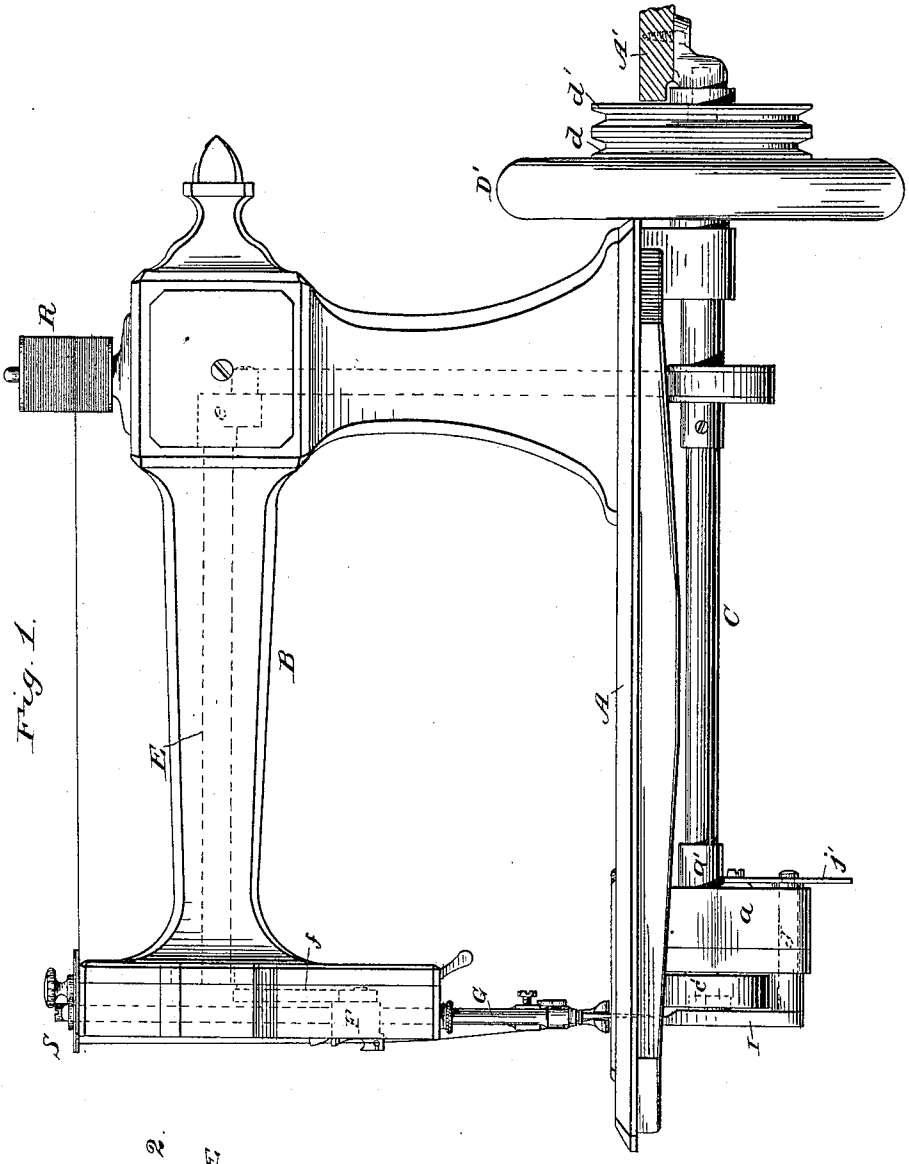
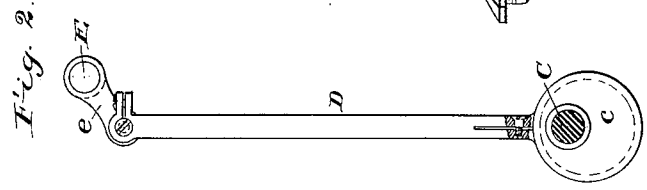
(No Model.) 6 Sheets—Sheet 1.

J. W. POST.

SEWING MACHINE.

No. 320,394. Patented June 16, 1885.





Witnesses:
N. N. Low
E. D. Smith

Inventor:
John W. Post

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J. W. POST.

SEWING MACHINE.

No. 320,394. Patented June 16, 1885.

