

(No Model.)

6 Sheets—Sheet 1.

G. H. SCETRINI & G. CADE.
SEWING MACHINE.

No. 527,348.

Patented Oct. 9, 1894.

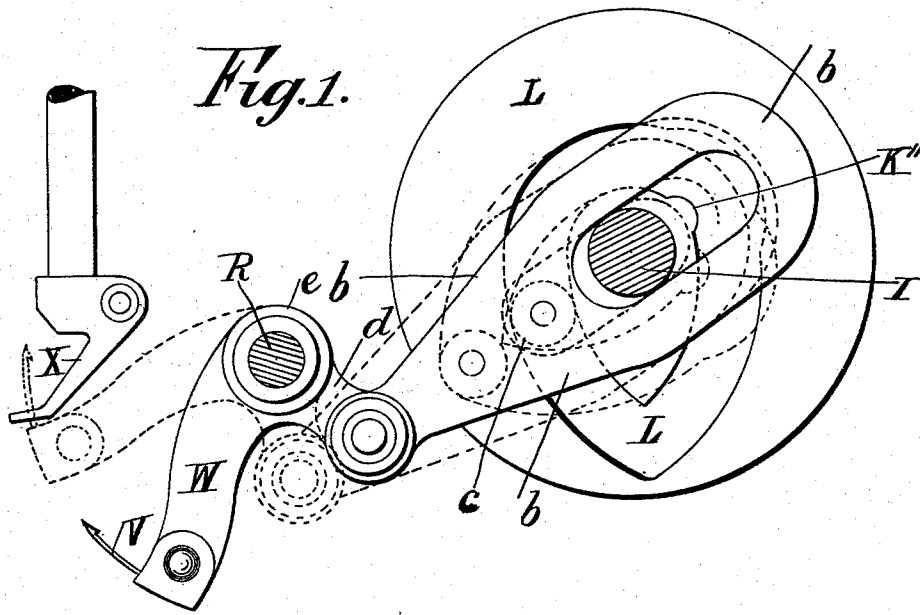


Fig. 2.

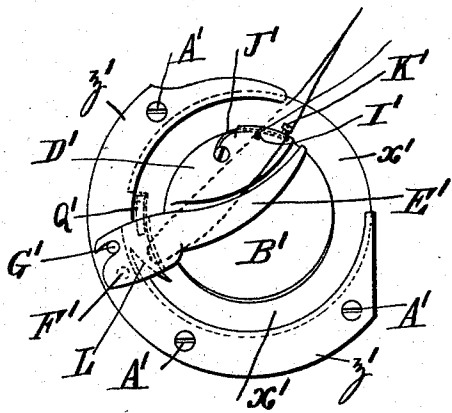
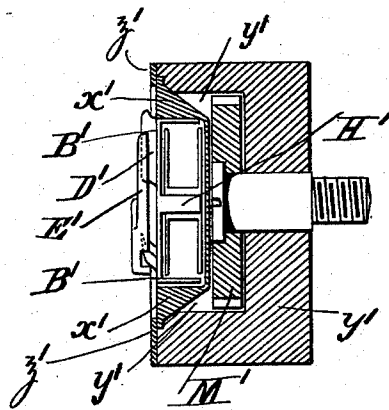


Fig. 3.



Witnesses:
B. W. Rea.
Thos. A. Green

Inventors:
George H. Scetrini and
George Cade,
By James L. Norris.
Atty

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Fig. 4.

