

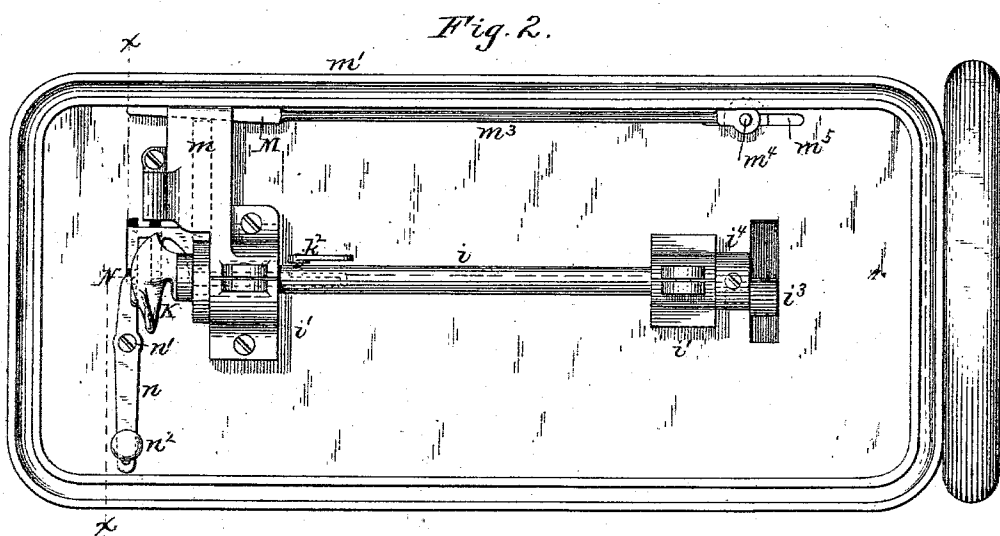
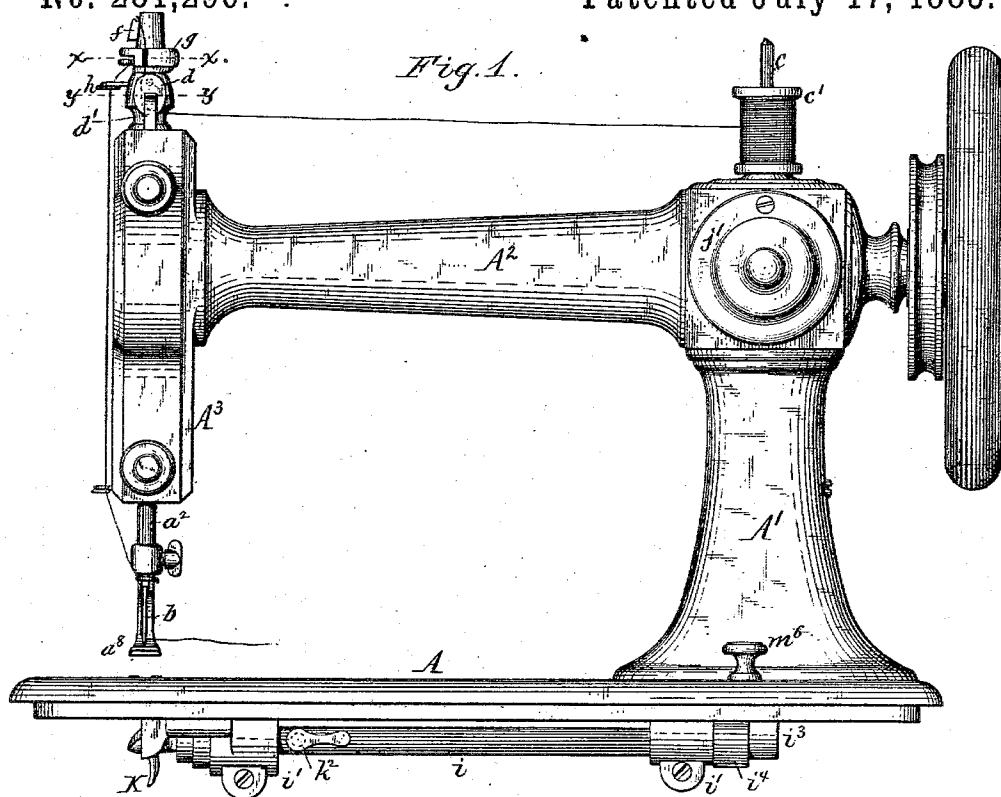
(No Model.)

4 Sheets—Sheet 1.

J. W. POST.
SEWING MACHINE.

No. 281,296.

Patented July 17, 1883.