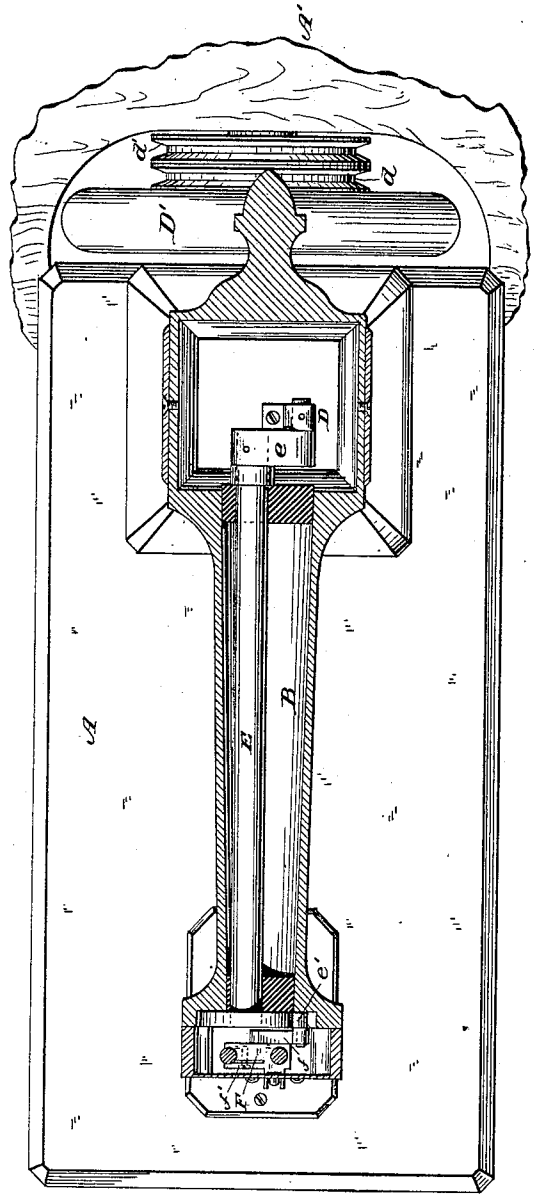

Fig. 3.

Witnesses:
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(No Model.)

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J. W. POST.

SEWING MACHINE.

No. 320,394. Patented June 16, 1885.

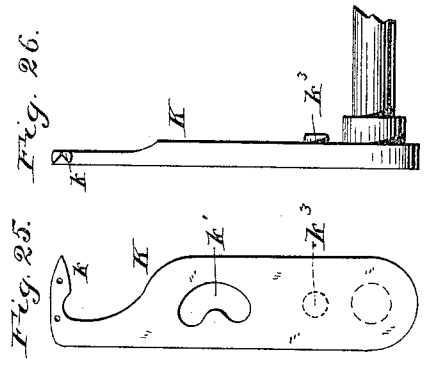

Fig. 26.

Fig. 25.

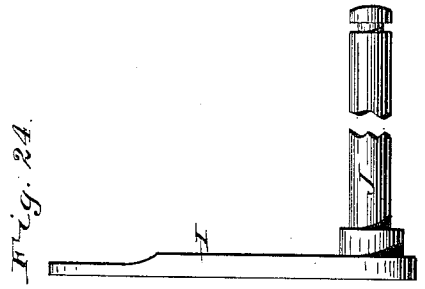

Fig. 24.

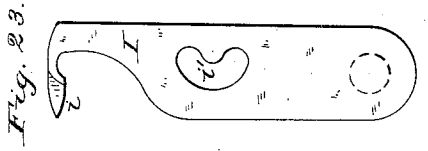

Fig. 23.

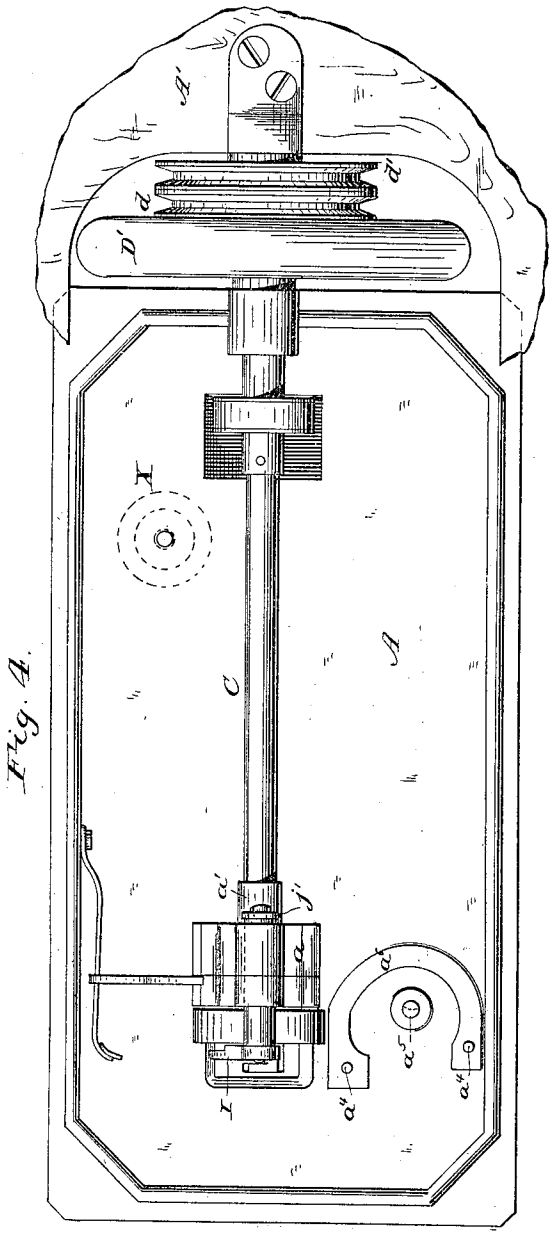

Fig. 4.

