

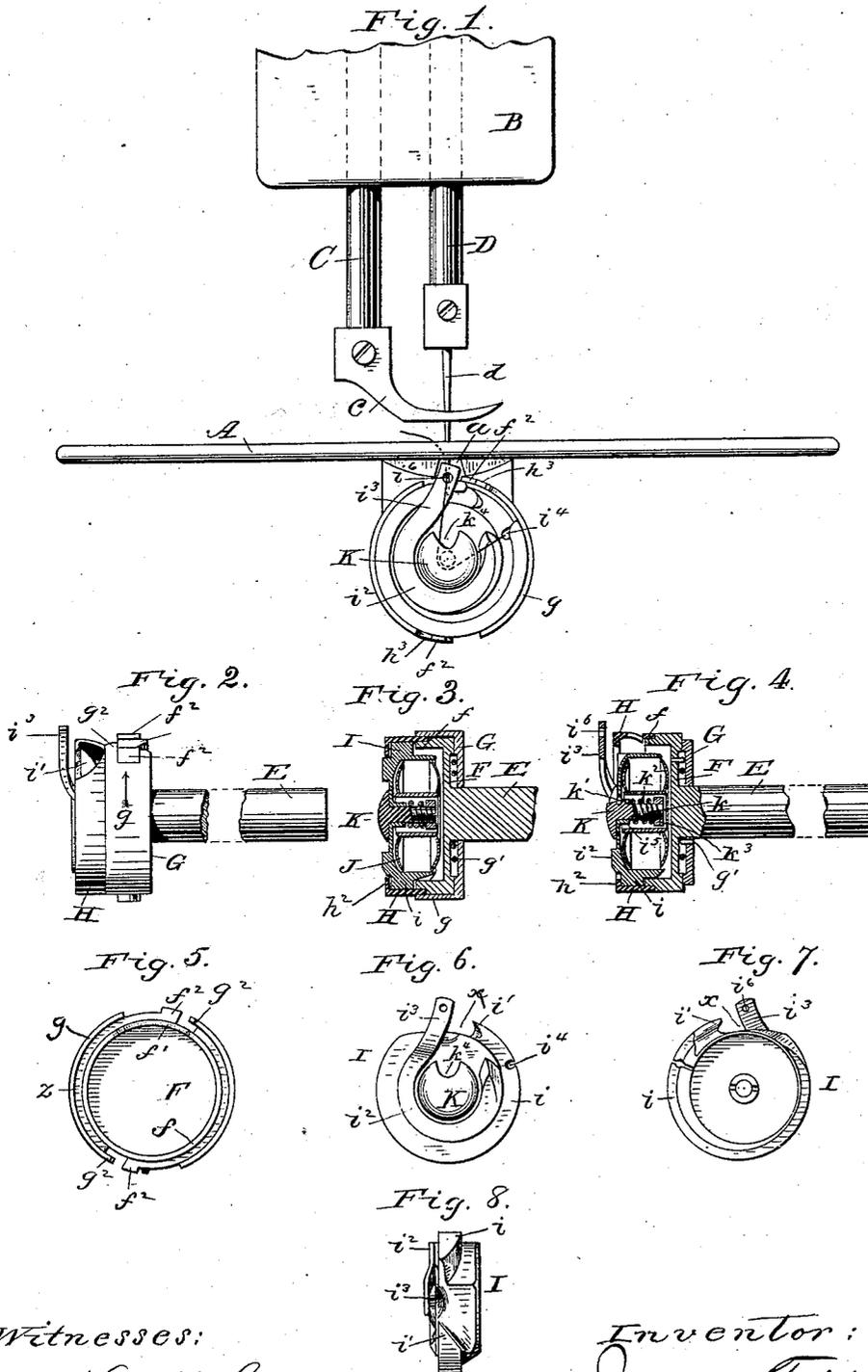
(Model.)

2 Sheets—Sheet 1.

J. TRIPP.
SEWING MACHINE.

No. 308,711.

Patented Dec. 2, 1884.



Witnesses:

H. N. Low,
L. A. Palmer, Jr.

Inventor:

James Tripp,
By Henry Cabot,
Att'y.

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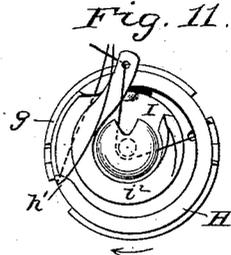
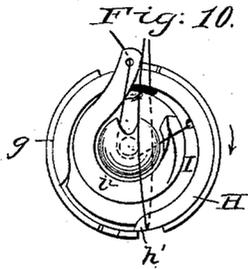
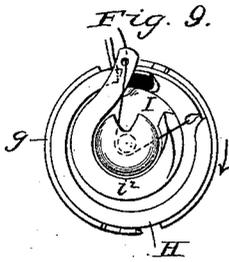


Fig. 12.

