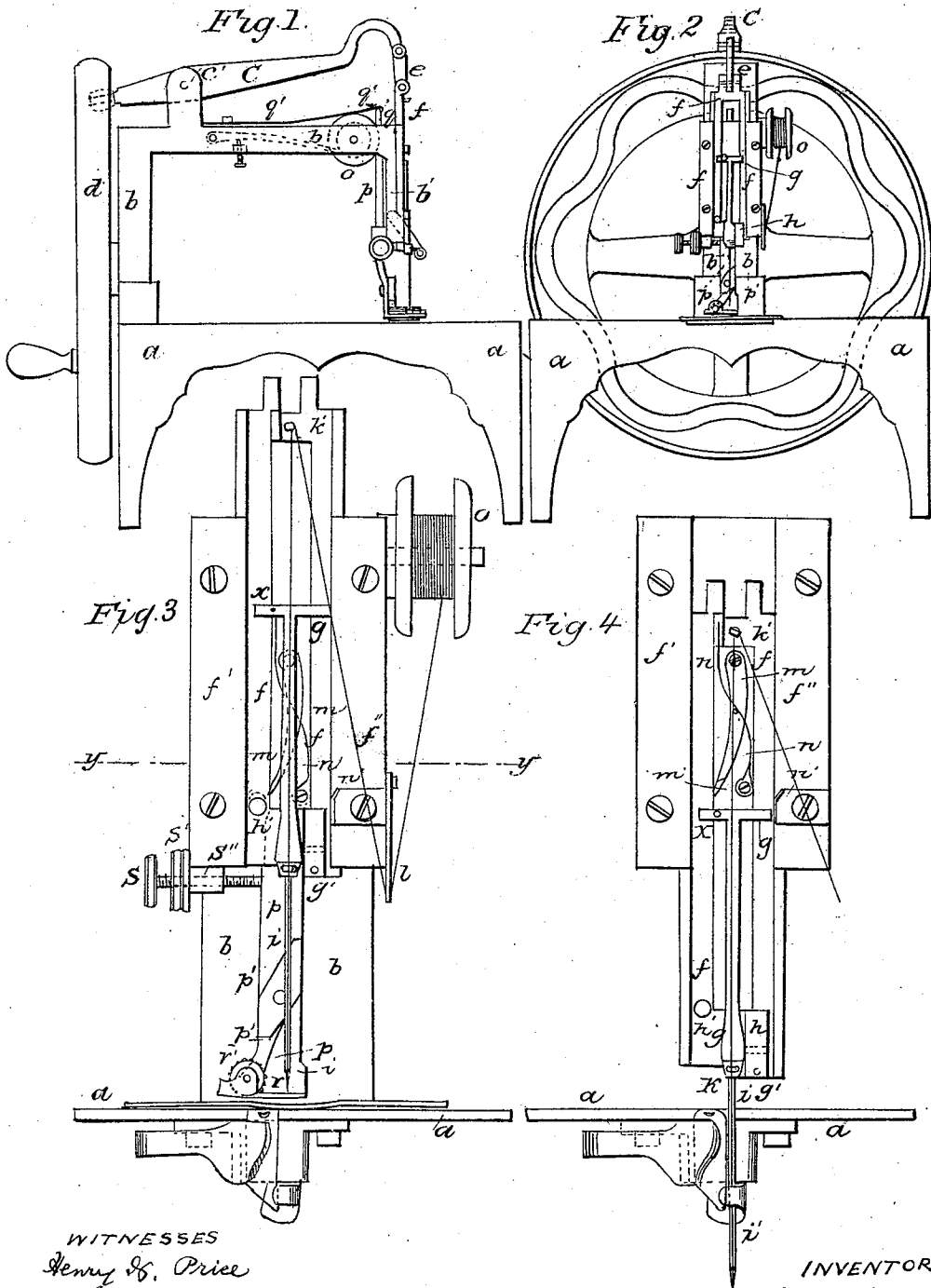


T. J. W. ROBERTSON.

Sewing Machine.

No. 12,015.

Patented Nov. 28, 1854.