Witnesses:
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(No Model.) 6 Sheets—Sheet 4.

J. W. POST.

SEWING MACHINE.

No. 320,394. Patented June 16, 1885.

Fig. 6.

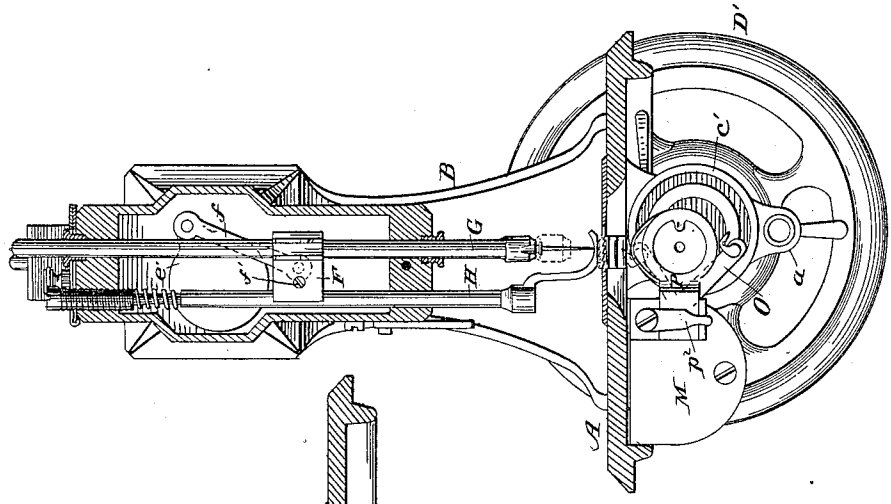


Fig. 7.

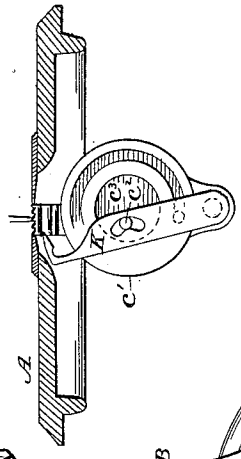


Fig. 5.

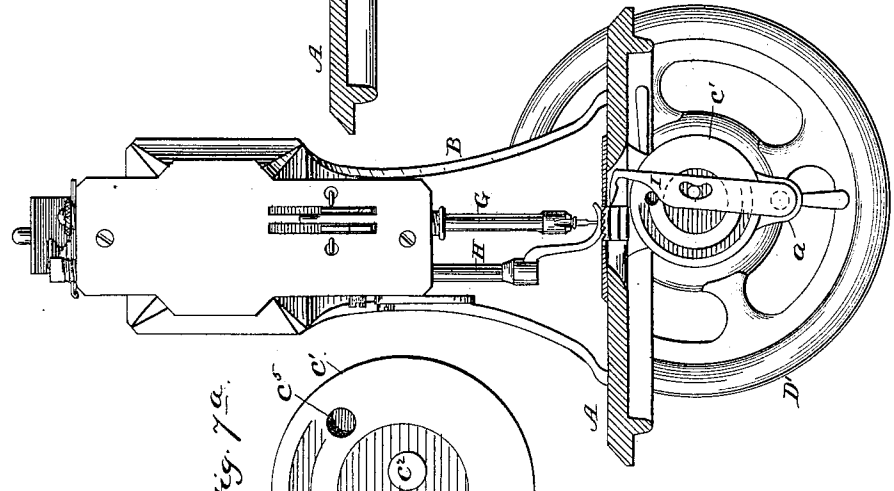
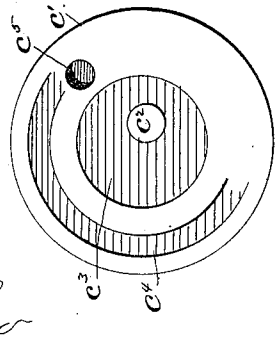


Fig. 7a.



Witnesses:
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SEWING MACHINE.

No. 320,394. Patented June 16, 1885.

