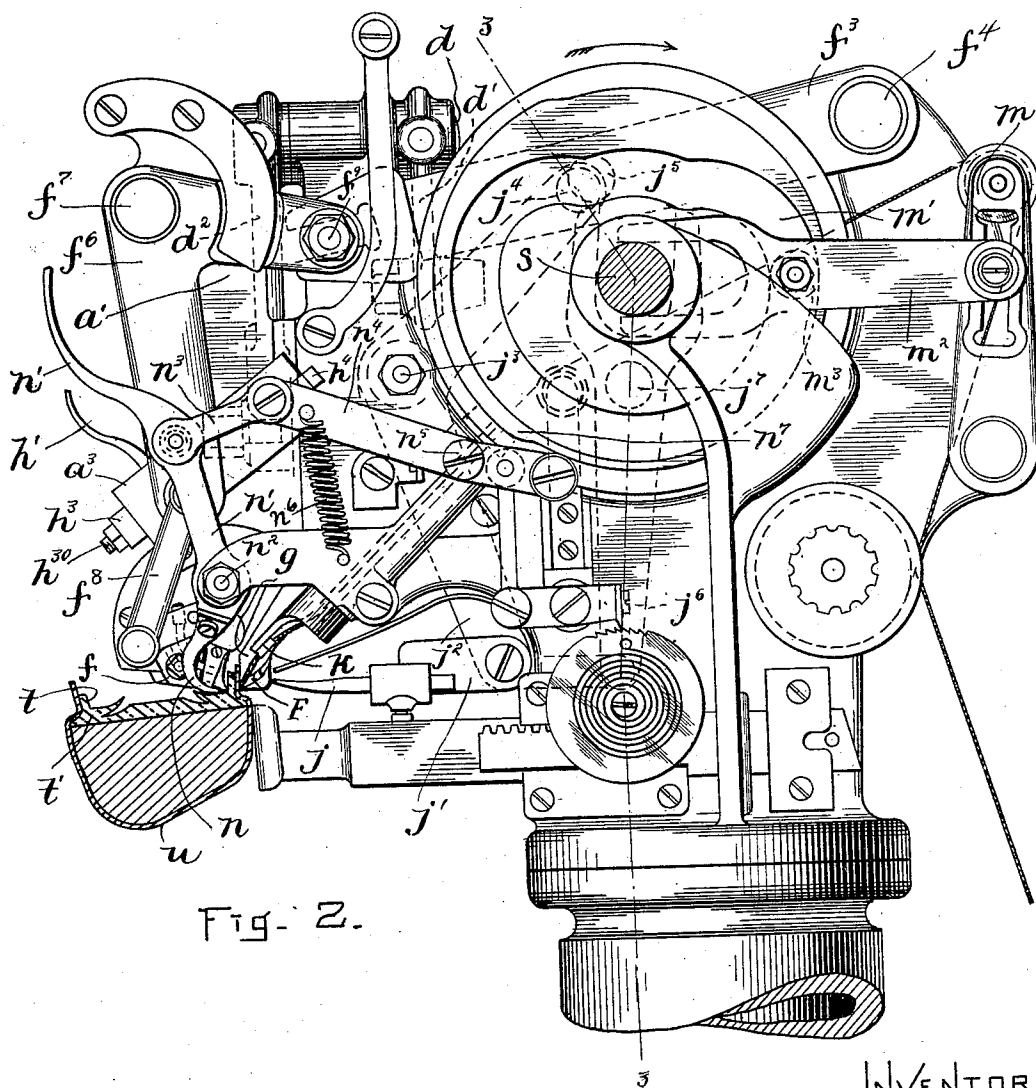


Fig- 2.