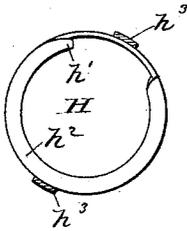


Fig. 13.

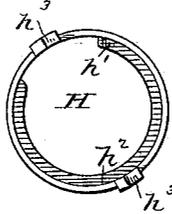


Fig. 14.

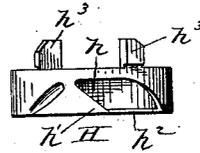


Fig. 15.

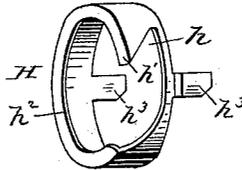


Fig. 16.

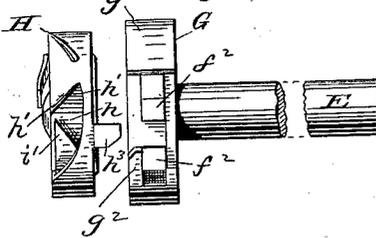
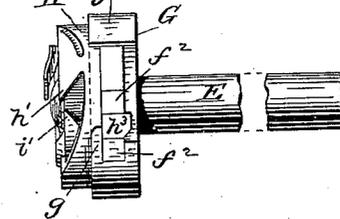


Fig. 17.



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Inventor:

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UNITED STATES PATENT OFFICE.

JAMES TRIPP, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 308,711, dated December 2, 1884.

Application filed February 18, 1884. (Model.)

To all whom it may concern:

Be it known that I, JAMES TRIPP, a citizen of the United States, residing in the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to that class of lock-stitch sewing-machines in which a hook having a continuous or reciprocating rotary movement is employed for carrying loops of needle-thread around a stationary shuttle or bobbin-case which holds the under or locking thread; and the object of my invention is to improve machines of this class by providing a rotary hook and stationary shuttle or bobbin-case, so constructed relatively to each other that the needle-thread may be carried around the bobbin-case, and thus be interlocked with the under thread with the least possible friction.

In the drawings forming part of this specification, Figure 1 is a partial front end elevation of a sewing-machine embodying my invention. Fig. 2 is a side view of my improvements. Figs. 3 and 4 are central horizontal and vertical sections of the same. Fig. 5 is an elevation of the disk and its cap. Figs. 6, 7, and 8 are front, rear, and top views, respectively, of the shuttle or bobbin-case. Figs. 9, 10, and 11 are views showing the hook in different positions to illustrate the operation of my invention. Figs. 12, 13, and 14 are front, rear, and top views of the hook-shell, and Fig. 15 is a perspective view of the same. Fig. 16 is a top view showing the hook-shell, with its inclosed bobbin-case detached from its carrying-disk; and Fig. 17 is a top view of these parts in operative relation to each other.

A indicates the bed-plate of the machine, and B a portion of the head thereof.

C is the presser-bar, carrying a presser-foot, *e*; and D the needle-bar, having an ordinary eye-pointed needle, *d*, said needle-bar, it will be understood, being operated by any suitable mechanism.

E is the under shaft of the machine, which is to be connected with mechanism for imparting to said shaft a continuous or reciprocating rotary movement, it being under-

stood that when the said shaft has a reciprocating rotary or oscillating movement the oscillations will considerably exceed one hundred and eighty degrees, or a half-circle, as is common with shafts for operating oscillating hooks in this class of machines, the term "rotary" as used in this specification referring to either a continuous or reciprocating rotary motion.

Secured to or formed integral with the forward end of the shaft E is a disk, F, having within its periphery a forwardly-projecting flange, *f*, affording a cup-like formation to the said disk. The edge of the flange *f* is slightly recessed or cut away at *f'* (see Fig. 5) for a purpose which will be hereinafter explained, and the disk F is preferably provided with lugs *f² f²* on its periphery to afford means for detachably securing the hook-shell to the said disk.

G is a flanged cap placed loosely on the shaft E adjacent to the disk F, said cap being controlled in position by a suitable torsional spring, as *g'*, which has a tendency to force said cap in the direction indicated by the arrow in Fig. 2. The flange *g* of the cap G projects forward over the periphery of the disk F, and as the flange *f* is inside said periphery an aperture, *z*, will be left between said flange and the flange *g*. The flange *g* is cut away on its opposite sides adjacent to the lugs *f² f²*, and at each of said cut-away portions is formed a locking-lug, *g²*.