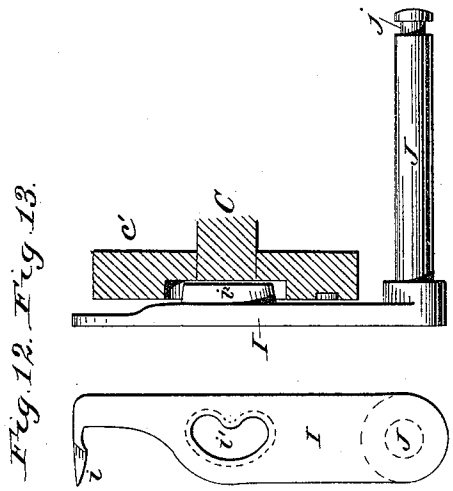

Fig. 12. Fig. 13.

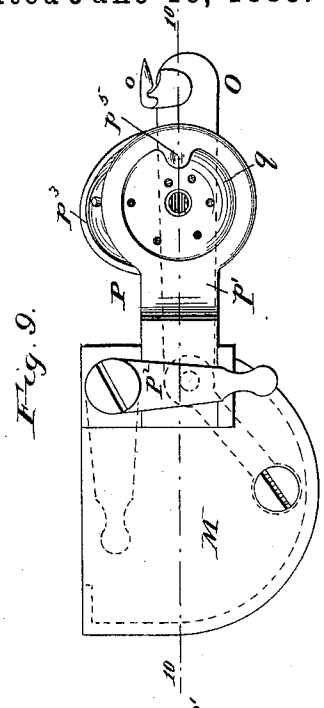

Fig. 9.

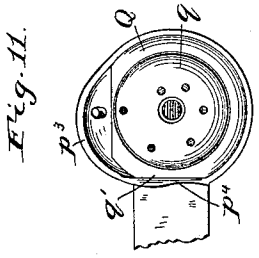

Fig. 11.

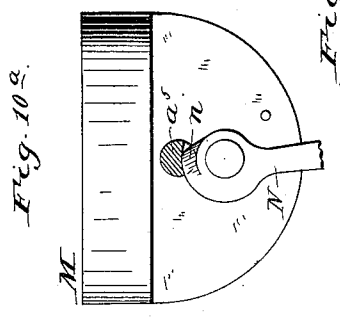

Fig. 10a.

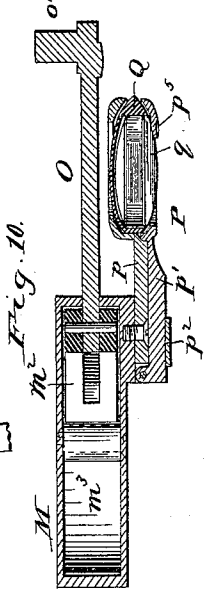

Fig. 10.

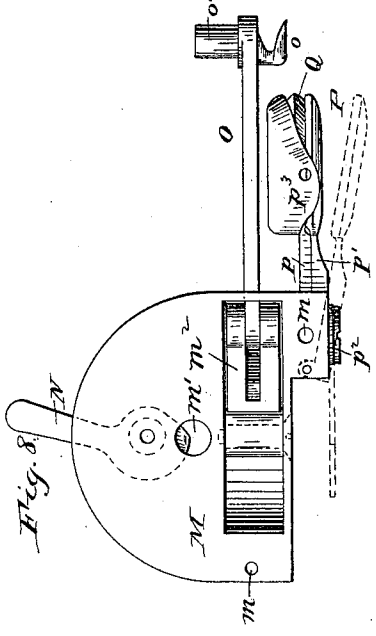

Fig. 8.

Witnesses:
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J. W. POST.

SEWING MACHINE.

No. 320,394. Patented June 16, 1885.

Fig. 18.

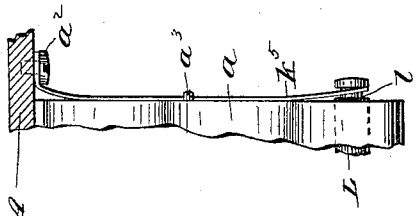


Fig. 17.

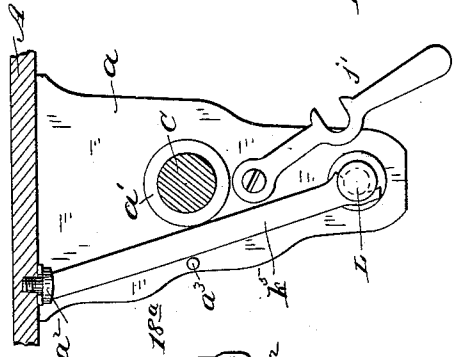


Fig. 18a.

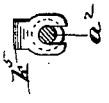


Fig. 15.

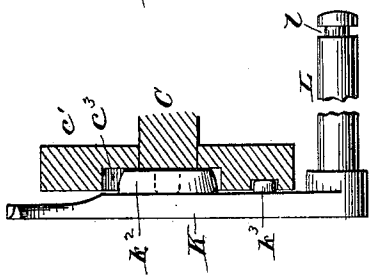


Fig. 14.