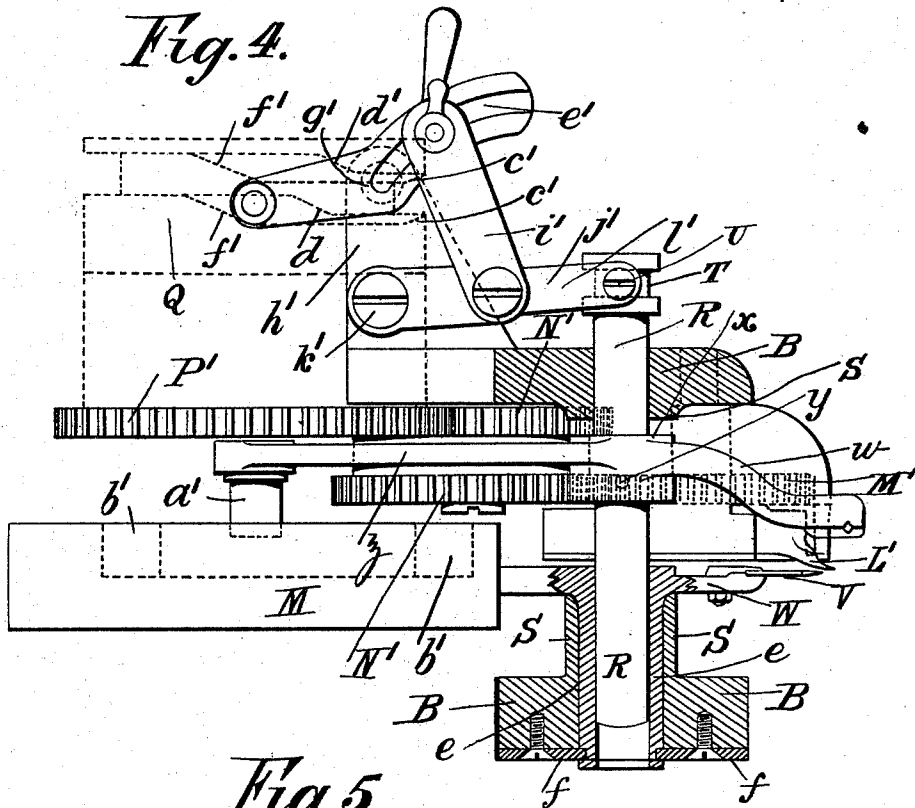
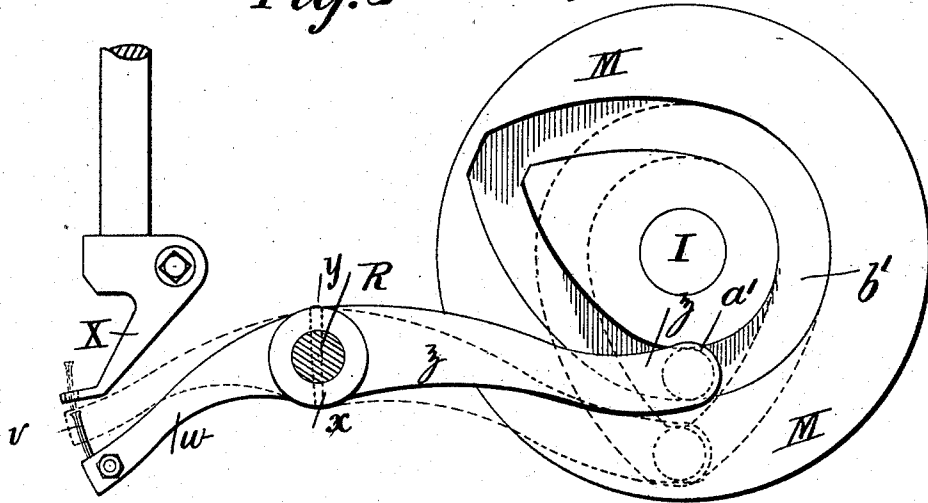


Fig. 5.



Witnesses:
 G. W. Rea.
 Thos. A. Green

Inventors:
 George H. Scetrini and
 George Cade,
 By James L. Norris,
 Atty

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Fig. 6.