WITNESSES -

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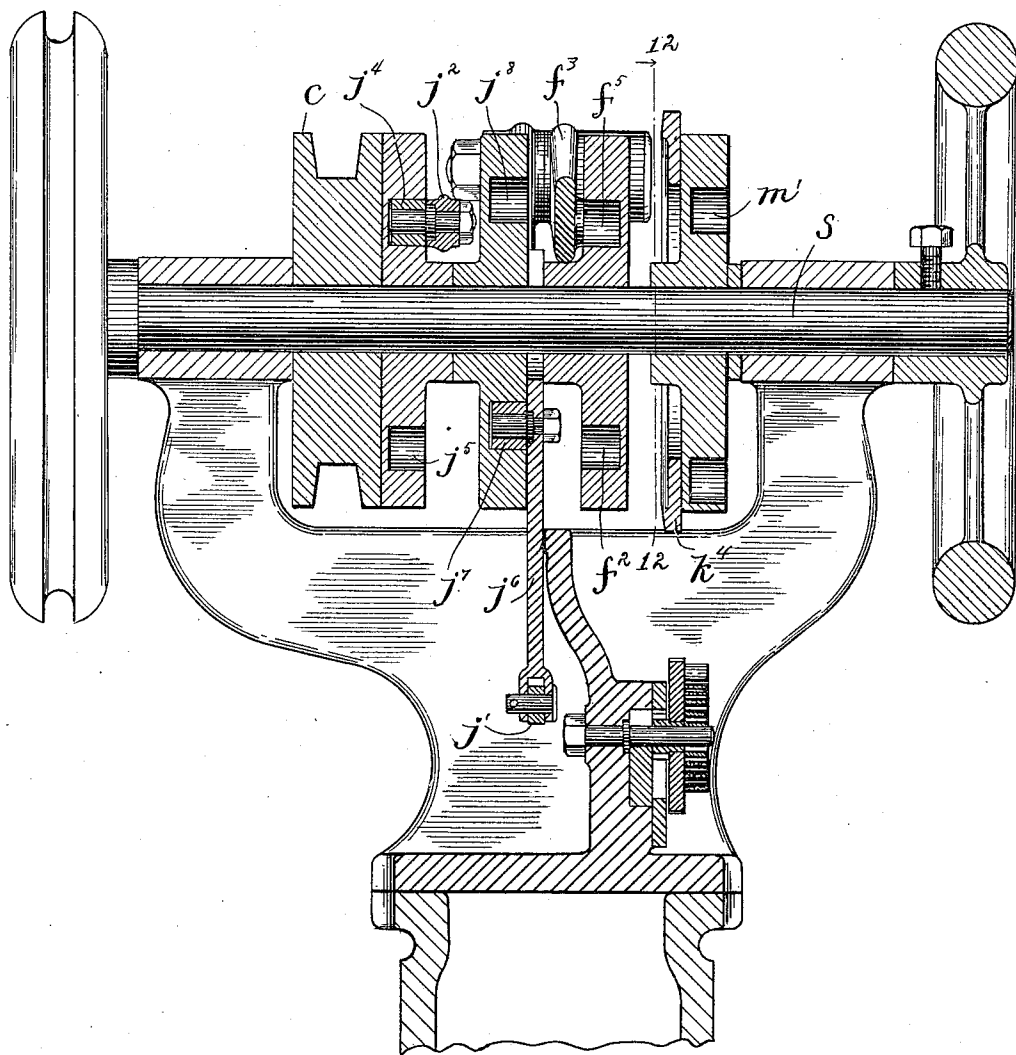
(No Model.)

6 Sheets—Sheet 3.

P. A. COUPAL.
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No. 579,697.

Patented Mar. 30, 1897.



WITNESSES.

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Fig. 3.

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(No Model.)