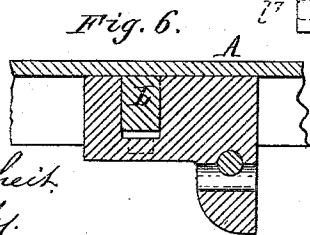
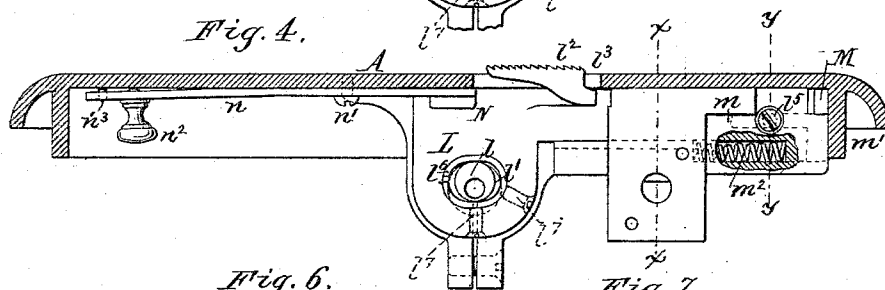
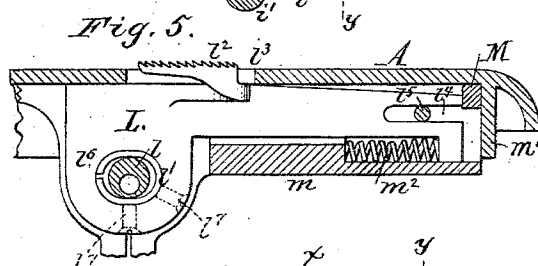
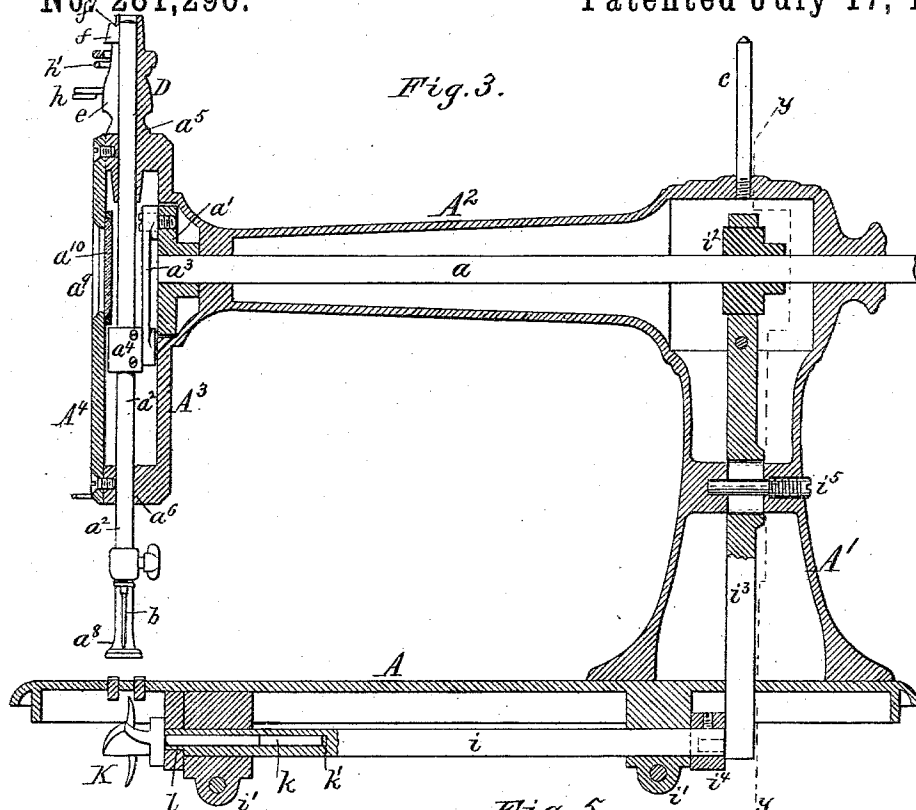
Chas. J. Buchheit
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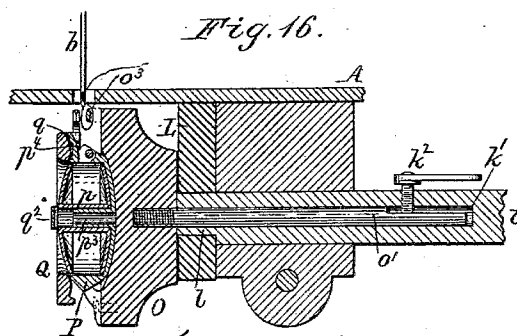
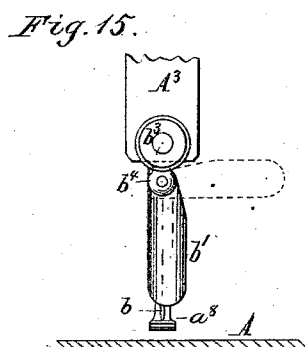
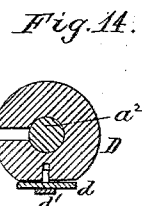
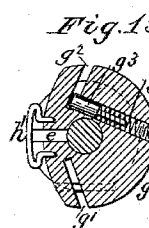
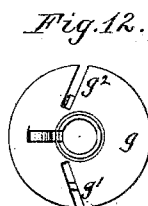
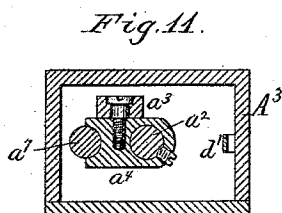
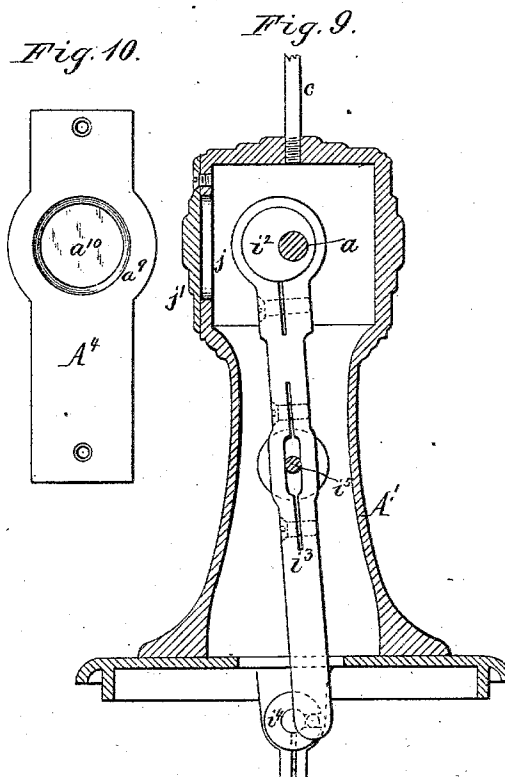
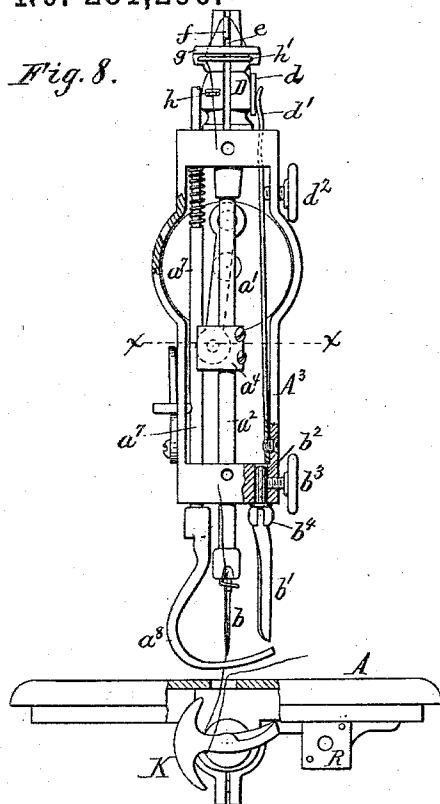
(No Model.)

