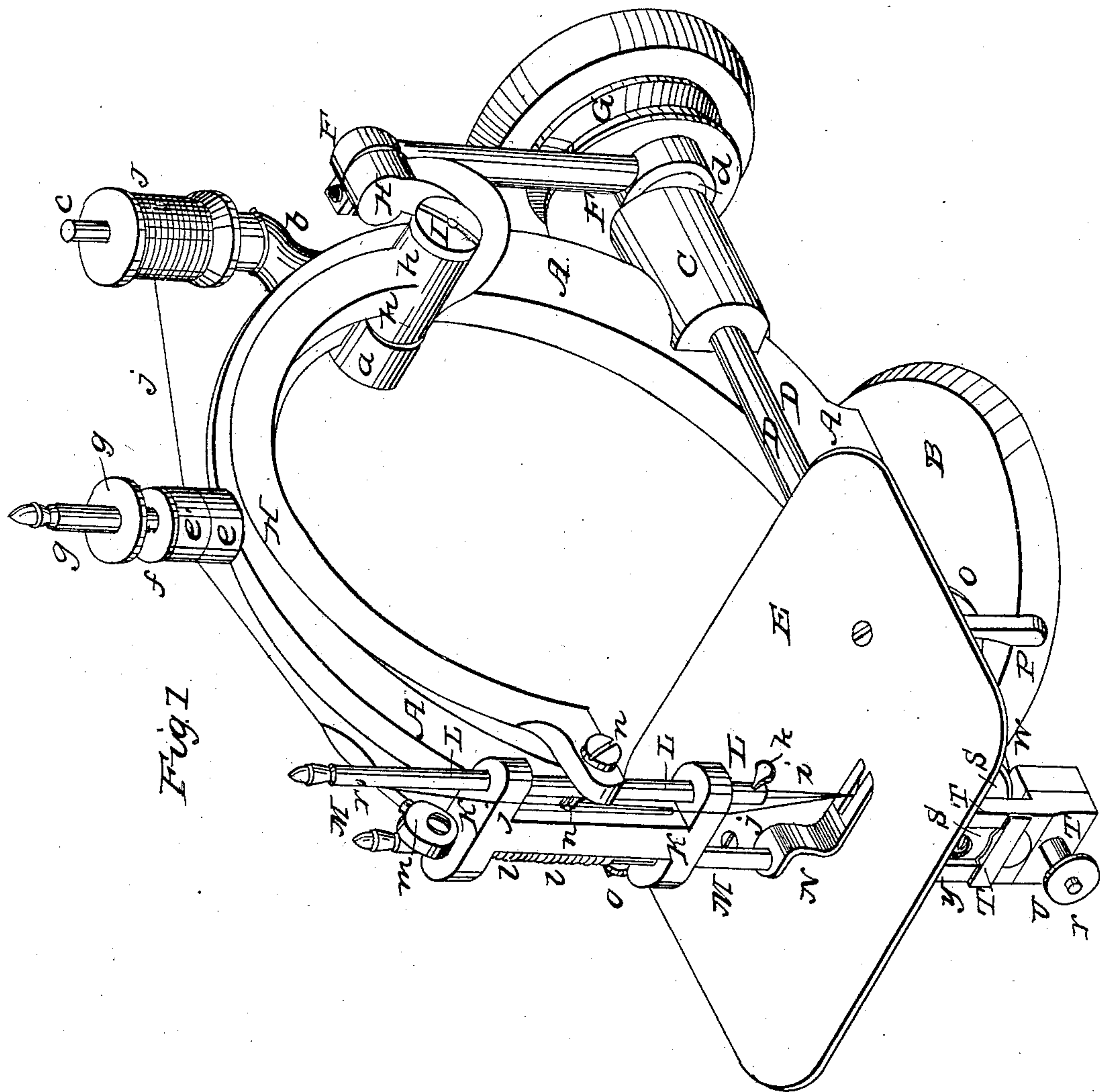


J. SMALLEY.
Sewing Machine.

No. 27,577.

Patented March 20, 1860.