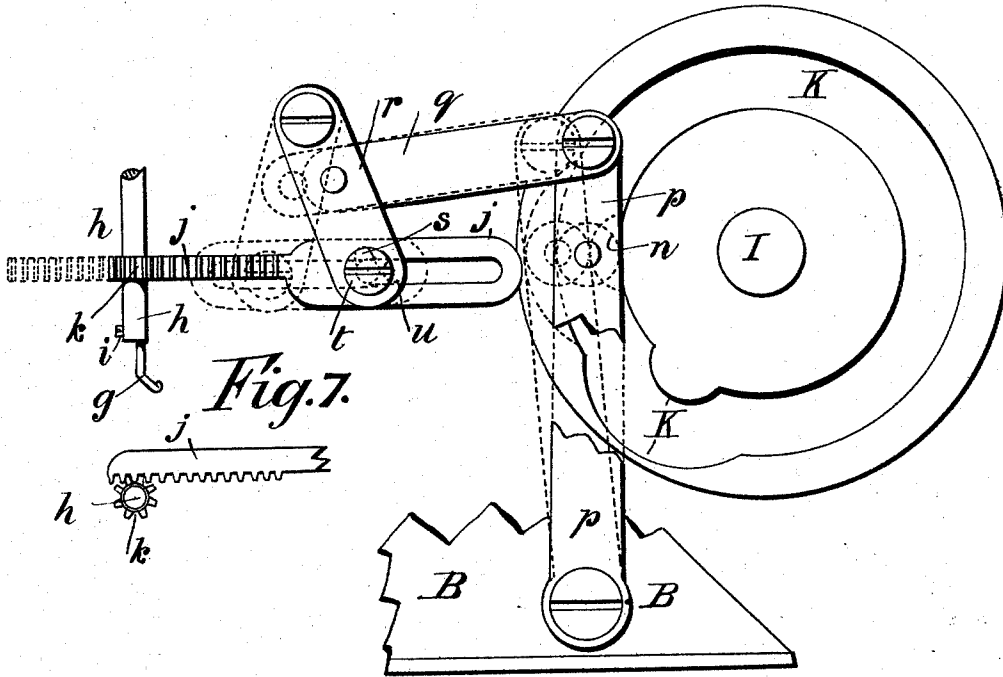


Fig. 7.

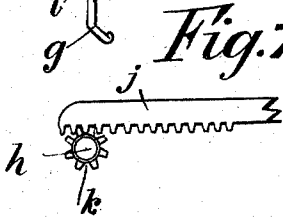
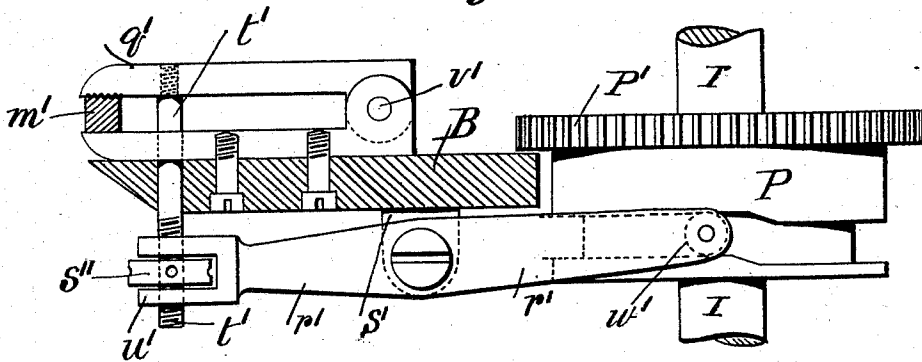


Fig. 8.



Witnesses:
G. H. Rice,
Thos. A. Green

Inventors:
George H. Scetrini and
George Cade,
By James L. Norris
Atty

(No Model.)

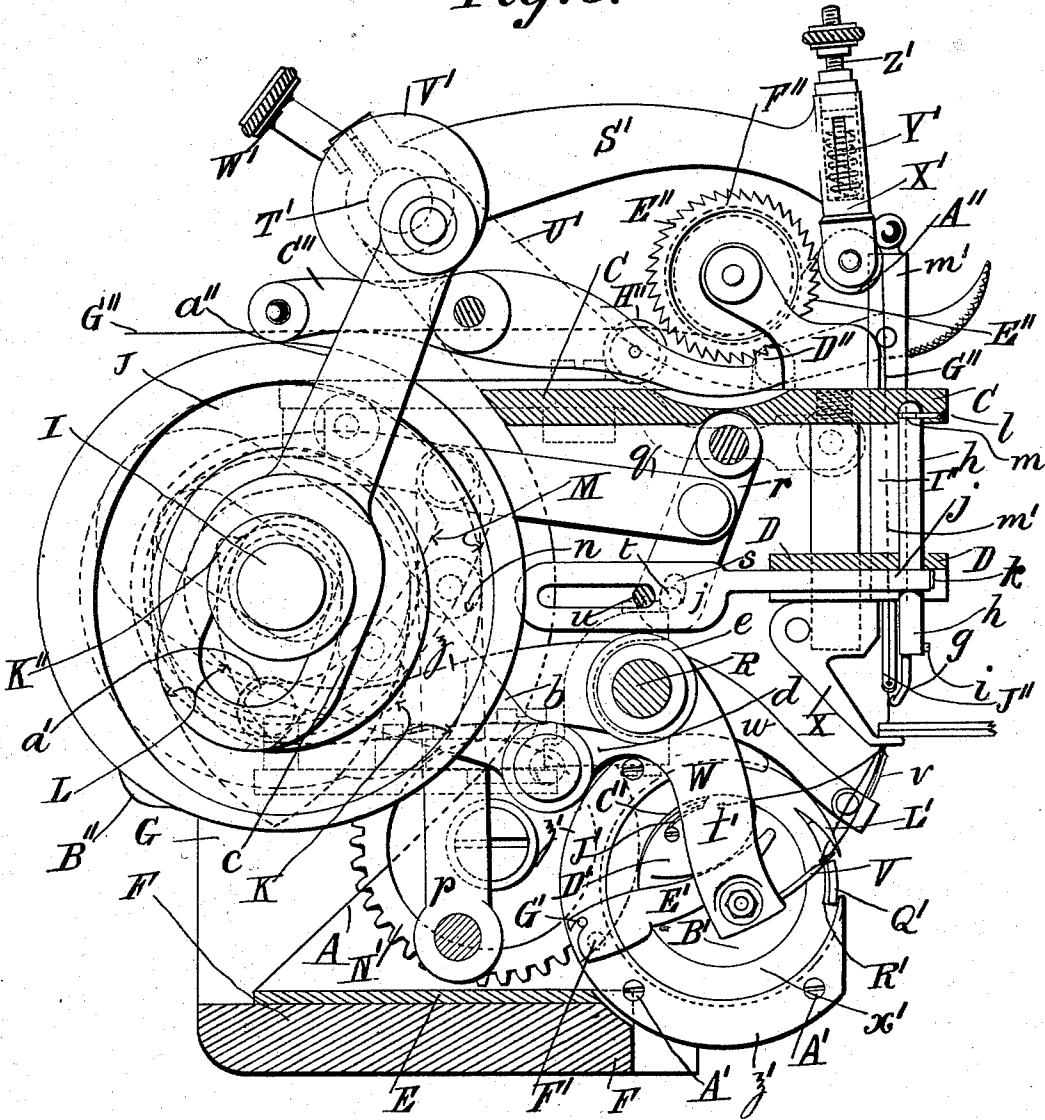
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G. H. SCETRINI & G. CADE.
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Fig. 9.