4 Sheets—Sheet 3.

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No. 281,296.

Patented July 17, 1883.



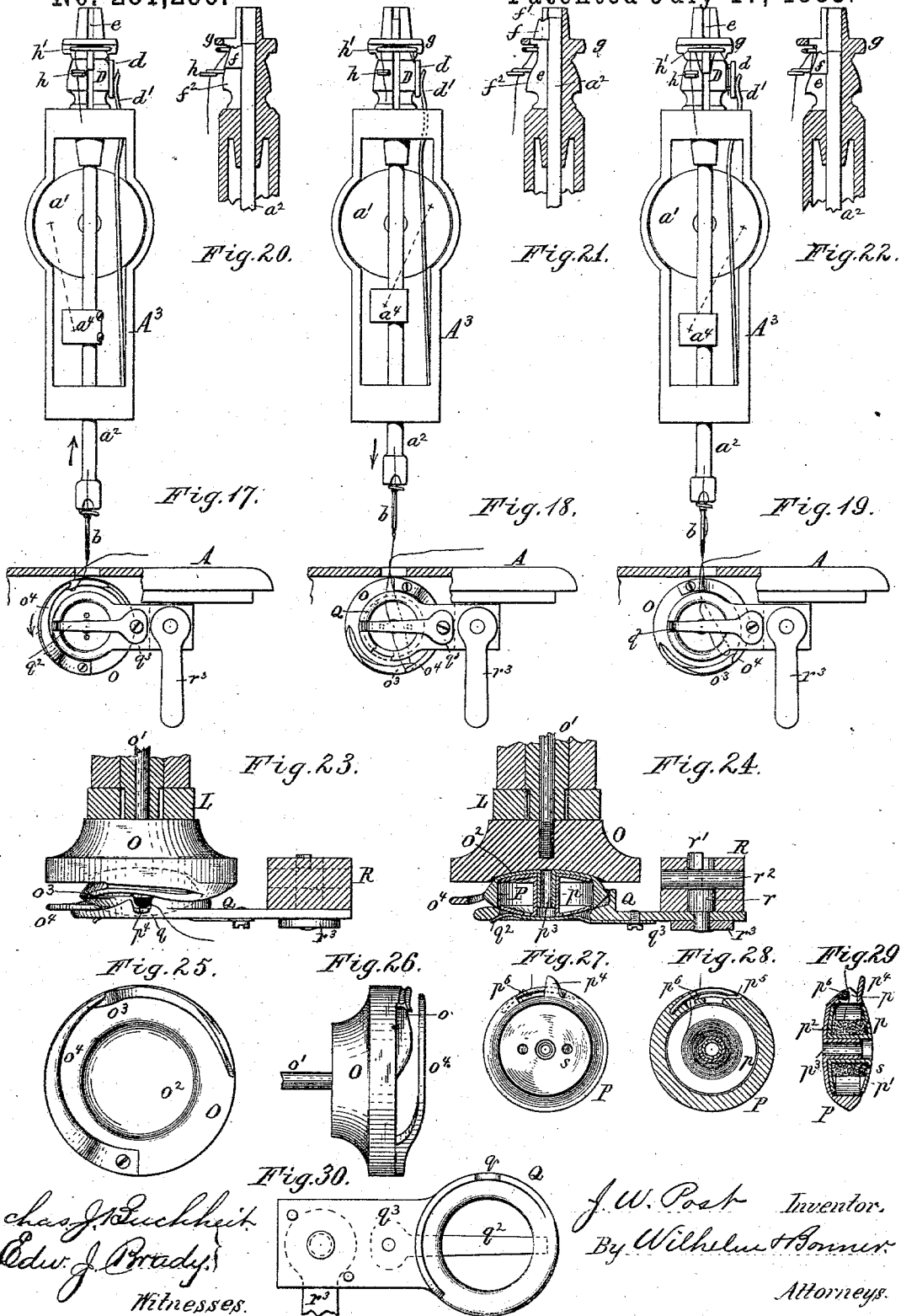
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Witnesses.