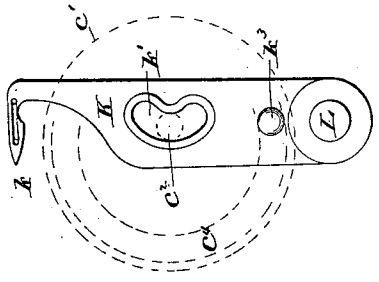


Fig. 16.

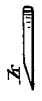


Fig. 22.

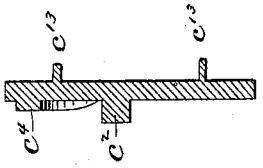


Fig. 21.

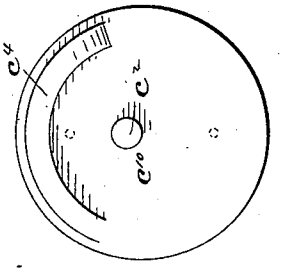


Fig. 20.

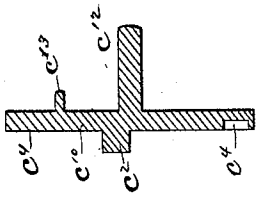
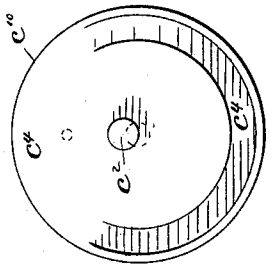


Fig. 19.



Witnesses:

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E. D. Smith

Inventor:

John W. Post

UNITED STATES PATENT OFFICE.

JOHN W. POST, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 320,394, dated June 16, 1885.

Application filed June 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. POST, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates more particularly to that class of sewing-machines capable by means of interchangeable parts of forming different kinds of stitches at the pleasure of the operator, and the object of my present invention is to provide a machine of this kind which will be simple in construction, adapted to high rates of speed, very light running, and almost noiseless, while the interchangeable parts of the stitch-forming mechanism are of such structure that they may be applied to or removed from the machine quickly and easily without the use of a screw-driver or other special instruments, the parts being changed as readily as are hemmers, guides, or other ordinary simple attachments.

In the drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a detail view showing the connections of the lower and upper shafts. Figs. 3 and 4 are, respectively, top and bottom plan views, the former being partly in section. Fig. 5 is a front elevation with the bed-plate in section, showing the chain-stitch looper in position. Fig. 6 is a similar view with the lock-stitch mechanism in place and the face-plate removed. Fig. 7 is a front elevation showing the double chain-stitch mechanism in place. Fig. 7ª is a detail view of the looper-operating crank-disk. Fig. 8 is a top view of the lock-stitch looper and bobbin-supporter and the detachable bracket to which these parts are attached. Figs. 9 and 10 are, respectively, a front elevation and a horizontal section of the same. Fig. 10ª is a detail view showing the means for locking the detachable bracket to the machine. Fig. 11 is a detail view showing the bobbin and bobbin-case and the means for preventing the rotation of the latter. Figs. 12 and 13 are detail views of the single chain-stitch looper. Figs. 14, 15, and 16 show the double chain-stitch looper in detail. Figs. 17, 18, and 18ª show the spring for moving the double chain-stitch looper laterally and adjacent parts. Figs. 19, 20, 21, and 22 are detail views of modifications of the looper-operating crank-disk; and Figs. 23, 24, 25, and 26 are detail views of modified forms of loopers to be used therewith.

A indicates the bed-plate, to which is secured the bracket-arm B, and C is the main or driving shaft journaled beneath the bed-plate. To the main shaft is secured an eccentric, *c*, connected by a pitman, D, to the rear arm, *e*, of a rock-shaft, E, journaled in the horizontal portion of the bracket-arm. A crank, *e'*, on the forward end of the shaft E, is connected by a link, *f*, with a cross head, F, secured to the needle-bar G.

H is the presser bar, which is round, like the needle-bar, and the cross head F is formed with a half-round recess fitting the presser-bar, which thus serves to guide and steady the cross-head, the latter being preferably partly split, as shown, so that wear may be compensated for by an adjusting-screw, *f'*. (See Fig. 3.) The shaft C is provided at its forward end with a disk, *c'*, having a crank-pin, c^2, for actuating the single and double chain-stitch loopers.