Witnesses:
 J. W. Rea,
 Thos. A. Green

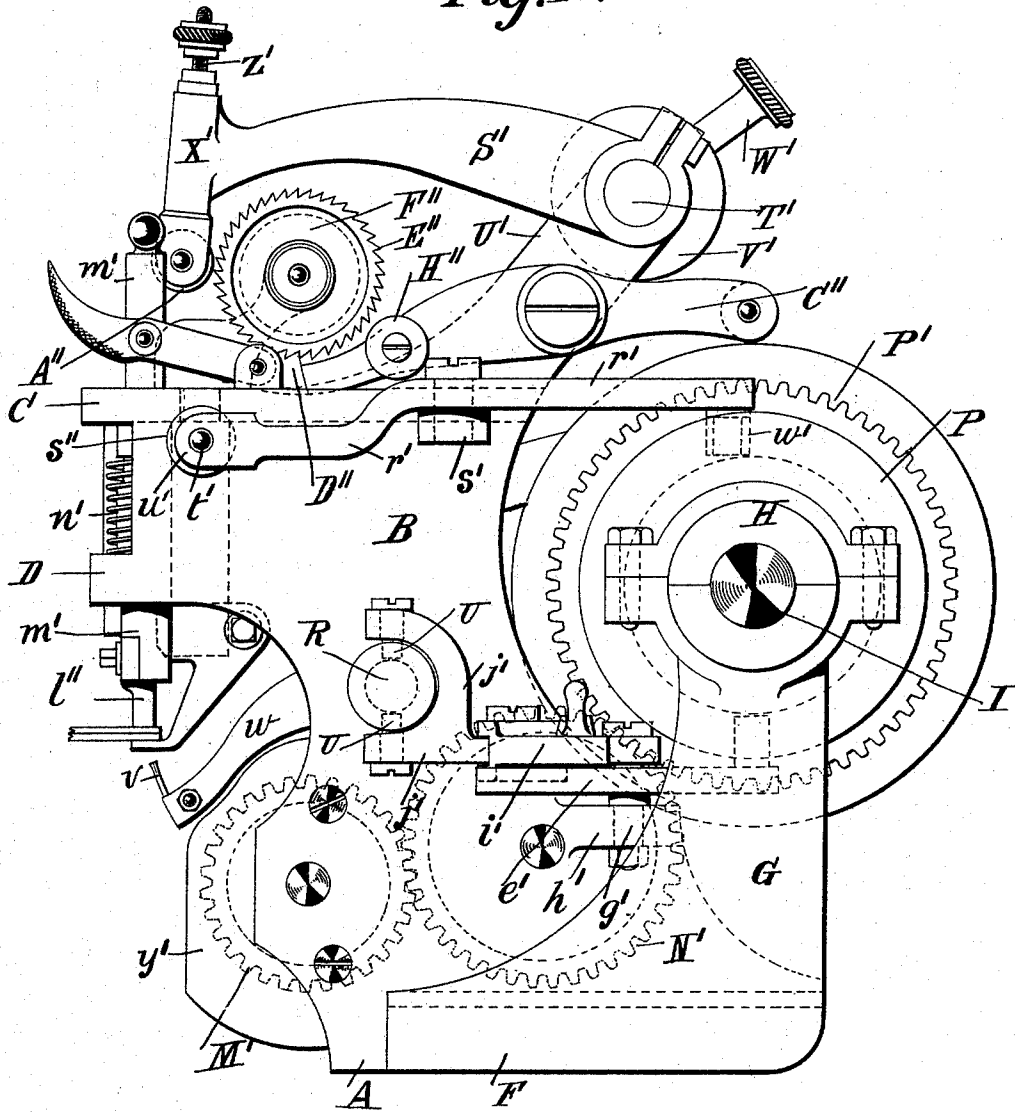
Inventors
 George H. Scetrini and
 George Cade,
 By James L. Norris.
 Atty.