J. W. Post Inventor.
By Wilhelm H. Bonner
Attorneys.

UNITED STATES PATENT OFFICE.

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

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 281,296, dated July 17, 1883.

Application filed February 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. POST, of the city of New York, in the county of New York, and State of New York, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

The object of this invention is the construction of a sewing-machine which shall be free from irregular motions, and which shall be capable of forming a lock-stitch or the chain-stitch, and in which the number of parts of which the machine is composed is greatly lessened, and which is easily operated and substantially noiseless in its operation.

My invention consists to that end of the improvements which are hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of four sheets, Figure 1 is a side elevation, and Fig. 2 a bottom plan view, of a machine provided with my improvements. Fig. 3 is a longitudinal section of the same. Fig. 4 is a cross-section, on an enlarged scale, in line *x x*, Fig. 2, with the looper removed. Fig. 5 is a partly-sectional front elevation of the feed-plate and connecting parts. Figs. 6 and 7 are cross-sections in lines *x x* and *y y*, Fig. 4, respectively. Fig. 8 is a partly-sectional front elevation. Fig. 9 is a vertical cross-section in line *y y*, Fig. 3, looking forward. Fig. 10 is a front elevation of the face-plate at the head of the machine. Fig. 11 is a horizontal section, on an enlarged scale, in line *x x*, Fig. 8. Fig. 12 is a top plan view of the upper end of the guide of the needle-bar. Figs. 13 and 14 are horizontal sections in lines *x x* and *y y*, Fig. 1, respectively. Fig. 15 is a side elevation of the needle-guard. Fig. 16 is a longitudinal section of the lock-stitch mechanism on an enlarged scale. Fig. 17 is a front elevation of the needle-bar and lock-stitch mechanism, showing the parts in the position in which the hook of the revolving looper seizes the loop. Fig. 18 is a front elevation of the same parts, showing the same in the position in which the needle-thread is drawn off to its greatest length. Fig. 19 is a similar front elevation, showing the loop drawn off the hook of the looper. Figs. 20, 21, and 22 are vertical longitudinal sections of the upper portion of the needle-bar and guide, corresponding, respectively, with Fig. 17, 18, and 19. Fig. 23

is a partly-sectional top plan view of the lock-stitch mechanism and connecting parts on an enlarged scale. Fig. 24 is a horizontal section of the same parts. Fig. 25 is a front elevation of the revolving looper. Fig. 26 is a side elevation of the same. Fig. 27 is a front elevation of the spool-holder. Figs. 28 and 29 are vertical sections of the spool-holder at right angles to each other. Fig. 30 is a rear elevation of the arm bearing against the front side of the spool-holder.

Like letters of reference refer to like parts in the several figures.

A represents the bed or base plate of the machine; A', the hollow standard rising therefrom; A², the hollow arm extending forwardly from the upper end of the standard; and A³, the head-block, arranged in a well-known manner, with the exception that the body of the standard A' and the arm A² are made round in cross-section, so that it can be readily turned off and prepared for the operation of plating, thereby doing away with the great amount of manual labor otherwise required for finishing these parts.

a represents the horizontal driving-shaft, arranged in the arm A², and provided at its front end with a crank-disk, *a'*, by which the needle-bar *a²* is operated.

a³ is a connecting-rod, which is attached with one end to the crank-pin of the disk *a'* and with its other end to a cross-head or sleeve, *a⁴*, which is secured to the needle-bar *a²* by set-screws, as shown in Figs. 3 and 8, or in any other suitable manner. The needle-bar *a²* is guided at the upper end of the head A³ in a cylindrical bearing, *a⁵*, and at the lower end thereof in a similar bearing, *a⁶*.

a⁷ represents the vertical rod of the presser-foot *a⁸*. This rod is also guided in the top and bottom of the head-block A³. The cross-head *a⁴* surrounds the needle-bar *a²*, and is provided at the side adjacent to the bar *a²* of the presser-foot with a semi-cylindrical bearing-surface, which bears against the inner side of the presser-foot bar *a⁷* and serves to guide the cross-head on the same, thereby giving the needle-bar a bearing intermediate between the top and bottom portions of the head-block A³. The cross-head *a⁴* is readily constructed by forming a cross-head twice as long as necessary and drilling three holes through the same at equal dis-

tances apart, and then dividing the cross-head centrally through the middle opening, whereby two cross-heads of similar form will be formed.