6 Sheets—Sheet 4.

P. A. COUPAL.
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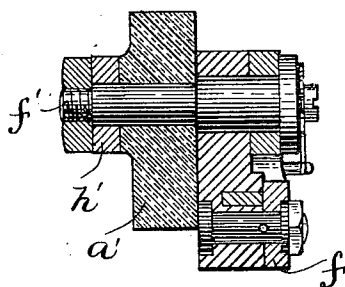
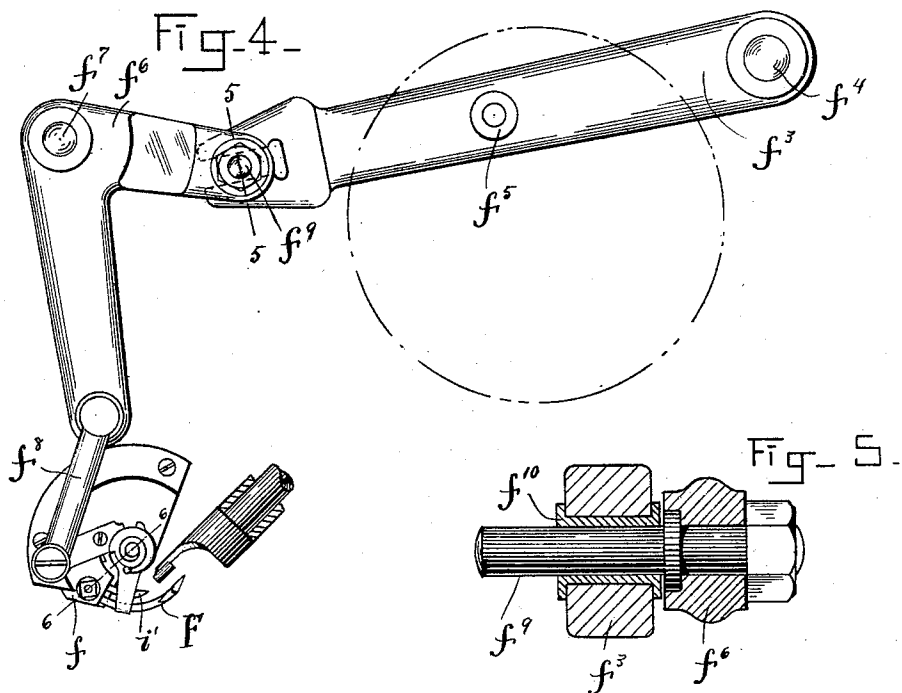


Fig-6-

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A. D. Harrison.

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P. A. COUPAL.
SHOE SEWING MACHINE.

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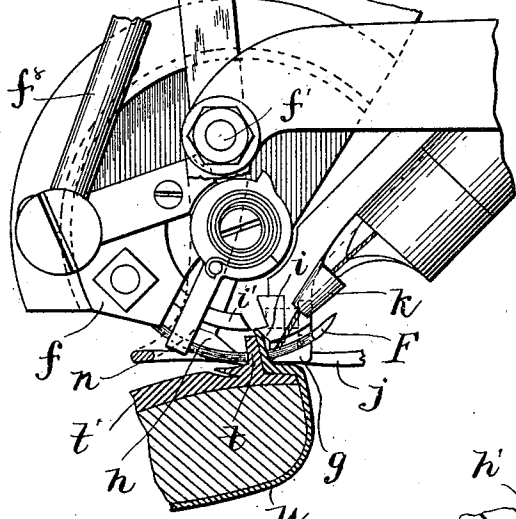
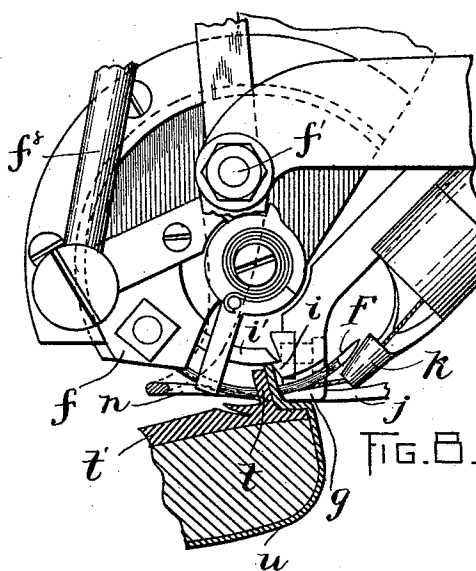
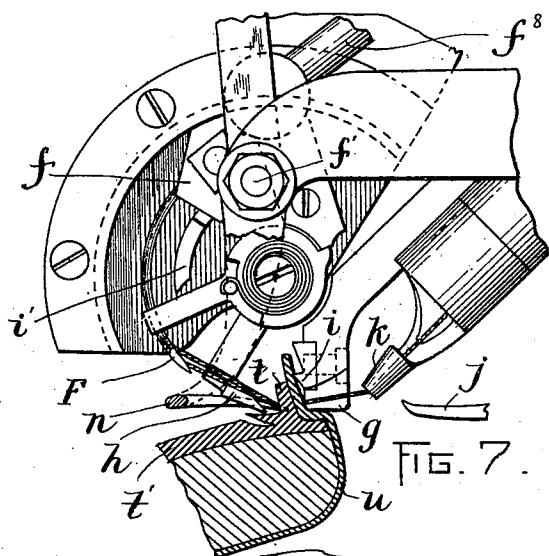