G. H. SCETRINI & G. CADE.
SEWING MACHINE.

No. 527,348.

Patented Oct. 9, 1894.

Fig. 10.



Witnesses:
 G. W. Rea.
 Thos. A. Green

Inventors:
 George H. Scetrini and
 George Cade,
 By Janus L. Norris.
 atty.

(No Model.)

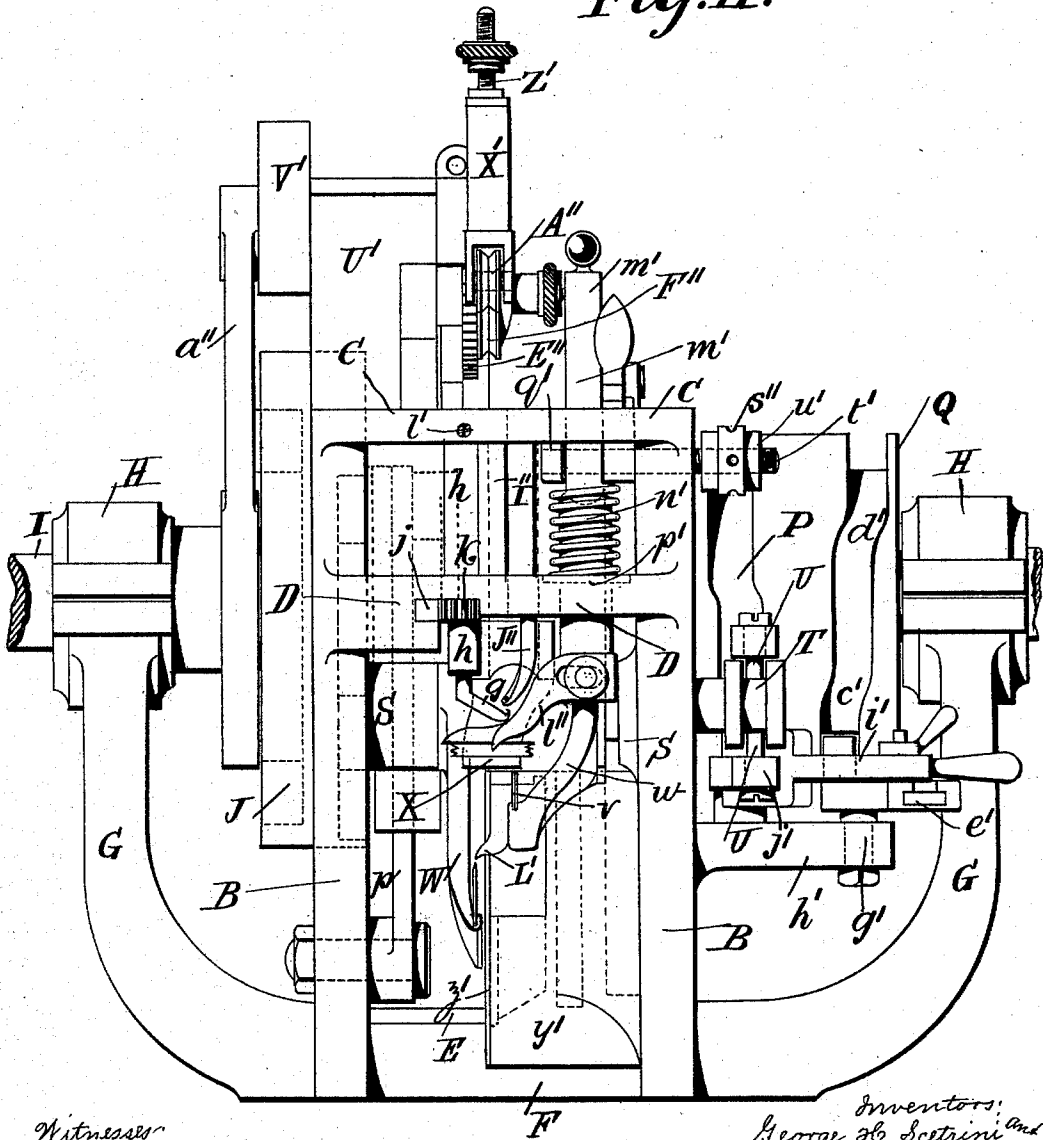
6 Sheets—Sheet 6.