WITNESSES
 Henry D. Price
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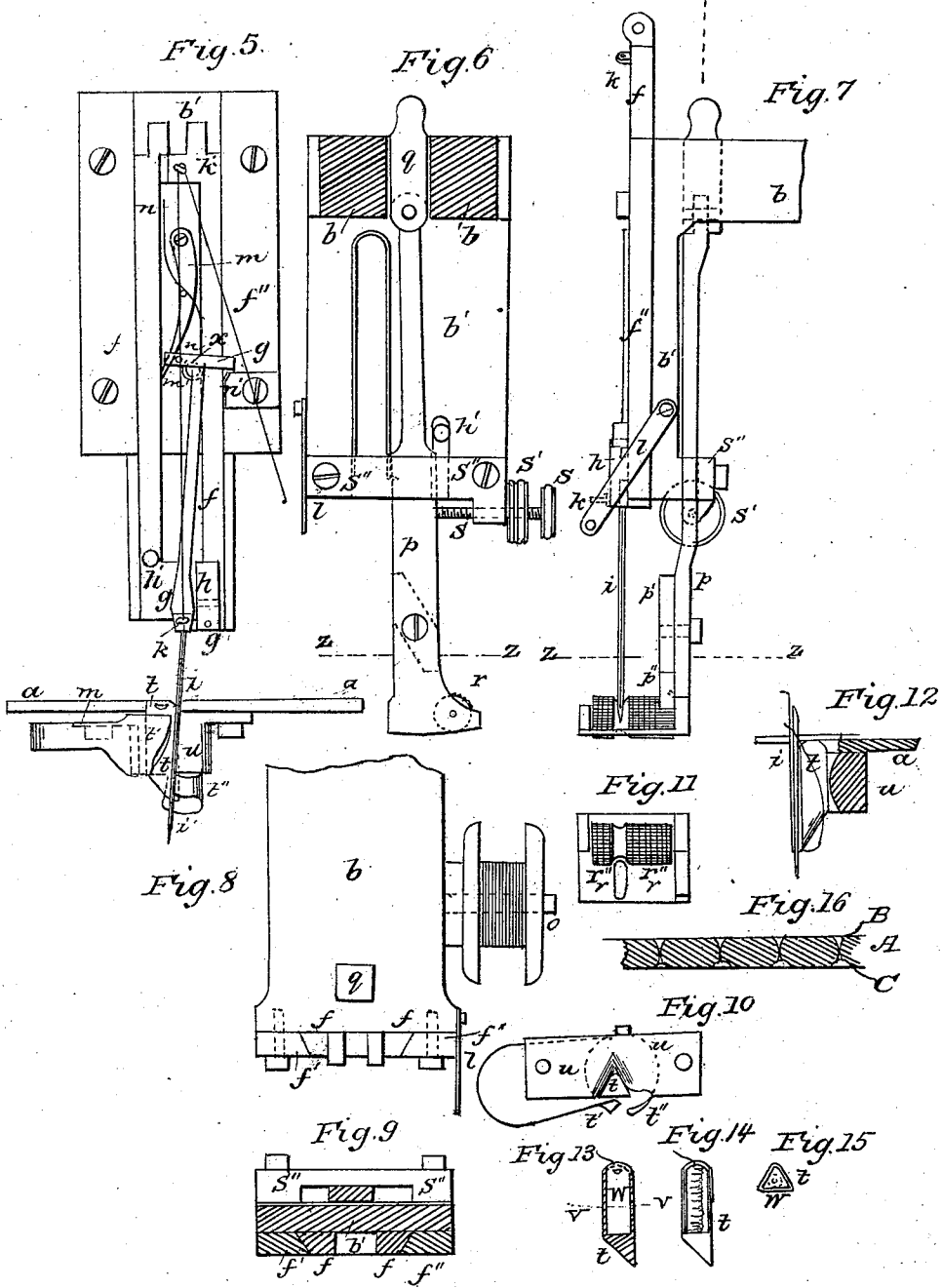
INVENTOR
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UNITED STATES PATENT OFFICE.

THOS. J. W. ROBERTSON, OF BROOKLYN, NEW YORK, ASSIGNOR TO T. J. W. ROBERTSON AND A. E. BEACH.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 12,015, dated November 28, 1854.

To all whom it may concern:

Be it known that I, THOMAS J. W. ROBERTSON, of the city, county, and State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full and exact description thereof.

This invention consists in making an "interlocked stitch" (such as has heretofore been made by a needle and shuttle) by means of a needle and insulated or detached thread-case when the said thread-case and needle are so arranged and operate together as that the loop formed by the needle-thread is drawn by the needle in its return or back stroke over the thread-case to form the stitch, essentially as hereinafter described; and my invention further consists in an improvement in the feed-motion.

To enable others skilled in the art to make and use my improvement, I will proceed to describe its construction and operation, reference being had to the annexed drawings, forming a part of this specification, in which—

Figure 1 is a side view of my improvement; Fig. 2, an end view of the same; Fig. 3, an enlarged end view, showing the sliding frame and needle raised above the cloth; Fig. 4, enlarged end view, showing the sliding frame thrown down, the needle having completed its downward movement; Fig. 5, the same, showing position of needle when throwing the loop over point of thread-case; Fig. 6, enlarged end vertical section of feed apparatus; Fig. 7, enlarged side view of same; Fig. 8, top section of a portion of arm *b*; Fig. 9, section of feed-bar and sliding frame through lines *y y*; Fig. 10, sectional view, showing manner of holding thread-case; Fig. 11, feed roller and plate, being a section through *z z*. Fig. 12 represents the needle in its relative position to the thread-case when the loop is being thrown over the thread-case; Figs. 13, 14, 15, the thread-case detached; Fig. 16, enlarged section of cloth, showing interlocked stitch.