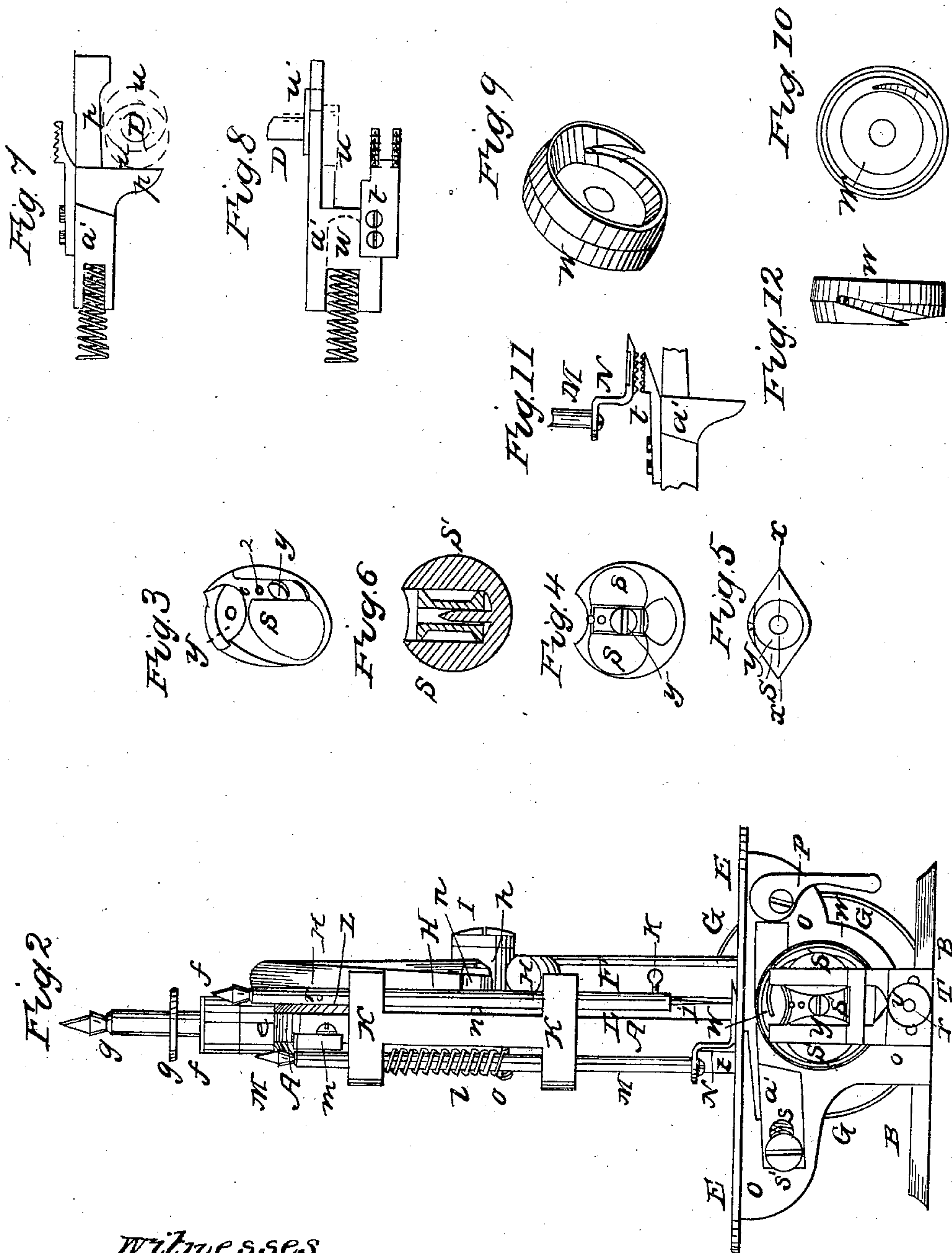
Witnesses
John F. Boddington
William S. Long

Inventor
John Smalley

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Witnesses
John F. Hollington
William C. Long

Inventor
John Smalley

UNITED STATES PATENT OFFICE.

JOHN SMALLEY, OF BOUND BROOK, NEW JERSEY.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 27,577, dated March 20, 1860.

To all whom it may concern:

Be it known that I, JOHN SMALLEY, of Bound Brook, county of Somerset, in the State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to that class of machines in which the operation of sewing is performed with two threads by forming the lock-stitch; and it has for its object to so construct the machine that the operation of sewing with two threads may be performed by it with the employment of both threads on the ordinary spools in the market, and to so construct the apparatus that no loop-check is necessary, and the machine shall be very simple and effective; and to these ends my invention consists in certain novel constructions and combinations of parts of the apparatus, as will be hereinafter fully described.