I is the single chain-stitch looper, having a looping-hook, *i*, at its upper end and a cam-slot, *i'*, near its center. This cam-slot is preferably formed in an off-set or projecting portion i^2, arranged in a circular recess, c^3, in the face of the disk *c'*, the crank-pin c^2 being placed in said recess. By recessing the face of the disk and using the off-set cam-slot projection, a crank-pin, for operating the looper, which will not project beyond the face of the disk, may be employed, and such crank-pin need not, therefore, be removed when the lock stitch mechanism is to be applied. The looper I is carried by a shaft, J, preferably formed integral with said looper by drop-forging, said shaft being sustained by a bored bracket, *a*, depending from the bed-plate. The inner end of the shaft J projects through the bracket *a*, and is formed with an annular recess, *j*, adapted to be engaged by a slotted latch, *j'*, pivoted to the bracket *a*. It will be obvious that said latch, when swung into position to engage said recess, will serve to hold the shaft in place in the bracket, but when said latch is disengaged from the shaft the latter, with its attached

looper, may readily be removed from the machine.

K is the double chain-stitch looper, which, in general form, is much like the single chain-stitch looper I, the position of its looping-hook k relative to the needle being, however, reversed. The looping-hook k is provided with eyes for the thread, as is common with this class of loopers. The cam-slot k', near the center of the looper, which is for the reception of the crank-pin c^2, is perferably formed in a projecting or off-set portion, k^2, thus adapting this looper to the recess c^3 of the disk c'. The looper K is attached to or formed integral with a shaft, L, corresponding to the shaft J of the single chain stitch looper, said shaft being adapted to the bracket a, in which it is held by a latch-spring, k^5, detachably secured to the bed-plate, by engaging with its forked upper end the head of a pin, a^2, its central portion being held between the pin a^3 on the bracket a and the thimble a', which forms one of the bearings for the shaft C. The lower end of the spring k^5 engages the annular recess l in the shaft L, said spring having a tendency to draw said shaft inward, or toward the right in Fig. 18, but permitting said shaft to move slightly in the opposite direction, when in operation, to allow the looping-hook to move laterally, so that it may vibrate on both sides of the needle, as is common with double chain-stitch loopers. To provide for this lateral movement of the looper K a small lug, k^3 is formed thereon, and the disk c' is provided with a face-cam, c^4, adjacent to said lug, so that as the said disk revolves the co-operating spring and face-cam move the looper and its shaft laterally, said shaft sliding easily endwise in its bearing to accommodate itself to the lateral movements of the looper, which, however, are very slight, being in practice hardly one-sixteenth of an inch.

M is a bracket adapted to be removably secured to the under side of the bed-plate A by dowel-pins a^4 and a^5 on said bed-plate entering holes m and m' in said bracket, the under side of the bed-plate having a milled seal, a^6, against which said bracket fits. The larger dowel-pin a^5 projects through the hole m', which is in the thinner part of the bracket, said pin being provided with an under-cut groove, adapted to be engaged by a locking-lever, N, pivoted to the bracket and provided with an inclined or wedge-shape portion n, engaging the said under-cut groove of the pin a^5. When the bracket M is placed in position on the dowel-pins, it may be securely fastened to the bed-plate simply by turning the lever N into engagement with the pin a^5, and by turning said lever out of engagement with said pin said bracket is quickly rendered removable from said bed-plate.

To the bracket M are attached the lock-stitch looper O and the bobbin-supporter P, these parts being thus adapted to be applied to or removed from the machine with said bracket. The looper O has a looping-hook, o, of well-known form, and a crank-pin, o', freely entering a hole, c^5, in the crank-disk c', the rear end of the arm of said looper being jointed to a forked link, m^2, pivoted within a recess, m^3, in the bracket M, the arm of the looper passing through a slot in said bracket. The forked-link m^2 is of thickness closely corresponding to the width of the recess m^3, so that the walls of said recess serve as guiding surfaces for said link and its attached looper, thereby holding the crank-pin o' of the looper in its hole c^5 in the crank-disk c' with sufficient steadiness and accuracy to obviate the necessity of any special devices for attaching said crank-pin to said disk.

The bobbin-supporter P consists of two arms, p and p', the former being rigidly attached to the said bracket, and the latter pivoted or hinged thereto, so that it may be swung aside when the bobbin-case Q and its inclosed bobbin q are to be inserted or removed. A locking-lever, p^2, pivoted to the bracket M at a point in a vertical line between the ends of the arm p', serves to hold said arm securely in working position, said lever engaging said arm between its pivot and its outer end, so as to have a firm bearing against the same. The frictional contact between said arm and lever is sufficient to prevent any accidental displacement of the latter.

It will be seen that the bracket M consists of horizontal and vertical portions, the former portion fitting against the milled seat a^6 on the under side of the bed-plate, and being provided with holes for the reception of the dowel-pins a^4 a^5, while the bobbin-supporter P and the lock-stitch looper O are both supported by the vertical portion of said bracket, the said looper being attached to said bracket by means of the link m^2 in the recess m^3, as above described. The bobbin-case Q is loosely held between the recessed ends of the arms p and p', the former being provided with an overhanging guard, p^3, for keeping the bobbin-thread out of the way of the looping-hook.