Similar letters refer to like parts.

a is the frame of the machine; *b*, supporting-arm; *b'*, front end of arm; *c*, working-lever; *c'*, bearing of same; *d*, fly-wheel; *e*, connecting-link; *f*, sliding frame; *f' f''*, gibs of same; *g*, needle-bar; *g'*, pivot of same; *h*, needle-bar support; *h'*, adjustable feed-pin; *i*,

point of same; *k k' l*, thread-guides; *m*, movable cam; *m'*, point of the same; *n*, spring; *n'*, guide-piece; *o*, spool; *p*, feed-bar; *p'*, adjustable guide-piece; *p''*, ratchet-spring; *q*, feed-bar connecting-rod; *q'*, feed-bar spring; *r*, bottom feed-plate; *r'*, feed-wheel; *s s'*, adjusting-screw; *s''*, screw-bearing; *t*, thread-case; *t'*, thread-case spring; *t''*, thread-guide; *u*, thread-case holder; *x*, pin; *w*, side of thread-case; A, cloth; B, upper thread; C, lower thread.

The red lines indicate the thread. The upper thread is wound upon the spool *o*, and passes through the thread-guides *k, k'*, and *l*, through the point of the needle *i*, in the manner shown in the various figures. The other thread is contained within the thread-case *t*, passing out of the thread-case through an aperture in the same manner as shown in Figs. 13, 14, 15.

The cloth to be sewed is placed on a frame, *a*, as seen in Fig. 3. The fly-wheel *d* is furnished on its inside with a cam-groove, into which one end of the working-bar *c* projects, so that by turning the fly-wheel an up-and-down motion is imparted to the working-bar *c*. A vertical movement is communicated to the sliding frame *f* by means of the connecting-link *e*, which unites it with the working-bar *c*. The sliding frame *f* slides between gibs *f' f''*, as seen in the various figures. The needle-bar *g* is attached to its support *h*, which latter is fastened to the sliding frame *f*, so that the needle-bar *g*, and with it the needle *i*, have a vertical movement corresponding to the motion of the sliding frame *f*. The needle-bar has a pivot at *g'*. The needle-bar *g* is furnished with a cross-head, on the inside of which there is a pin, *x*. The movable cam *m* is attached to the front end of the supporting-arm *b'* by means of a screw, as shown. This movable cam is pressed up against one side of the sliding frame *f* by means of the spring *n*, there being a pin on the movable cam, against which the spring bears. When the needle-bar descends, the pin *x* passes between the cam-point *m'* and the side of the sliding frame *f*; but when the needle-bar rises, in consequence of the point *m'* bearing against the side of the sliding frame *f*, the pin *x* cannot pass between the sliding frame *f* and the cam in the same manner as it did in descending. The pin *x*, therefore, bears against the opposite lower side of the point *m'*, which causes the needle-bar to take a lateral movement until it

has passed the point m' , which is thicker than the other portions of the cam m . This lateral movement of the needle-bar, it will be seen, does not take place until just after the needle-bar commences to rise. The bearing of the pin x against the end of the cam-point m' and the lateral movement thus communicated to the needle-bar g are shown in Fig. 5. As before stated, the needle i is attached to the needle-bar g , which latter has a pivot at g' , so that when the upper part of the needle-bar receives lateral movement in one direction, the needle-point i receives a lateral movement in an opposite direction. The thread-case t is placed just below the level of the frame. A cross-section of this case shows its sides to be angular. (See Figs. 10 and 15.) The thread-case fits into a corresponding cavity in the thread-case holder u , in which position it is retained by the spring t' . The thread retained in the interior of the thread-case is drawn out through an aperture in the upper end of the thread-case, as shown. When the threaded needle descends, it rises again in exactly the same direction for a short distance until the pin x strikes the lower end of the cam m . In this manner a loop is formed by the thread at the end of the needle, which loop, by the rising of the needle-bar and the lateral movement imparted thereto by the contact of the pin with the under side of the cam-point m' , is thrown over the lower point of the thread-case t , and as the needle is constantly rising the loop so formed and thrown over the point is drawn round the body of the thread-case t and unites in the cloth with the thread from the thread-case, the two together forming the well-known interlocked stitch. The thread-case, as before stated, is held in its place by the spring t' ; otherwise the thread-case stands by itself independent, so that the loop is passed over the thread-case entirely, and with as much certainty as if a movable shuttle were employed, which was forced through a race, &c. t'' is a guide, which prevents any failure in the loop from passing over the point of the thread-case. Thus it will be seen that it is the retraction or back stroke of the needle itself drawing the loop over the insulated thread-case that produces the locking-stitch, or gears the two threads to form the "double" or "interlocked" stitch, without any driven action or working movement of the thread-case or other device besides the needle in its retraction, and in thus dispensing with all driving mechanism below the table or frame a a great advantage is obtained, and the carrying-arm b may be arranged to stand distinct from the table or frame a , so to admit of wide sheets of cloth—such as coverlids—being spread on the table and worked throughout their width. The object of the lateral play of the needle is merely to introduce the loop of the needle-thread over the point of the thread-case—that is, to make the thread-case enter the loop to enable the needle in its retraction to pass the loop over the thread-case, as and for the ob-