G. H. SCETRINI & G. CADE.
SEWING MACHINE.

No. 527,348.

Patented Oct. 9, 1894.

Fig. 11.



Witnesses:
J. W. Oea.
Thos. A. Green

Inventors:
George H. Scetrini and
George Cade
By James E. Norris.
Atty

UNITED STATES PATENT OFFICE.

GEORGE HARRY SCETRINI AND GEORGE CADE, OF LONDON, ENGLAND,
ASSIGNORS TO HERBERT KYNASTON BRIDGER, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 527,348, dated October 9, 1894.

Application filed March 7, 1894. Serial No. 502,751. (No model.) Patented in England June 21, 1893, No. 12,248.

To all whom it may concern:

Be it known that we, GEORGE HARRY SCETRINI, residing at 1 Lesley Street, Barnsbury, and GEORGE CADE, residing at 12 Cumberland Street, Barnsbury, London, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Lock-Stitch Sewing-Machines, (patented in Great Britain, No. 12,248, June 21, 1893,) of which the following is a specification.

This invention has for its object a novel arrangement of the parts of sewing machines in which waxed or plain threads are used for sewing leather such as the soles of boots and shoes, harness and the like or other comparatively hard substances and consists in the features of construction and novel combinations of devices hereinafter described.

In order that our invention may be clearly understood we have appended the accompanying six sheets of drawings, in which—

Figure 1 is a side view, partly in section, representing the work table, the needle and its carrier, and the cam-operating mechanism for said needle carrier. Figs. 2 and 3 are side and cross-sectional elevations, respectively, of the shuttle, the spool carrier, the spool and accompanying parts. Fig. 4 is a part sectional plan of the awl operating mechanism, showing, also, the manner of mounting and securing the needle quadrant boss to the frame. Fig. 5 shows in side elevation the awl-carrier and the cam for imparting to it a rising and falling motion. Fig. 6 is a side elevation of the mechanism for operating the looper. Fig. 7 is a plan of the looper actuating rack and pinion. Fig. 8 is a part sectional plan illustrating the appliances for locking the presser leg. Fig. 9 is a part sectional side elevation of a sewing machine in which all the parts shown in the preceding figures are assembled in conjunction with other known parts of a boot and shoe sewing machine, the various cams and levers being shown in the proper relative positions for giving the required time movements. Fig. 10 is a reverse side elevation of the same. Fig. 11 is a front elevation of the machine.

Referring to the machine as a whole as represented in Figs. 9, 10 and 11 of the annexed drawings, it will be seen that the body cast-

ing A, is formed with two side cheeks B, B, connected at the top by a plate C, intermediate division D and at the bottom by a thin base E for lodgment and fixture to the main casting F at the back of which and projecting upward are two brackets G, G, fitted with caps H, H as bearings for the main shaft I upon which are arranged transversely from left to right in the order of their enumeration the take up, cam J, looper cam K, needle cam L, awl piercing cam M, shuttle gear wheel N, presser foot locking cam P and stitch regulating cam Q respectively.

At a suitable distance below the intermediate division D and forward of the main shaft I is fitted a countershaft R, that is supported on one side of the needle carrier boss and on the other by an inwardly projecting boss S through which it passes, terminating at the end with a double flange to form a groove T into which two studs U, U, of one of the stitch regulating levers may take for imparting an end on movement to said countershaft R in the manner and for the purpose hereinafter fully explained.

The barbed needle V for drawing the top thread through the work is clamped in any convenient manner in the end of the quadrant lever W and has a circular travel downward below the table X under the action of the needle cam L which in its rotation reciprocates the slide *b* by means of the roller *c* to move the lever W through a given arc it being connected to same by pivoting it to the lug or short lever *d*.