To enable those skilled in the art to which my invention pertains to comprehend and use the same, I will proceed to describe the manner in which I have practiced the same, referring by letters to the accompanying drawings, forming part of this specification.

In the accompanying drawings, Figure 1 represents a perspective view of a sewing-machine embracing my improvements. Fig. 2 represents a front elevation of the same. Fig. 3 represents a perspective view of the case which holds the spool of the lower thread. Figs. 4 and 5 represent side and top views of the same, and Fig. 6 is a vertical section, at *x x* of Fig. 5, of the same. Fig. 7 represents a side view of the feed-bar. Fig. 8 represents a top view of the same. Fig. 9 represents a perspective view of the hook or looper, and Figs. 10 and 12 represent a front and side elevation of the same. Fig. 11 represents a detailed view of presser-foot and feeder.

Similar letters denote the same parts in the different views.

A is the frame of the machine, which is supported by a base or foot plate, B, and is formed with an I-shaped frontispiece, K, in which are formed the bearings for the needle-bar L and the bar M of the presser-foot N. The needle *i* is secured in the lower end of the needle-bar a thumb-screw, *k*, in the usual manner.

l is the spiral spring which keeps the presser-foot N down onto the table E, and *m* is a cam-lever by which it is lifted and held up when work is being arranged on the table. The pin *o*, which compresses the spring *l*, also serves as a guide-pin (working in a vertical slot in the side of the frame-piece K) to keep the bar M from turning round in its bearings.

The needle-bar L is reciprocated vertically in its bearings by means of the vibrating needle-arm H, to the forward end of which it is pivoted by a pin, *n*, in the ordinary manner. Said needle-arm H is hung by a stud, I, to the projection *a* of the frame A, and is vibrated on said stud by a pitman, F, coupled at its lower end onto the eccentric *d* of the horizontal rotating shaft D. Said shaft D is hung in the suitable bearings in the frame of the machine, (at C and under the table E,) and is rotated by means of a pulley, G, coupled by a belt to the tread by shaft-pulley in the usual way, and the said horizontal rotating shaft D carries the cams or eccentrics *u* and *u'*, which operates the feed-bar *a'*, and also the rotary hook or looper W.

From a stand, *b*, formed on the rear side of the frame A, projects up a vertical stud or shaft, *c*, which holds the spool J, containing the needle-thread *j*. The tension on the needle-thread *j* is created by two blocks of rubber, *e* *e'*, between which it passes, and which are pressed more or less closely together by a thumb-nut, *g*, and collar *f*.

In the upper end of the bar L is an eye, *r*, through which the needle-thread passes for a guide.

The frame-work and driving parts of the machine are constructed in a manner similar to machines in use, as above alluded to; but the construction and arrangements of parts already alluded to, it will be observed, are very simple and desirable.

a' is the feed-bar, which is slotted out at its rear end to slide and vibrate round a pin, *s'*, and is bored out to receive a spiral spring, *s*, the tendency of which is to continually press the bar away from the pin *s*. Said feed-bar is formed with a horizontal and a vertical leg, *p* and *p'*, (see Figs. 2, 7, and 8,) and has secured to its upper surface a feeder, *t*, the teeth of which are made to pass up through openings in the table E and feed the work along in the usual manner. The proper motion is imparted to

the feed-bar a' by two cams, u and u' , on the shaft D, and in the spring s .

The peculiar formation of the hook W will be best comprehended by an examination of the drawings at Figs. 9, 10, and 12.

The formation of the spool-case S, which carries an ordinary spool of thread for the "lower thread," will be readily comprehended from Figs. 3, 4, 5, or 6 of the drawings, while it will be seen that said case is made hollow to receive a common spool, Y, which is retained laterally by and rotates on a center shaft, S', which projects up in the hollow of the case, the object of the shaft S' being to keep the smallest spool which may be placed in the case sufficiently near to a central position vertically to insure the descent of the needle into the hole of the spool. The stud S' should be of a sufficient diameter to fit loosely in the smallest-holed spools which may be employed, it not being necessary that it should fit perfectly all, since the needle is so much smaller than the hole in any spool that it only becomes necessary to insure a central position of the smallest spools, which might, without the shaft S', get so far to one side that the needle would strike the spool.