To prevent the rotation of the bobbin-case the latter is formed with a flattened side, q', and the inside of the recessed part of the rigid arm p' with a straight portion, p^4, against which the flattened side of the bobbin case bears.

With bobbin holders or supporters of the class herein shown it has heretofore usually been customary to use a spring for holding the bobbin in its case. To dispense with such a spring and thereby reduce the number of parts, I have provided the recessed and open-faced end of the arm p' of my bobbin-supporter with a lip or lug, p^5, which projects inwardly slightly beyond the periphery and over the face of the bobbin, and thus prevents the latter from coming out of its case when in operative position. This lug is preferably extended inward from the outer side of the bobbin-supporting arm p', as in such position it is out of the way of the loops of needle-thread passing around the bobbin-case at the moment

when the strain on said thread by the looper is greatest. The fly-wheel D′ is provided with the usual belt-pulley *d*, and adjacent to the latter, on a stud secured to the table A′ of the machine in line with the main shaft C, is mounted a pulley-wheel, *d′*, for holding a driving-belt when the machine is to be removed from the table or when it is desired to wind bobbins from the driving-wheel below the table without running the machine.

Instead of forming the crank-disk *c′* with the recess c^3, and the single and double chain-stitch loopers I and K with offset or projecting portions entering said recess, (which construction is preferable, as it requires fewer parts,) these loopers may be made without these offset projecting portions, and a separate detachable disk, as c^{10}, Figs. 19, 20, 21, and 22, carrying the crank-pin c^2, be employed. This removable disk will be held in position by a steadying-spindle, c^{12}, to which it is fixed, entering a central hole in the shaft, and dowel-pins c^{13} on the disk c^{10} entering holes in the main disk *c′*. These pins will cause the former to rotate with the latter, the disk c^{10} being held against the disk *c′* by the looper which is being operated by the crank-pin carried thereby.

In the modification the face-cam c^4 which, in connection with a co-operating spring, imparts the lateral movements to the double chain-stitch looper, may be recessed into the face of the looper-operating disk c^{10}, so that its highest portion is just flush with the face of the disk, as shown in Figs. 19 and 20, or said cam may be raised above the face of the said disks, as shown in Figs. 21 and 22.

R is the thread spool from which the thread passes through a tension device, S, and a take-up device attached to or formed integral with the cross-head F to the needle. These tension and take-up devices are not herein claimed or fully described, as they constitute the subject-matter of another application, Serial No. 136,181, filed simultaneously herewith.

The operation of my machine will be readily understood by those skilled in the art from the foregoing. When the main shaft is rotated, the eccentric thereon, through the pitman in the vertical portion of the bracket-arm, will impart a rocking motion to the upper shaft, which, being connected with the needle-bar, will give a vertical reciprocating movement to the latter. Supposing the single chain-stitch looper to be in position to co-operate with the needle, said looper will be vibrated by the crank-pin c^2, working in the cam-slot in the looper. When the needle has descended to its lowest point and has commenced to rise, the loop of thread then thrown out by said needle will be seized by the vibrating looper and held until the needle descends at the formation of the next stitch. The looper moves backward as the needle is coming down, so that the first loop will be held in position for the needle to pass the second loop through it, the looper then backing out or casting off the first loop. As the needle begins to rise the looper again moves forward, seizes the second loop and draws it through the first, which is tightened by the extension of the second loop and the drawing up of the thread by the take-up on the needle-bar. These operations are repeated indefinitely during the formation of chain-stitches. The double chain-stitch is formed in substantially the same manner as in the well-known Grover & Baker machine. The looper K, having been placed in position and supplied with thread from the spool X, sustained beneath the work-plate, and the machine being set in motion, the needle descends to its lowest point and as it begins its upward movement the looper operated by the crank-pin, c^2, working in the cam-slot *k′*, moves forward and seizes the loop of needle-thread. As the needle continues its ascent the face-cam c^4, operating against the lug k^3, moves the looper slightly outward or laterally, so that when the needle again descends it passes between the looper and the thread of the latter, thus carrying a loop of the needle-thread through a loop of the looper-thread. The looper then retreats, backing out of or casting off the loop of needle-thread, and as soon as the face-cam has passed beyond the lug the looper returns to its first position under the stress of the spring k^5, acting on the looper-shaft. The needle has in the meantime continued to descend, carrying a new loop through the old loop of needle-thread cast off from the looper, and as said needle again begins to rise the looper again moves forward, seizes the new loop of needle-thread and draws it through the old one. Thus the operation continues, the loops of needle and looper thread being passed alternately through each other and tightened into the fabric by the upward and backward movements of the needle-bar and looper, respectively.