FIG. 9.

FIG. 10.

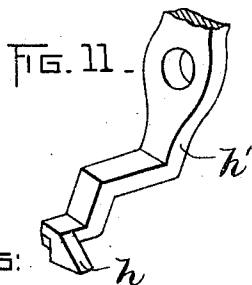
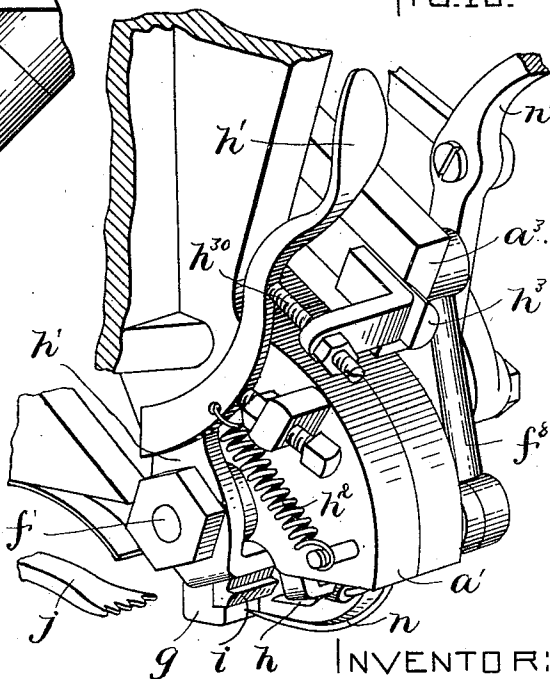


FIG. 11.

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P. W. Prosser

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(No Model.)

6 Sheets—Sheet 6.

P. A. COUPAL.
SHOE SEWING MACHINE.

No. 579,697.

Patented Mar. 30, 1897.

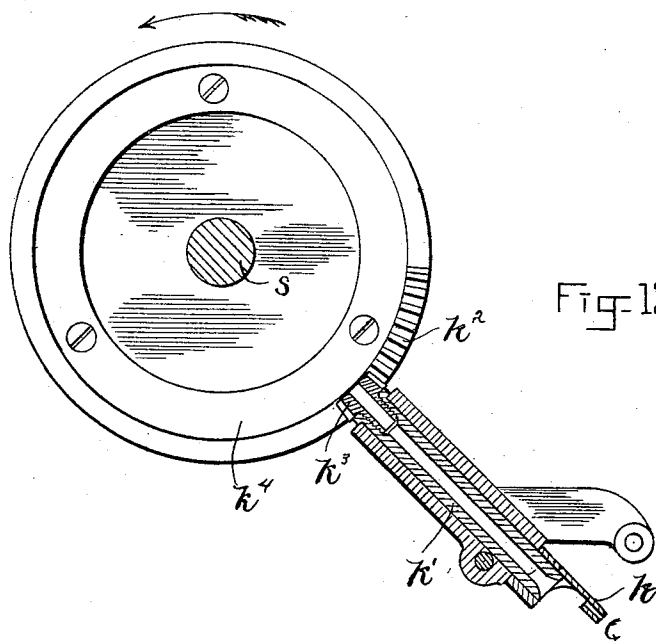


Fig. 12.