The case S, it will be seen, is so shaped as to be as light and cumbersome as possible, and so as to set into the concavity of the hook and admit of the loop being readily passed round it by the hook W, and has two or more holes, 1 2, formed in one side, through which the thread is brought from the spool Y in such manner as to induce the requisite amount of friction in the unwinding of the lower thread from its spool during the sewing process.

T is the ring or clasp by which the case S is held against and in the concavity of the hook W. This clasp T, it will be seen by Figs. 1 and 2, is formed like a rectangular frame with the upper side taken away, and is held up in its proper position by a thumb-nut, V, on the shaft r .

It will be observed that the clasp is so shaped as to come in contact with the front side of the case S along its (the case's) three flattened sides, so that the said clasp or retainer T not only holds the case S up into the concavity of the hook W, but also keeps the said case from turning round with the said hook.

p is a cam-stop, by which the length of the feed or the length of the stitch is regulated.

It will be seen that by constructing the case S with a center shaft, S', as illustrated, different-sized spools may be employed in the same case, each with equal facility. The one shown at Y in the drawings is the largest the case is capable of containing.

It will also be observed by reference to Fig. 6 that the bottom of the hollow in the case S is tapering, so that only the outer edge of the lower end of any sized spool used will come in contact with the case, and the spool will run freely and easily. The shaft S' only extends

part way up in the center hole of the spool, so as not to be in the way of the needle i when the latter descends.

By reference to Fig. 11 it will be seen that the presser-foot and the feeder are both roughened or serrated on their adjacent surfaces, and that the teeth formed on them point toward each other. By this method of forming the presser-plate and feeder-teeth the work is held, while the thread of the loop is drawn in a contrary direction to the carrying of the feed.

It will be understood that the needle i passes up and down immediately in front of the hook W and in the center of the spool Y, carrying the lower thread. By this means the loop is equally divided on each side of the case S, and the hook has room to pass between the loop, rendering a "loop check" or pad unnecessary.

The operation of my machine is as follows: The needle-thread being wound on the spool J and passed through a suitable tension device, $e f g$, and through proper guide-holes and the needle's eye, in the usual manner, as shown by the red line j , and the lower thread on spool Y being arranged as shown in the drawings, motion is imparted to the driving-wheel G, which causes the shaft D to rotate in its bearings and produces in the needle-bar end of bar H (by means of eccentric d and pitman F) a vibratory motion, which imparts to the needle-bar L a vertical reciprocating motion, the bar L carrying the needle i . The work is placed between the presser-foot N and the top of the table E, in the usual manner, and is fed by the feeder t , the bar of which is operated by cams u and u' on rotating shaft D and by springs s in its rear end. As the needle descends it passes down into the hole of the spool Y, carrying the lower thread, while the point of the rotating looper W (on end of shaft D) passes between its side and its thread j above the eye of the needle and passes the loop of thread j around the spool-case S, containing the spool Y, on which is wound the lower thread, thus forming the lock-stitch.

The length of the feed is regulated by the cam-stop P, (see Fig. 2,) and the presser-foot N, which is kept down on the work by a spring, t , around the rod M, is elevated and held up, when desired, by a cam handle or lever, m . (See Fig. 1.)

It will be observed that by passing the needle down into the center of the spool, arranged as described, and carrying the loop, divided evenly on both sides, around the spool-case, the employment of any pad or loop-check is rendered unnecessary.

Having described the construction and operation of my improved sewing-machine, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of a hollow stationary spool-case capable of containing different-sized

spools of cotton with a rotating hook or looper, substantially as hereinbefore described, for the purpose set forth.

2. So arranging the spool-case as that the needle shall always descend into the center of the spool placed in it, as hereinbefore described.

3. The formation of the spool-case S in the manner specified, with a centralizing and steadying shaft, S', substantially as hereinbefore set forth.

4. Disclaiming the passing of the needle-thread around an ordinary spool carrying the lower thread when said spool changes its position relatively to the other parts of the machine, I claim passing the needle-thread around

an ordinary spool containing the lower thread, while said spool containing the lower thread remains always in a fixed position, substantially in the manner described.

5. The rotary hook and vertically-fixed spool, in combination with a needle carrying its thread into the center of the spool, substantially in the manner and for the purposes described.

In testimony whereof I have hereunto set my hand this 17th day of January, 1860.

JOHN SMALLEY.

Witnesses:

JOHN F. CODDINGTON,
WILLIAM S. LONG.