When it is desired to form lock-stitches, the bracket M, with its attached looper and bobbin-supporter, will be placed in position and secured to the bed-plate by turning the locking-lever N into engagement with the undercut pin a^5, the crank-pin *o′* on the looper being entered into the hole c^5 in the crank-disk *c′*. Motion being imparted to the machine, the needle descends, and as it commences its upward movement it throws out a loop of thread, which is seized by the looping-hook *o*. The needle continues its movement and the looping-hook passes around and below the bobbin-case and bobbin, carrying with it the expanded loop of needle-thread. When the said loop-hook is on the lower side of the bobbin-case, it will be moving backward or from its point, instead of forward or toward its point, as it does when on the upper side of said bobbin-case, and during this backward movement the looper becomes disengaged from its loop after having carried the latter past the center of the bobbin-case. The looper, continuing its movement, seizes a second loop of needle-

thread, which has in the meantime been thrown out by the needle, and in expanding this second loop in carrying it round the bobbin-case the first loop is tightened into the fabric, thereby completing the stitch. Thus the operation continues, resulting in a seam of lock-stitches.

From the foregoing it will be obvious that chain, double-chain, or lock stitches may be produced at the pleasure of the operator, the different loopers to form these different stitches being quickly and easily attached to or removed from the machine.

Having thus described my invention, I claim—

1. In a sewing-machine, the combination of a shaft having a crank-disk provided with a recess in its face, a crank-pin arranged in said recess, and a pivoted looper having an offset or projecting portion adapted to be received into said recess and having a cam-slot formed in said offset portion, substantially as set forth.

2. In a sewing-machine, a crank-disk adapted to co-operate with interchangeable chain, double-chain, and lock-stitch loopers, said disk having in its face a recess in which is arranged a crank-pin, a hole for the reception of the crank-pin of the lock-stitch looper, and a face cam for moving the double-chain stitch looper laterally, combined with mechanism for operating said crank-disk and at will with one of said loopers, substantially as set forth.

3. In a sewing machine, the combination, with the bed-plate having a bored bracket, of a looper having a cam-slot near its center, a pivot-shaft for said looper at the lower end thereof, a device for removably securing said shaft in said bracket, and mechanism for operating said looper, substantially as set forth.

4. In a sewing-machine, the combination, with the bed-plate having a depending bored bracket, of a looper having a pivot-shaft extending through said bracket and provided with an annular recess, and a slotted locking-latch adapted to engage said recess to hold the looper-shaft and looper in place, substantially as set forth.

5. In a sewing-machine, the combination, with a shaft having a crank-disk provided with a crank-pin and a face-cam, of a double chain-stitch looper having on one face a projecting lug, a longitudinally-movable pivot-shaft connected with said looper, and a spring for moving said shaft in opposition to the movements imparted thereto by said face-cam, substantially as set forth.

6. In a sewing-machine, the combination, with the bed-plate thereof having dowel-pins, one of which is provided with an under-cut recess, of a bracket having vertical and horizontal portions, the latter provided with holes for the reception of said pins, a locking-lever having an inclined portion for engagement with said under-cut pin, and a lock-stitch looper and bobbin-supporter, both connected with the vertical portion of said bracket, and thus attachable to and removable from the machine therewith, substantially as set forth.

7. In an interchangeable-stitch sewing-machine, the combination, with a bed-plate having a milled seat, a^6, and dowel-pins, one of the latter being provided with an under-cut recess, of a bracket having vertical and horizontal portions, the latter portion fitting against said milled seat and being provided with holes for the reception of said pins, a locking-lever pivoted to the horizontal portion of said bracket and having an inclined portion for engagement with the under-cut dowel-pin, and a lock-stitch looper and bobbin-supporter, both connected with the vertical portion of said bracket, substantially as set forth.

8. In a sewing-machine, the combination, with a lock-stitch looper having a crank pin, of a disk having a hole for the reception of said pin, a bracket having a recess, and a link jointed to the arm of said looper and arranged in said recess, said link having a thickness closely corresponding to the width of said recess and being thus adapted to be steadied and guided by the walls thereof, substantially as set forth.

9. In a sewing-machine, the combination, with a removable bracket, of a bobbin-supporter carried thereby and composed of a fixed and a pivoted arm, and a locking-lever pivoted to said bracket at a point in a vertical line between the ends of said arm and thus adapted to bear against the same to hold it in working position between its pivot and its free end, substantially as set forth.

10. In a sewing-machine, the combination of a bobbin-supporter composed of two arms recessed for the reception of the bobbin-case, one of the said arms having an open face and an inwardly-projecting lip or lug, a bobbin-case, and a bobbin supported therein, said lug projecting over the bobbin and thus serving to hold the latter in its case, substantially as set forth.

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

JOHN W. POST.

Witnesses:

ALBERT H. NORRIS,

JULIUS G. CLARK.