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360		
Needle and Cutter.			Out																																				
Tack Roller (Vertical)			Up																																				
" " (Horizontal)			Back																																				
Shoe Feed.			Rest																																				
Looper.																																							
Take Up.			Forward																																				

Fig. 13.

WITNESSES -

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P. W. Pezzatti.

INVENTOR -

P. A. Coupal
by Knight Brown & Quincy
attys.

UNITED STATES PATENT OFFICE.

PETER A. COUPAL, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO WILLIAM GORDON, OF SAME PLACE.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,697, dated March 30, 1897.

Application filed October 23, 1896. Serial No. 609,851. (No model.)

To all whom it may concern:

Be it known that I, PETER A. COUPAL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention has for its object to provide means for basting a lasted upper to the inner sole of a welted boot or shoe after the upper has been secured thereto by the lasting-tacks, and at the same time pulling out the lasting-tacks close to the point where the basting-stitches are formed, the upper and welt being thus secured together by fastenings which will not interfere with the operation of a welt-sewing machine in stitching together the welt, upper, and inner sole, so that the permanent-stitch-forming operation may be performed immediately after the lasting operation without the necessity of waiting until the upper has become sufficiently set in its lasted form to warrant the removal of the lasting-tacks. It is the usual practice, after lasting a boot or shoe upper and securing it with lasting-tacks, to lay aside the upper while on the last and allow it to remain for a considerable period, usually twenty-four hours, until the form of the upper has become sufficiently permanent to warrant the removal of the lasting-tacks, so that the welt, upper, and inner sole may be stitched together by a welt-sewing machine. By my invention the lasting-tacks are removed progressively, and the upper and inner sole are connected close to the point where each tack is removed by light basting-stitches designed to form a temporary connection between the two and to hold the upper in its lasted form upon the last during the permanent-stitch-forming operation.

My invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a sewing-machine embodying my invention. Fig. 2 represents an end elevation of the same. Fig. 3 represents a section on line 3 3 of Fig. 2. Fig. 4 represents an elevation showing the needle and cutter operating mechanism. Fig. 5 repre-

sents a section on the line 5 5 of Fig. 4. Fig. 6 represents a section on line 6 6 of Fig. 4. Figs. 7, 8, and 9 represent a portion of the machine, showing the positions of the various parts at different stages of the operation. Fig. 10 represents a perspective view of portions of the machine. Fig. 11 represents a perspective view of the presser-foot. Fig. 12 represents a section on line 12 12 of Fig. 3. Fig. 13 represents a diagrammatic view or chart of the cams carried by the driving-shaft.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention I provide a suitable stitch-forming mechanism, which may be of any suitable type, preferably adapted to carry a waxed thread. The mechanism here illustrated comprises a curved needle F, which has a lateral movement while it is projected to feed the work and a return movement while it is retracted. The machine is provided with a sliding head *a*, which moves horizontally on fixed guides *b b* on the frame of the machine and is reciprocated by means of a cam *c*, affixed to the driving-shaft *s* of the machine, a rock-shaft *d*, mounted in fixed bearings on the frame and provided with arms *d'* *d''*, the former being engaged with the cam *c*, and a link *e*, connecting the arm *d''* with an ear affixed to the sliding head *a*.