H is the hook-shell, which is recessed or cut away at *h* to form the hook *h'*, said shell being preferably provided at its outer edge with an inwardly-projecting flange, *h²*, and at its periphery with rearwardly-projecting locking-lugs *h²*, adapted to engage with the lugs *f²* on the periphery of the disk F. When the hook-shell is in working position, its inner edge fits in the aperture *z*, between the flanges *f* and *g*, and when said shell is to be detached from the disk F, for the insertion or removal of the shuttle or bobbin-case, the cap G is turned slightly in the direction opposite that indicated by the arrow in Fig. 2, to disengage the lugs *g²* on the cap G from the lugs *h²* on the hook-shell, as in Fig. 16, when the latter will be free to be removed, and when the hook-shell is replaced the lugs *g²* of the spring-acted

cap G will again secure said hook-shell in place.

Although I prefer the construction just above described for detachably securing the hook-shell to its driving-disk, (these two parts, forming two halves of a rotary hook, constituting a receptacle or holder for the stationary shuttle or bobbin-case,) it will be understood that said shell and disk may be otherwise connected together—as by being hinged, or by forming one part with one or more dowel-pins entering holes in the other part. I do not, therefore, wish to be understood as limiting myself to the construction which I have shown and described, which permits of the removal of the hook-shell from its disk when the shuttle or bobbin-case is to be inserted or taken out.

I is the stationary shuttle or bobbin-case, having a circular recess, in which fits an ordinary disk-bobbin, J. The bobbin-case I has a peripheral rim, *i*, which is cut away at *x* on the upper side of said case to form a hook, *i'*, the latter pointing in a direction opposite to that of the hook *h'* on the hook-shell H, the recess having about the same circular extent as the recess *h* in the said hook-shell. The rim *i* fits closely within the interior of the hook-shell, and the bobbin-case is held in said shell by the inwardly-turned flange *h*² of the latter, the front edge of the flange, *f* bearing loosely against the rear side of the rim *i*, to hold the said bobbin-case in position. Rearwardly of the rim *i* the bobbin-case fits loosely within the flange *f* of the disk F, and sufficient space is left between the inner face of the bobbin and the outer face of said disk for the free passage of the loops of needle-thread. The bobbin-case is provided on its front or outer face with a circular rib or thread-guide, *i*², which has an extension, *i*³, having a thread-guiding hole, *i*⁴, near its top. Said extension *i*³ thus serves as a thread-guide, and also to prevent the rotation of the bobbin-case with the rotary hook, by being fitted loosely in a slot or opening, *a*, in the bed-plate A, the throat-plate, or other stationary part of the machine. A thread-passage, *i*⁴, is formed through the bobbin-case, said passage being preferably slotted to the periphery of said case for convenience in threading. The rib *i*² on the front face of the bobbin-case nearly encircles the tension-disk K, and thus serves as a guide to pass the loops of needle-thread over said disk. The stem or pin *k* of the tension-disk passes freely through a bearing afforded by a small hub or post, *i*⁵, extending within the bobbin-recess of the shuttle or bobbin-case, said pin being prevented from turning by a small pin or projection, *k*¹, entering a slot or recess in said hub or post. A small spiral spring, *k*², is arranged on the stem *k* between the hub *i*⁵ and a regulating-nut, *k*³, on the inner end of said stem, and by a proper adjustment of said nut the pressure of the tension-disk K on the thread passing between the same and the outer face of the bobbin-case

can be properly regulated. The bobbin loosely encircles the tension-pin, the flanges thereof resting against the interior walls of the bobbin-recess. A notch, *k*⁴, is formed in the tension-disk K, to allow the needle to pass down as near to the center of the bobbin-case as possible, and also to enable the thread to run properly from beneath the tension-disk. The bobbin-case is threaded simply by inserting the thread through the thread-passage *i*⁴, drawing the same beneath the tension-disk K, and then passing it through the guiding-hole *i*⁵ in the extension *i*³ of the rib or thread-guide *i*². The bobbin-case thus threaded is, with its inclosed bobbin, next inserted in the detached shuttle-shell from the rear side of the latter, and said shell is then attached to the disk F of the rotary shaft, when the device is ready for operation. The machine being set in motion, the needle descends, and a loop of its thread is caught by the rotating hook *h'*, and as said hook moves forward said loop is forced rearward by the hook *i'* on the shuttle or bobbin-case, the latter hook being arranged oppositely to the said hook *h'*. As the rotating hook meets the hook on the bobbin-case almost the instant it has caught the needle-loop, the latter is positively held in the V-shaped or triangular recess between the two hooks, so that it cannot by any possibility escape to occasion imperfect work by skipping a stitch. The peripheral rim *i* on the bobbin-case fits closely in the hook-shell H, which may encircle said rim as snugly as an eccentric-strap fits an eccentric, as the needle-thread never passes between said rim and the interior of said shell, the rim merely serving as a bearing for the bobbin-case within the hook-shell. The recess *h* in the hook-shell H is made slightly deeper than the rim *i* on the bobbin-case, and as the recess *f*¹ in the flange *f* registers with the recess *h*, there is sufficient space for the needle-thread to run freely in said recess back of said rim, and thus around the bobbin-case, one portion of the loop being held by the stationary hook *i'* in the recess *x* as the hook *h'* rotates. Thus when the hook *h'* has passed around to the lower side of the bobbin-case, as in Fig. 10, the needle-thread will still be running loosely around the bobbin-case, and as the hook *h'* continues its forward movement the needle-loop will be carried onward, and as soon as the forward portion of the recess *h* comes opposite to the recess *x*, as in Fig. 11, the loop can escape freely from the hook-shell and will be drawn upward in the operation of tightening the stitches, having passed entirely around the bobbin-case and the locking-thread carried thereby without ever having lifted said case from its support in its passage around the same. It will thus be seen that by the construction of hook and shuttle and bobbin-case herein described I am enabled to carry the needle-thread freely around a locking-thread without lifting the device by which the locking-thread is carried, thereby avoiding much friction on the needle-