The lever W, hereinafter called the needle carrier is preferably formed with the boss *e* and is retained in its position in the boss S of the side cheek B by two sliding plates *f, f*, which engage in a slot cut in the end of the needle carrier boss in such a manner as to allow it to move freely on its axis but not endwise as will be evident upon referring to the sectional plan Fig. 4.

The looper *g* is fixed eccentrically in the spindle *h* by a screw *i* and is revolved by the to and fro motion of the rack *j* gearing into a pinion *k* on the spindle *h* which is prevented from leaving its bearing by the stud *l* engaging a groove *m*. The necessary movement is imparted to the rack *j* by means of

the face cam K into the race of which a roller *n* has its path, said roller being pivoted to a rocking lever *p* pivoted at its lower end to the side cheek B and at its upper end to a link *q* for transferring the movement of the lever *p* to the lever *r*, also pivoted at its upper end to the cheek B and having a slot *s* in the other end for engaging a pin *t* fixed in the rack *j* which is supported by a stud *u*.

By adopting the above system of compound levers and positive connections for communicating motion to the looper we are enabled to obtain a comparatively large and rapid movement of the rack *j* both for throwing the thread around the needle and releasing the same and without the use of a spring for returning the parts to their normal positions.

The awl *v* is clamped in the end of the lever *w* which is in a piece with a boss *x* and is fixed to the countershaft R by a pin *y* passing through the said shaft R. The boss *x* has an arm *z* which projects backward to below the main shaft I and is furnished with a roller *a'* engaging in the race *b'* of the awl piercing cam M for giving the necessary upward and piercing, and afterward the downward or receding motion to the awl by alternately raising and lowering the lever *z*. The awl is also caused to feed the work forward, the amount of such forward movement being regulated by means of a system of levers and cams in such a manner that the transverse movement of the awl is greater than is required or used for the stitch, as some of the side movement of said awl takes place before it has entered its work the object being to allow the awl and its lever to come well back out of the way of the shuttle hook and needle and carrier.

The beforementioned motion of the awl is obtained by making the cam Q with two steps *c'*, *d'*, which move the quadrant lever *e'* twice in the same direction of the work feed only one of which motions is used to actually move the work as before explained, but the awl is returned to its former positions by one movement of the part *f'* of the cam Q.

The lever *e'* is pivoted at *g'* to the bracket *h'* and has a T slot in same for a similarly shaped bolt to travel in for regulating the distance of the link *i'* from the center *g'* and consequently of the throw or movement of the shaft R imparted to the same by the fork lever *j'* and by the link *v'* which is connected to same intermediate of the pivot point *o'* and fork *l'* of the lever *j'*.

The pressure foot *l''* is furnished with the usual bar *m'* that works up and down in its bearings in the top and division plate C and D respectively it being encircled by a spring *n'* bearing upon a collar *p'* fixed to the presser bar for keeping the foot down upon the work. One side of the bar *m'* is serrated or roughened so that a pinching lever *q'* can bite upon same to hold it in any given position the requisite pressure being put upon it by means of the presser foot cam P acting

upon the lever *r'* which is pivoted to the lug *s'*, outstanding from the side cheek B.

The end of the lever *r'* is forked to receive a screw collar or nut *s²* fitted upon the spindle *t'* which is passed through the fork *u'* and riveted or otherwise fastened to the pinch lever *q'* so that when the cam P moves the lever *r'* over, it opens or shifts the lever *q'* upon its hinge *v'* to free the presser bar *m'* and allow the foot to rise to accommodate itself to the varying thicknesses of the work being sewed.

The amount of grip or bite of the lever *q'* is regulated by the screw collar *s''* which by being screwed up on the spindle *t'* causes the cam P to bind upon the roller *w'* of the lever *r'* and draw the pinch lever *q'* (the face of which is also roughened or serrated) tightly against the bar *m'*.

The shuttle *x'* is retained within the race *y'* by means of the plate *z'* covering the rim or periphery of the same and being secured by screws A'. Within the shuttle the spool carrier B' is placed, the recess that holds it being of an oval or eccentric shape or in other words the recess is formed so that a sufficient space as at C' is left for the carrier to freely rise when pulled by the thread of the loop in order that the lump D' which is formed on the spool carrier B' for the purpose of preventing the rotary movement of the same by its contact against the stop E' may be lifted away from said stop and allow the loop to pass freely by without chafing or in any way rubbing the threads.

The stop E' is pivoted to the shuttle race *y'* at F', the stud G' serving to locate the stop E' in its right position after it has been moved away to allow the spool carrier B' to be withdrawn from the recess in the shuttle.