ject specified—that is, to gear the two threads or form the double stitch. The lateral play of the needle, therefore, so far as this effect is concerned, need be but very slight; or the lateral play of it may be altogether dispensed with, and the loop of the needle-thread be introduced over the point of the thread-case, either by a side play imparted to the loop toward the close of the descent or early part of the ascent of the needle, so as merely to catch the loop over the point of the thread-case; or the same effect may be produced by constructing the thread-case or its holder in any elastic, hinged, or loose manner which will admit of the end or point of the thread-case being canted, or canting itself to enter the loop of the needle-thread as the loop passes the point of the thread-case, so that and in either of which cases the loop will be drawn over the thread-case, thus entering it, by the retraction of the needle itself, to produce the double stitch, the same as when the needle was made to play laterally to introduce the loop over the point of the thread-case, and the thread-case be caused to retain the same stationary character or freedom from driving action or operation to pass the loop over it, which distinguishes it, as a different thing entirely, from the various shuttle motions or other separate driving apparatus for passing the loop, it being the needle itself, by its retraction, as before specified, that in my machine draws the loop over what may consequently be termed a "stationary thread-case," to produce the interlocked stitch. Where the needle having no side play is used, the feed of the cloth should take place when the needle is out of the cloth. I claim nothing new in a needle having side play.

The feeding apparatus consists of a feed-bar, p , having a lower plate, r , on which plate the feed-roller r' is secured. At q^2 the feed-bar is hinged to a connecting-piece, q , above. p' is an adjustable guide-piece attached to the feed-bar p , and secured by means of an adjustable screw. One end of the feed-roller r' is furnished with a ratchet, into which the end of the ratchet-spring p^2 works. When the sliding frame f descends, the adjustable feed-pin h' strikes against the adjustable guide p' , which gives a lateral movement to the feed-bar p and feed-roller r' , the ratchet-spring p^2 permitting the feed-wheel r' to turn only in one direction. The feed-bar p accommodates itself to this lateral movement by the hinge at q^2 . q^2 is a spring which presses against the feed-bar p , so that after the feed-bar has received its lateral movement by the descent of the sliding frame f , the feed-bar is thrown back again after the sliding frame rises. In this manner the cloth is fed along with the utmost regularity and certainty. At ss' is an adjusting-screw, by merely turning which the length of the stitch is regulated. The connecting-rod q extends up through an aperture in the arm b , its upper end being pressed by the feed-spring q' . In this manner the pressure of the feed-roller r' upon the cloth is rendered al-

ways even, and if there are any variations in the thickness of the cloth during its passage under the feed-roller the feed-motion will operate just as well. There is an adjustable spring on the side of the arm *b*, which presses on the spool *o*, regulating the tension of the upper thread. The tension of the lower thread in the thread-case is regulated in its exit by passing through apertures in the side or end of the thread-case. The feed-plate *r* is slotted, so as to afford an aperture for the needle to pass. The roller *r'* has a groove in its center, so that the teeth of the roller may not interfere with the seam produced in the operation of sewing. The thread-case *t* is three-sided, having a slide, *w*, by removing which the thread may be introduced.

Having thus described my invention, I claim—

1. Making the interlocked stitch by causing the needle to pass its thread over a stationary thread-case, in which the other thread is con-

tained, in the manner substantially as described.

2. The combination of the thread-case *t* with the thread-case holder *u* by means of a spring, *t'*, or its equivalent—that is to say, when so arranged as that while the spring holds the thread-case securely in place the thread-case holder and spring shall permit the needle-thread to be drawn around the thread-case to form the stitch, in the manner substantially as described.

3. The combination of the sliding frame *f*, needle-bar *g*, and movable cam *m*, in the manner substantially as described.

4. The combination of the feeding-bar *p*, having a plate, *r*, and feed-roller *r'*, with the sliding frame *f*, in the manner substantially as described.

T. J. W. ROBERTSON.

Witnesses:

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ALFRED E. BEACH.