5 A^4 represents the face-plate of the head-block A^3 . This face-plate is provided with an opening, a^9 , which is covered by a glass, a^{10} , placed opposite the crank-disk a' , so that the head motion can be observed through this glass, thus facilitating the application of oil and the taking up of lost motion through an opening in one of the side walls of the head-block A^3 .

15 b represents the needle, secured to the lower end of the needle-bar a^2 in any suitable and well-known manner.

b' represents a shield or guard, which is arranged in front of the needle, so as to hide the needle-bar from the view of the operator, thereby relieving the eyes of the operator from the unpleasant sensation and dazzling effect caused by the rapidly-reciprocating needle-bar. The shield b' may be secured to the head-block A^3 by a shank, b^2 , inserted in an opening in the head-frame, and secured therein by a set-screw, b^3 , the shield being pivoted to the shank b^2 by a hinge, b^4 , so that the shield can be swung out of the way, so as to expose the needle when necessary to thread it or for other purposes. The shield b' also protects the needle against breakage by preventing obstructions from coming in contact with the needle from the side on which the guard is arranged, the other side being protected by the presser-foot.

35 c represents the vertical spool-post, secured to the upper end of the standard A' , and c' is the spool turning thereon.

40 d represents the tension-disk, arranged on one side of the needle-bar guide D at the upper end of the head-block A^3 , and d' represents a spring whereby the disk d is pressed against the flat side of the needle bar guide D. The spring d' is preferably a long flat spring, which is secured with its lower end to the inner side of one of the side walls of the head-block A^3 , and which is adjustable at its upper end by means of a set-screw, d^2 , as represented in Fig. 8. The great length of this spring permits of a very fine adjustment of the pressure against the tension-disk D.

55 e represents a vertical slot or mortise formed in the needle-bar guide D on its front side, and extending, preferably, from the top plate of the head-block A^3 to the upper end of the needle-bar guide.

60 f represents a projection formed on the front side of the needle-bar a^2 , near its upper end, and playing in the mortise e . The projection f is constructed in its upper surface with a depression or groove, f , in which the thread rests when the needle-bar rises and completes the stitch in sewing the chain-stitch. The front side of the projection is made inclined forwardly, and the front side of the needle-bar guide D is also inclined forwardly, as shown at f^2 , on both sides of the mortise e . The in-

clined forward portion of the needle-bar guide D projects farther forward than the projection f on the needle-bar, so that as the projection descends between the inclined portions of the guide D the latter will draw forward the thread which rests against the under side of the projection f in sewing the lock-stitch, and will finally withdraw the thread from under said projection and release it therefrom.

75 g represents a collar formed on the needle-bar guide D, above the tension-disk d , and extending forward beyond the mortise e , which extends through this collar.

80 g' and g^2 are notches formed in the collar g on opposite sides of the mortise e . The notch g' is provided with a tension-bolt, g^3 , which is arranged in a suitable socket in the collar g , and provided with a tension-spring, g^4 , which can be adjusted by means of a screw, g^5 , whereby the thread is steadied or held against any flopping movement.

In sewing the chain-stitch the thread runs from the spool c' to the tension-disk d , thence upwardly through the notch g' , thence across the upper side of the collar g and the notch in front of the needle-bar to the notch g^2 , thence downward and through a guide-eye, h , on the front side of the needle-bar guide D, and thence downward through the eye of the needle, as represented in Figs. 1 and 8.

In sewing the lock-stitch the thread runs from the tension-disk d over a horizontal loop, h' , which is arranged on the front side of the needle-bar guide D, below the collar g , and thence downward to the guide h and the eye of the needle, as represented in Figs. 17, 18, and 19.

105 i represents the horizontal shaft whereby the looper and feed mechanism are actuated, and which is supported in suitable bearings, i' , formed on the under side of the bed-plate A. Motion is imparted to the shaft i from the driving-shaft a by an eccentric, i^2 , mounted on the shaft a , and an eccentric-rod, i^3 , connected at its lower end to a crank-disk, i^4 , mounted on the end of the shaft i . The eccentric-rod i^3 rocks on a fulcrum-pin, i^5 , secured to the standard A' .

115 j represents an opening formed in the front wall of the upper portion of the standard and provided with a removable cover, j' , which can be taken off for oiling and adjusting the eccentric i^2 and the eccentric-rod attached thereto.

120 K represents a rotating looper which is employed for forming the chain-stitch. The looper K is provided with a shank, k , which is inserted in a socket, k' , formed in the shaft i , and secured thereto by a set-screw, k^2 , having a suitable handle, and engaging in a groove or against the flattened side of the inner portion of the shank k , so that the looper can be readily secured in place and removed, as may be required.

130 l represents an eccentric neck formed at the front end of the shaft i , for actuating the feed-bar L. The eccentric l is made smaller in di-

ameter than the shaft *i*, and engages in an elongated opening, *l'*, formed in the feed-bar L. The latter is provided with the usual serrated surface, *l'*, which projects upward through an opening, *l'*, in the bed-plate A.

l' represents a notch formed in the rear end of the feed-bar, and *l'* is a horizontal bolt, which is secured in a casting, *m*, formed on the under side of the bed-plate A. The bolt *l'* extends through the notch *l'* in the feed-bar and supports the rear end of the feed-bar.