thread incidental to machines now in use, and thus facilitating the production of lock-stitches at a high rate of speed with a minimum of power.

5 A chain-stitch seam may be made with my rotary hook simply by substituting a stationary looper or loop-detaining device for the stationary bobbin-case and bobbin.

10 Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a sewing-machine, the combination, with a shaft and a rotary hook carried thereby and formed in two parts, one detachable from the other, of a shuttle or bobbin-case fitting within said hook, the outer or detachable portion of the latter being provided with an inwardly-turned flange for retaining said bobbin-case within the hook, substantially as set forth.

20 2. In a sewing-machine, the combination, with a shaft carrying a flanged disk, of a hook-shell detachably secured to said disk, and provided with a hook and an inwardly-turned lip or flange on its outer edge, and a stationary shuttle or bobbin-case having a peripheral rim fitting snugly within said hook-shell, one portion of said rim being recessed or cut away to form a hook the point of which extends in a direction opposite to the point of the hook on the rotary hook-shell, substantially as set forth.

30 3. In a sewing-machine, the combination, with a shaft carrying a disk having a forwardly-projecting flange provided with a recess in its edge, and a hook-shell detachably secured to said disk and having a recess forming a hook, said recess being arranged to register with the recess in the edge of the flange on the said disk, of a stationary shuttle or bobbin-case having a peripheral rim fitting snugly within said hook-shell and recessed to form a hook, the said recess in the hook-shell being slightly deeper than the width of said rim to permit of the free passage of the loops of needle-thread, substantially as set forth.

45 4. In a sewing-machine, the combination, with a shaft, a disk carried thereby, and a hook-shell, said disk and hook-shell being provided with locking-lugs, of a spring-acted flanged cap also having locking-lugs for de-

tachably securing said shell to said disk, substantially as set forth. 50

5. In a sewing-machine, the combination, with a shaft, a disk carried thereby, and having a forwardly-projecting flange within its periphery, and a hook-shell detachably secured to said disk and fitting over said flange, of a stationary bobbin-case fitting snugly within said hook-shell, substantially as set forth. 55

6. In a sewing-machine, the combination, with a rotary hook, of a bobbin-case arranged within said hook, and having on its outer face a circular rib or thread-guide having an upward extension adapted to engage with some stationary part of the machine to prevent the rotation of said bobbin-case, and a tension-disk arranged within said thread-guide, substantially as set forth. 60

7. In a sewing-machine, the combination, with a rotary hook, of a stationary bobbin-case arranged within said hook, and having on its outer face a circular thread-guide, a tension-disk arranged within said thread-guide and having a stem extending within the bobbin-case, and a spring and regulating-nut both mounted on said stem, substantially as set forth. 65

8. In a sewing-machine, the combination, with a rotary hook, of a stationary bobbin-case arranged within said hook, and having on its outer face a tension-disk provided with a notch or recess to permit of the downward movement of the needle, substantially as set forth. 70

9. In a sewing-machine, the combination, with a rotary hook, of a stationary bobbin-case arranged within said hook, and having a thread-passage, *i*¹, a circular thread-guide, *i*², having an upward extension, *i*³, provided with a thread-hole, *i*⁵, and a tension-disk, K, arranged within said circular thread-guide, and having a stem, *k*, provided with a spring and a regulating-nut, substantially as set forth. 75

In witness whereof I have hereunto set my hand this 9th day of January, 1884. 80

JAMES TRIPP.

Witnesses:

GEO. W. FLETCHER,
W. COLBORNE BROOKES.