The needle F is affixed to a holder or carrier *f*, which oscillates on a fixed stud *f'*, Fig. 6, secured to a flange *a'* on the sliding head *a*. The needle-carrier *f* is oscillated by means of a cam *f''* in a disk on the driving-shaft *s*, a lever *f'''*, pivoted at *f''''* to the frame of the machine and having a trundle-roll *f'''* engaged with the cam *f''*, a bell-crank lever *f''''*, pivoted at *f''''''* to the flange *a'* on the sliding head, and a rod *f''''''*, connecting the longer arm of the lever *f''''* with the needle-carrier *f*. The lever *f'''* and bell-crank lever *f''''* are connected by a pin *f''''''* in a block *f''''''*, (see Figs. 4 and 5,) the pin sliding lengthwise in the block to permit the horizontal movements of the sliding head *a* without disturbing the connection between the levers *f'''* and *f''''*.

g represents a work-rest formed to support the lip *t* on the inner sole *t'* of a boot or shoe and the portion of the upper *u* that bears on

the outer side of said lip, said rest being rigidly affixed to the frame of the machine. h represents a presser-foot formed on or attached to a lever h' , which oscillates on the stud f' , that supports the needle-carrier. The presser-foot is formed to enter the angle formed by the lip t and the face of the inner sole t' and to press said lip and the portion of the upper bearing against its outer surface against the fixed rest g , the presser-foot being normally pressed toward the rest g by means of a spring h^2 , connected at one end with the lever h' and at the other end with the flange a' . To move the presser-foot away from the rest g for the purpose of releasing the work, a slide h^3 is provided, having a screw h^{30} , arranged to bear on the lever h' and cause a presser-foot-displacing movement of said lever. The slide h^3 is movable in a guide a^3 , affixed to the sliding head a , and has a lug h^4 , Figs. 1 and 2, which is located in the path of the longer arm of the bell-crank lever f^6 , so that when said arm swings in the direction required to retract the needle it also causes the displacement of the presser-foot from its operative position.

To the fixed rest g is affixed a cutter or shear blade i , arranged to coöperate with a movable cutter i' in trimming off the surplus portion of the edge of the upper u , as indicated in Fig. 8, the movable cutter i' being affixed to and moving with the needle-carrier f , so that when the needle advances and penetrates the lip t and upper u the cutters sever the portion of the upper that projects above said lip, or, if desired, they may trim both the lip and upper.

j represents a tack-puller which is formed and arranged to engage the lasting-tacks that secure the upper to the inner sole and to remove said tacks at a point immediately in advance of the work-rest and cutters, so that each tack remains in position to hold the upper in place until it has nearly reached the cutters, and is then removed to prevent injury to the cutters and needle. The tack-puller j is affixed to an arm j' , which is pivoted to a lever j^2 . Said lever is pivoted at j^3 to the frame of the machine and has a trundle-roll j^4 , Figs. 2 and 3, engaged with a cam j^5 in a disk on the driving-shaft s . The arm j' is extended rearwardly from the lever j^2 and is pivoted to a second lever j^6 , which is provided with a trundle-roll j^7 , engaging a cam j^8 in a disk on the driving-shaft s . The lever j^2 is oscillated to give the tack-puller a substantially horizontal movement toward and from the work, while the second lever j^6 gives the tack-puller a vertical oscillating movement and is timed to move the operating end of the tack-puller upwardly just as it moves forward and engages a tack.

k represents the looper, which is affixed to a tubular shaft k' , Fig. 12. Said shaft is intermittently rotated in fixed bearings on the frame of the machine by means of a rack-segment k^2 on a disk k^4 , affixed to the driv-

ing-shaft s , and a pinion k^3 , affixed to the looper-shaft k' and meshing with the segment k^2 .

m represents the take-up lever, which is oscillated by a cam m' and an arm m^2 , having a trundle-roll m^3 , engaging the cam m' .

n represents an auxiliary presser-foot or work-holder, which is an arm or finger formed to penetrate the inner side of the lip t and adapted to alternate with the presser-foot h in holding said lip. The work-holder n is affixed to a lever n' , which is pivoted at n^2 to an arm affixed to the frame of the machine and is connected by a link n^3 with a lever n^4 , pivoted at n^5 to the frame of the machine and held by a spring n^6 against a cam n^7 on the driving-shaft s .