The spool itself revolves upon the pin H' and the thread from same is passed through a small hole I' in the lump D' and the required tension put upon the same by means of a fine wire J' more or less closing the small hole I' by the set screw K'.

The shuttle *x'*, the hook L' of which is shown in Fig. 9 as just entering the loop brought down by the barbed needle is rotated by the gear wheel M', twice to one complete stroke of the needle by means of the intermediate spur wheel N' and main wheel P' fixed upon the back shaft.

The wheel M' is fitted within the shuttle race in such a manner as to leave a space between the shuttle *x'* and said wheel M' for the passage of the loop around the shuttle, the motion of the wheel being communicated to said shuttle by the piece Q' engaging in the recess R' formed under the shuttle hook.

The "take up" lever S' is mounted upon the end of the shaft T' that is fitted in a horn U' upwardly projecting from the top plate C. On the other end of the shaft T' is a crank disk V' the pin of which can be moved and adjusted by the screw W' to obtain a variable lift of the take up lever S' under the action

of its cam J and slide *a''*. On the front end of the lever is a cylinder X' having within it a spring Y' encircling the spindle Z' in the forked end of which is a pulley A''.

5 The spindle Z' above the spring Y' is fitted with a collar for the said spring to abut against and yield to the sudden pull put upon the thread during the take up motion.

10 B'' is an edge cam for acting upon the rocking lever C'' the end D'' of which engages the ratchet teeth E'' of the tension pulley F'' over which the thread passes to withdraw the pawl at the end of the rocking lever from the teeth and release the thread when the needle 15 is drawing the thread to form a loop, and to lock same during the take up and other motions.

The thread G'' is brought up the back of the machine and led over the guide pulley 20 H'' and then under and around the tension F'' over the wheel A'' of the take up, thence down the tube I'' to the thread guide J''.

When the work to be sewed is placed upon the table X and the machine started, the awl 25 is caused by its cams to rise and at the same time the feed cam by the levers *e' i' j'* moves the shaft R and with it the awl a small distance sidewise and then stops until the awl cam by its continued rotation causes the awl 30 to rise to the end of its stroke and pierce the work for the feed cam Q to move it still farther forward until the hole is directly over the path of the needle V. The awl is then completely withdrawn from the work and 35 quickly moved back to its former position. The needle V then rises and enters the hole previously pierced by the awl for the thread G'' to be thrown under it by the movement of the looper which is rotated by its cam and the levers 40 and links *q, r*, and the rack *j* gearing into the pinion *k*. The looper *g* in its rotation catches the thread just under the guide J'' and draws it close to the needle V which in its downward movement draws it through the work to form the loop: the return movement of the looper meanwhile releasing the 45 thread off its hook. The loop is drawn down

by the needle, so that the hook L' of the shuttle can enter it and cause same to encircle the locking thread in the well known manner. 50 In order that the needle may freely leave the loop it is caused to rise a short distance by the small cam K'' on the main cam and then return to its lowermost position while the take up draws in the loop and the awl moves forward in the manner previously described to 55 feed the work for the next stitch. As the work is fed by the awl the grip lever *q* is released by its cam P and lever *r'* to allow the presser foot to rise and accommodate itself to 60 the varying thicknesses of the work.

What we claim, and desire to secure by Letters Patent, is—

1. The combination of the needle V, the shuttle *x'*, the spool-carrier B', the awl *v*, the 65 awl lever having arms *w, z*, the arm *z* provided with roller *a'*, the cam M having a race *b'* engaged with said lever, the countershaft R on which the awl lever is mounted, the lever *j'*, link *i'*, quadrant lever *e'*, and the cam 70 Q having steps *c', d'* to move the awl twice in the same direction, and a part *f'* for returning the awl, substantially as described.

2. The combination with the presser-foot and the presser-foot bar *m'*, of the grip lever 75 *q'*, screw *t'*, nut *s''*, lever *r'* and cam P for operating said lever *r'* to cause serrations on the grip lever *q'* to alternately engage similar serrations on the presser-foot bar and lock 80 said presser-foot to hold the work and subsequently release the same, substantially as described.

In witness whereof we have hereto signed our names, in the presence of two subscribing witnesses, this 12th day of January, 1894.

GEORGE HARRY SCETRINI.
GEORGE CADE.

Witnesses:

ALEX. RIDGWAY,
Notary Public, St. Michael's Alley, E. C.
HAROLD J. MOORE,
St. Michael's Alley, London, E. C., Notary's Clerk.