The opening *l'*, in which the eccentric *l* works, is bushed with a metallic split ring, *l'*, conforming to the contour of opening *l'*, and one or more screws, *l'*, pass through the feed-bar L and impinge against the bushing *l'*, as shown at Fig. 5, whereby any wear occurring between the eccentric and the bushing may be taken up or compensated for by the contraction of the bushing through the medium of the screws *l'*, in an obvious manner.

M represents an adjustable wedge arranged on the under side of the bed-plate A, between the rear end of the feed-bar L and the depending side flange, *m'*, on the bed-plate A. When the feed-bar L has been retracted, it rests with its rear end against the wedge M, as represented in Fig. 5. By adjusting the wedge M in one or the other direction, the feed-bar can be moved forward or backward, thereby changing the starting-point of the feed-bar and reducing or increasing the throw of the feed-bar and the length of the stitch.

m' represents a spiral or other suitable spring interposed between a shoulder on the casting *m* and a shoulder near the rear end of the feed-bar in such a manner as to press the feed-bar backward. The rotation of the eccentric *l* effects the forward movement of the feed-bar, during which the spring *m'* is compressed, and the reaction of the spring effects the return movement of the feed-bar.

The wedge M is provided with a rod, *m'*, extending along the lower side of the bed-plate A, said rod having at its rear end a bolt, *m'*, which extends upward through an elongated opening, *m'*, in the bed-plate, and on the upper side of the latter is a thumb-nut, *m'*, whereby the bolt can be clamped in any desired position. The wedge M is adjusted by moving the bolt *m'* in one or the other direction in the slot *m'*.

N is a plate which is arranged on the under side of the bed-plate A, in front of the looper K, for the purpose of confining the outer portion of the loop of the needle-thread and compelling it to be thrown off on the inner side of the needle, where it can be seized by the hook of the looper K. The plate N is mounted upon the end of a lever, *n*, which is pivoted to the under side of the bed-plate A at *n'*, and provided at its opposite end with a thumb-piece, *n'*, for conveniently taking hold of it. The lever *n* is made sufficiently elastic to permit it to be locked in position by the engagement of a small stud or protuberance, *n'*, on the underside of the bed-plate in corresponding open-

ings in the end of the lever *n*. The plate N can be readily swung away from the looper K when the latter is to be removed from the shaft *i*.

O represents the disk of the looper, which is employed in sewing the lock-stitch, and which is provided with a shank, *o'*, constructed in all respects like the shank *k*, hereinbefore described, which is formed on the looper K, and whereby the disk O is secured to the shaft *i*. The disk O is provided on its face side with a concave depression, *o'*, in which the convex rear side of the spool-holder P is seated.

o' represents a hook formed on the face of the disk O, for taking the loop from the needle, and *o'* is a curved arm secured to the face side of the disk O and arranged in front of the hook *o'*, with its free end near the point of the hook *o'*, as clearly represented in Figs. 25 and 26.

The spool-holder P is constructed with the convex rear side and a V-shaped annular edge surrounding its open front. *p* represents the spool, constructed with convex inner and outer sides or disks, *p'* *p'*, and turning on a hollow arbor, *p'*, which is secured to the rear wall of the spool-holder P.

Q is an annular frame which bears against the front side of the spool-holder P, and which serves to confine the latter in the concave depression in the front side of the disk O. The spool-holder P is constructed with a lip or projection, *p'*, which engages in a notch, *q*, formed in the annular frame Q, whereby the spool-holder is prevented from turning in the disk O.

p' represents an opening or recess in the peripheral wall of the spool-holder, through which the thread is drawn, and *p'* represents a wire or bar arranged in said opening or recess, for the purpose of giving tension to the thread by winding the thread around said bar, as represented in Fig. 28.

q' represents a spring or yielding arm, which is secured to the shank *q'* of the annular frame Q, and which bears against the front side of the spool with sufficient force to retain the spool in its proper position, and at the same time permit it to turn as the thread is drawn off. The shank *q'* of the annular frame Q is attached to a bracket, R, depending from the base-plate A of the machine, by a bolt, *r*, which is seated in a socket in the bracket R, and constructed at its inner end with a notch, forming a hook, *r'*, which can be engaged behind a transverse bolt, *r'*, secured in said bracket and intersecting the socket in which the bolt *r* is seated, so that by giving the bolt *r* a quarter-turn in one or the other direction by means of the handle *r'* the bolt is locked or unlocked and the annular frame Q attached or released, as may be desired. While I have shown a desirable means of securing the frame or holder in place, as just described, it will be apparent that changes may be made in this particular without departing from the spirit of my invention, so long as the idea is preserved

of securing the frame or holder in place by a partial rotation only of the locking device—such, for instance, as that known as a “bayonet-joint.” Upon removing the annular frame Q the spool-holder P and the disk O can be removed from the shaft *i* and the looper K substituted for the same.

It will be observed that the shanks *k* and *o'* of the loopers K and O, respectively, are each formed with a flattened side, which is so arranged that when the screw *k*² projects slightly within the socket *k'* said shanks can only be inserted when their flattened sides are turned toward said screw. These flattened sides are so arranged axially relative to the hooks of the loopers as to insure the setting of said loopers in their proper operative positions without any special care on the part of the operator.