The operation of the above-described mechanism is as follows: The needle being retracted and the sliding head a at the left-hand end of its movement, as viewed in Fig. 1, the operator, retracting the auxiliary work-holder n by means of the handle portion of the lever n' , brings the work over on the fixed rest g , then releases the work-holder n , thus allowing the spring n^6 to press said holder against the lip of the inner sole and hold the work in place. The machine now being set in motion, the presser-foot h first advances and coöperates with the work-holder n in holding the work against the rest g , the work being thus securely held before it is penetrated by the needle. The advancing needle then penetrates the work, and is followed by the cutter i' , which coöperates with the cutter i , as indicated in Fig. 8, after the needle has penetrated the lip and upper. The tack-puller then advances in a direction opposite to the advancing movement of the needle and withdraws the tack nearest the needle and cutters. After the needle has reached its extreme forward movement the work-holder n is retracted, releasing the work, and the sliding head a is moved toward the right, causing the needle to feed the work, the latter being at this time additionally held by the presser-foot h , which moves with the needle. The looper then supplies thread to the needle and the work-holder n advances and holds the work against the rest g . The needle and the cutter i now withdraw, the needle drawing a loop of thread through the upper and the lip of the sole. The presser-foot h is displaced after the withdrawal of the needle, the work-holder n continuing to hold the work against the rest g . The sliding head now moves toward the left, returning the needle to position to penetrate the material for the formation of the next stitch.

It will be seen that the work is held by the rest g , the work-holder n , and the presser-foot h while the needle is penetrating the work and during the operations of trimming the edge of the upper and withdrawing the tacks.

It will be seen that the presser-foot and auxiliary work-holder both coöperate with

the back-rest *g* in holding the work while the needle is penetrating, and that the presser-foot moves laterally with the needle and holds the work against the back-rest during the work-feeding movement of the needle, the auxiliary work-holder being at this time withdrawn. The auxiliary work-holder performs the important function of engaging the work and holding it securely in place while the needle and presser-foot are retracted and are moving laterally to return the needle to its starting position. The work is therefore at all times controlled by the machine and connects the upper and inner sole by stitches of uniform length.

I am the first, so far as I am aware, to combine a stitch-forming mechanism, a work rest or guide, a fixed trimming-cutter, a presser-foot, a tack-puller, and a movable trimming-blade; and I do not therefore limit myself, so far as this combination is concerned, to a stitch-forming mechanism of the curved-needle type nor to the mechanical construction herein shown and described of the other elements of the said combination.

I claim—

1. A sewing-machine of the character specified, comprising a fixed back-rest; a reciprocating sliding head or carrier; a curved needle, and a presser-foot, both supported by said head; and an auxiliary work-holder which releases the work while it is being fed by the needle and presser-foot, and holds the work during the return lateral movement of the needle and presser-foot.

2. A sewing-machine of the character specified, comprising a fixed back-rest, a reciprocating sliding feeding-head, a curved needle

and a presser-foot; an auxiliary work-holder which releases the work while it is being fed and holds the work during the return lateral movement of the feed device, and a tack-puller adapted to draw the tacks while the work is held by the fixed rest and the presser-foot and the auxiliary work-holder.

3. The combination of a stitch-forming mechanism, including a curved needle and an oscillating carrier therefor; a fixed rest formed to extend into the angle of an inner sole and its lip; a fixed trimming-blade secured to and supported by said rest; and a movable trimming-blade secured to the needle-carrier and arranged to cooperate with the fixed blade in trimming the work.

4. The combination of a stitch-forming mechanism, a work rest or guide formed to support an inner sole and its lip, a fixed trimming-blade adjacent to said rest, a presser-foot arranged to cooperate with said rest in clamping the work, a tack-puller arranged to draw tacks from the work at a point beside the work-rest and presser-foot, and a movable trimming-blade adapted to cooperate with the fixed trimming-blade in removing the surplus material from the work.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 19th day of October, A. D. 1896.

PETER A. COUPAL.

Witnesses:

C. F. BROWN,
WILLIAM GORDON.