In sewing the lock-stitch the looper, spool-holder P, and annular frame Q are arranged in position as represented in Fig. 17. The loop thrown off by the needle is seized by the hook *o*³ of the looper, and during the rotation of the latter in the direction of the arrow in Fig. 17 the loop is gradually enlarged and carried onward, the outer portion of the loop passing between the front side of the spool-holder P and the annular frame Q, and the rear side of the loop passing between the rear side of the spool-holder P and the disk O until the parts reach the position represented in Fig. 18. When the descending movement of the needle-bar begins, the projection *f* at the upper end of the needle-bar begins to depress that portion of the thread which extends across the loop *k'*, and the continuation of this movement of the projection *f* draws the loop from the hook *o*³ of the looper, as represented in Fig. 19. In this manner the needle-thread is looped around the thread coming from the spool in the spool-holder P.

The curved arm *o'* is located in close proximity to the front side of the needle, and prevents the loop of the needle-thread from being thrown off on the front side of the needle, but compels it to be formed on the rear side, in the path of the hook *o*³. Said arm *o'* also serves to keep the loop of the needle-thread, which has been drawn from the hook *o*³, out of the way of said hook until it has been drawn up and tightened by the formation and enlargement of the next succeeding loop.

The front plate of the spool *p* is provided with one or more openings, *s*, through which the amount of thread contained on the spool can be observed without removing any part of the mechanism.

My improved machine is free from irregular motions, and is therefore easily operated with very little effort at a high rate of speed, and its operative parts move with very little noise. The machine can be readily adapted to sew either a chain or a lock stitch without requiring the use of either a screw-driver or a wrench for this purpose. By avoiding the use of an independent take-up for taking up slack

loops, and by paying the thread for each successive stitch directly from the spool and drawing it tight only at the point of finishing each stitch, the friction on the thread is greatly reduced and the liability of the thread being broken considerably lessened. As a very light tension is sufficient, the wear on the thread is avoided, and the seam accordingly strengthened.

It will be observed that, instead of using the rotary looper described for making the lock-stitch, a rotary shuttle could be employed by making only such changes as would be apparent to any one skilled in the art, the gist of my invention in this particular consisting in the generic idea of employing interchangeable rotary devices for forming the two kinds of stitches.

It will be understood that what is meant by the “interchangeability” of the devices designed to be secured to the end of the rotary shaft beneath the bed-plate is that both are so organized and constructed as to be attached to and removed from the end of the shaft, and that each is removed to make place for the other in converting the machine from a lock-stitch to a chain-stitch, and vice versa.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a sewing-machine, of a needle-operating mechanism arranged above the bed-plate, a rotary-shaft arranged beneath the bed-plate, and rotary devices adapted to be interchangeably secured to or carried by said shaft for co-operating with the needle in forming either lock or chain stitches, substantially as set forth.

2. The combination, with a reciprocating needle-bar and a revolving shaft provided at its front end with suitable means of attachment, of the lock and chain stitch loopers O and K, adapted to be interchangeably secured to said revolving shaft, substantially as and for the purposes set forth.

3. In a convertible sewing-machine adapted for use with either a revolving chain-stitch looper, K, or a revolving lock-stitch looper, O, the rotary shaft *i*, provided with an axial slot or socket, *K'*, and a set-screw, *K*², the latter projecting slightly within said socket, in combination with the looper-shanks provided at their ends with a grooved or flattened surface, whereby the proper adjustment of said loopers with reference to the needle is secured, as hereinbefore set forth.

4. The combination, in a sewing-machine, of a rotary driving-shaft arranged above the bed-plate, a needle-bar connected with and operated by said driving-shaft, a counter rotary shaft arranged beneath the bed-plate, mechanism for operating said counter-shaft from said driving-shaft, and interchangeable rotary devices adapted to be carried by or secured to said counter-shaft for co-operating with the needle in forming either lock or chain stitches at the will of the operator, substantially as set forth.

5. The combination, in a sewing-machine, with a needle and its operating mechanism, of a rotary device adapted to press slightly against the side of said needle when it descends below the work-plate to insure the formation of loops of needle-thread, and a rotary device co-operating with said needle in forming the stitches for seizing and expanding said loops, substantially as set forth.
6. The combination, in a sewing-machine, with a needle and its operating mechanism, of interchangeable rotary devices co-operating with said needle to form different kinds of stitches, substantially as set forth.
7. The combination, in a sewing-machine, with a needle and its operating mechanism, of interchangeable rotary devices co-operating with said needle in forming different kinds of stitches, said interchangeable rotary devices being both constructed to operate on the same side of the needle, substantially as set forth.
8. The combination, in a sewing-machine, of a needle and its operating mechanism, a revolving shaft provided at its front end with suitable means of attachment, and interchangeable rotary devices for forming different kinds of stitches, adapted to be secured to said shaft, the said interchangeable devices being so constructed that when seated on the end of the shaft their proper adjustment relatively to the needle is secured, substantially as set forth.
9. The combination, in a sewing-machine, with a needle and its operating mechanism, of interchangeable rotary devices adapted to co-operate with said needle in forming different kinds of stitches, and a thread-controlling mechanism adapted to coact with either of said interchangeable devices in forming said different kinds of stitches, substantially as set forth.
10. The combination, in a sewing-machine, of interchangeable rotary lock and chain stitch loopers and a thread-controlling mechanism adapted to draw the thread from the hook of the lock-stitch looper at the proper moment, or to serve as a take-up in connection with the chain-stitch looper, accordingly as one or the other of the loopers is used, substantially as set forth.
11. The combination, with the revolving looper K, of a reciprocating needle-bar provided with a projection, *f*, which raises the thread and draws it tight in finishing the stitch, and a needle-bar guide provided with a mortise, *e*, in which the projection *f* plays, substantially as set forth.
12. The combination, with a revolving looper, O, and spool-holder P, of a reciprocating needle-bar provided with a projection, *f*, which depresses the thread and draws the loop from the hook of the looper, substantially as set forth.
13. The combination, with the driving-shaft *a* and crank-disk *a'*, of the needle-bar *a''*, cross-head *a'''*, constructed with a semi-cylindrical bearing-surface at one end, connecting-rod *a''''*, and a presser-foot bar, *a'''''*, forming a guide for the cross-head *a'''*, substantially as set forth.
14. The cross-head *a'''*, constructed with a perforation through which the needle-bar passes, and with a semi-cylindrical bearing-surface at one end, adapted to run in contact with the presser-foot bar *a''''*, substantially as set forth.
15. The screen *b'*, pivoted at its upper end to a shank, *b''*, in combination with the head-block provided with a shank, socket, and thumb-screw, *b'''*, whereby the screen is removably connected with the head-block, substantially as shown and described.
16. The combination, with the head-block A³ and a reciprocating needle, *b*, of a shield or guard, *b'*, pivoted to the head-block, whereby the guard may be placed in a position in which it will hide the needle-bar, or can be swung out of the way so as to expose the needle, substantially as described.
17. The combination, with the needle-bar guide D, provided with a mortise, *e*, of a needle-bar, *a''*, provided at its front end with a projection, *f*, substantially as set forth.
18. The combination, with a needle-bar guide, D, provided with a mortise, *e*, and inclined front portion, *f''*, of a needle-bar, *a''*, provided with a projection, *f*, having an inclined front side, substantially as set forth.
19. The combination, with the needle-bar guide D, having a mortise, *e*, and a collar, *g*, having thread-notches *g'* *g''*, of a needle-bar, *a''*, provided with a projection, *f*, having a depression, *f'*, in its upper side, substantially as set forth.
20. The combination, with a needle-bar guide, D, having a mortise, *e*, of a tension-disk, *d*, a guide, *h*, a loop, *h'*, extending across said mortise, and a needle-bar, *a''*, provided with a projection, *f*, substantially as set forth.
21. In combination with the collar *g*, having thread-notches *g'* *g''*, the spring-bolt *g'''*, for the purpose of steadying the thread, substantially as described.
22. The combination, with the head-block A³ and needle-bar guide D, in which the upper end of the needle-bar is guided, of a tension disk or plate, *d*, a spring, *d'*, secured with its lower end to the head-block and pressing with its upper end against the tension disk or plate, and a tension-screw, *d''*, arranged below the upper end of the spring and adapted to bear against the same, substantially as shown and described.
23. The combination, with the shaft *i*, of an eccentric, *l*, formed thereon, a feed-bar, L, having an elongated opening, *l'*, provided with a split bushing, *l''*, and the screw or screws *l'''*, whereby wear and lost motion may be taken up, substantially as hereinbefore set forth.
24. The combination, with the shaft *i*, of the looper O, secured thereto and constructed with a hook, *o''*, and curved arms *o'''*, a spool-holder P, seated in a depression in the front side of the looper O, and an annular frame bearing

against the front side of the spool-holder, substantially as set forth.

25. The combination, with the looper O, spool-holder P, and spool p , of the annular frame Q, attached to a depending bracket, R, by a bolt, r , having a hook end, r' , adapted to engage behind a transverse bolt, r^2 , and provided with an operating-handle, r^3 , substantially as shown and described.

26. The combination, with a removable holder for sustaining the bobbin carrying the lower thread, of a device constructed to secure said holder to its support or detach it therefrom by a partial rotation only, substantially as set forth.

27. The frame Q, for confining the spool-holder P in place, removably attached to the bracket or frame R by a notched rotary bolt adapted to be locked and unlocked by a quarter-turn, substantially as and for the purposes set forth.

28. A spool-holder provided with a spool, p , and an opening or recess, p^5 , through which the thread passes from the spool, and a bar, p^6 , arranged in said opening or recess, around

which the thread is wound for giving tension to the same, substantially as set forth.

29. In a sewing-machine, a head-block constructed with a transparent face-plate, through which the head motion can be observed, substantially as set forth.

30. The combination, with the revolving chain-stitch looper K, of a removable plate, N, arranged in front of the looper, whereby the thread is confined and the loop prevented from being thrown out on the front side of the needle, substantially as set forth.

31. The revolving looper O, provided with a curved arm, o^4 , constructed as described, and arranged relatively, as set forth, to the hook o^3 and the plane in which the needle moves, whereby the loop drawn from hook o^3 is kept out of the way of the same and the succeeding loop formed by the needle is prevented from being thrown out or formed on the front side, substantially as shown and described.

JOHN W. POST.

Witnesses:

EDWARD WILHELM,
F. L. BROWNE.