2 Sheets—Sheet 1.

J. McCLOSKEY.

Take-Up for Sewing-Machines.

No. 201,260. Patented March 12, 1878.

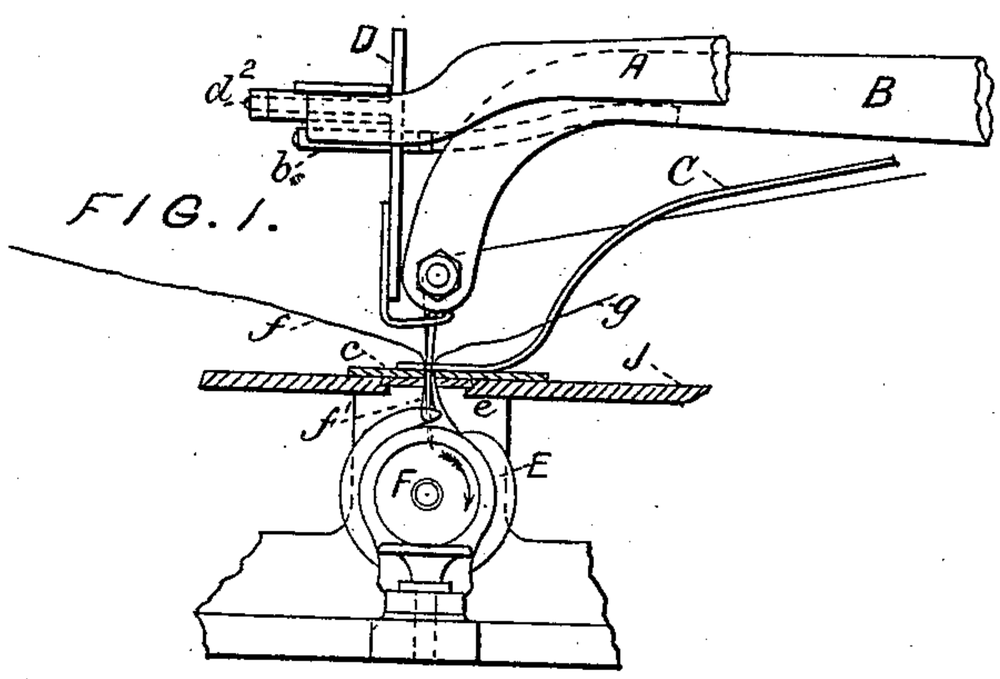

FIG. 1.

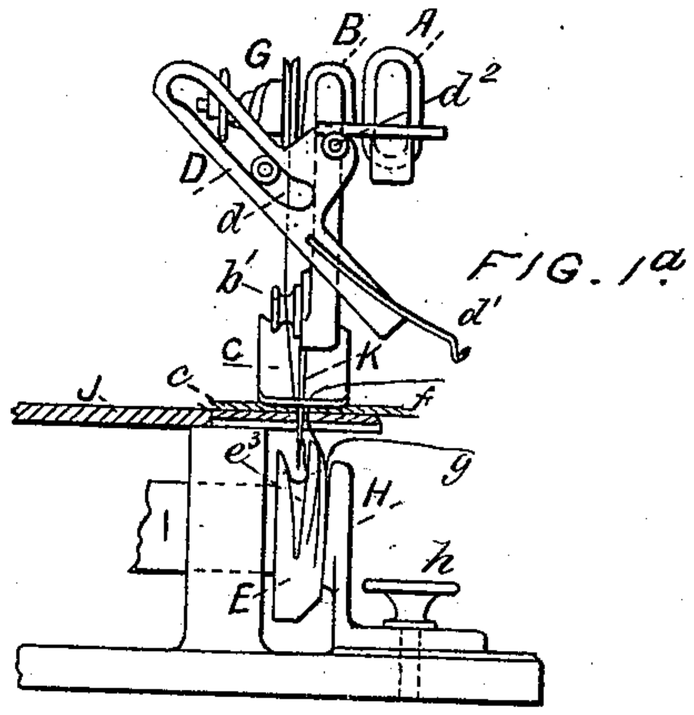

FIG. 1a

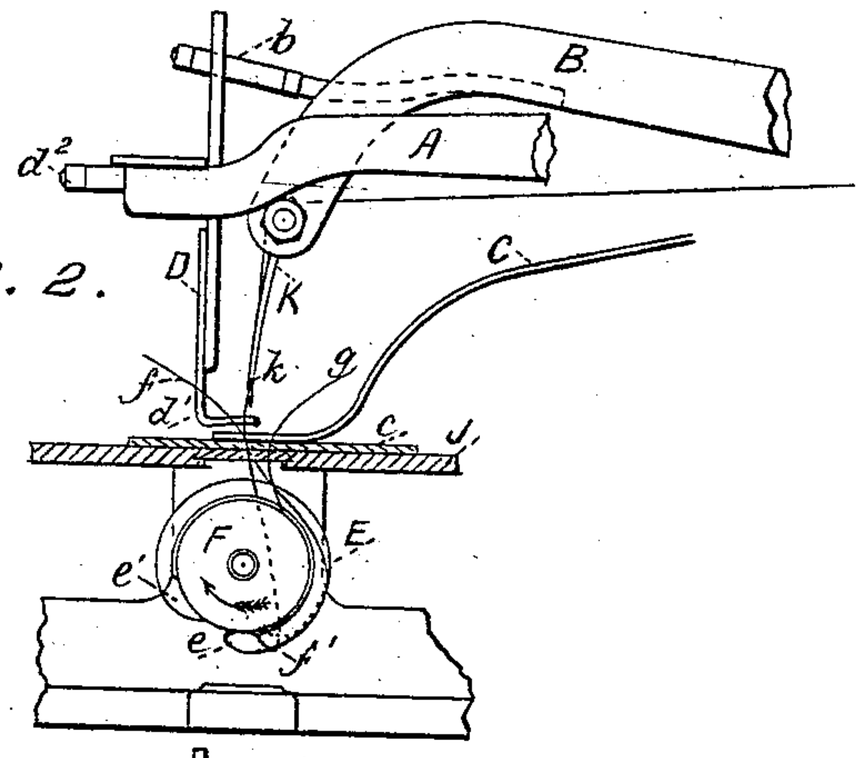

FIG. 2.

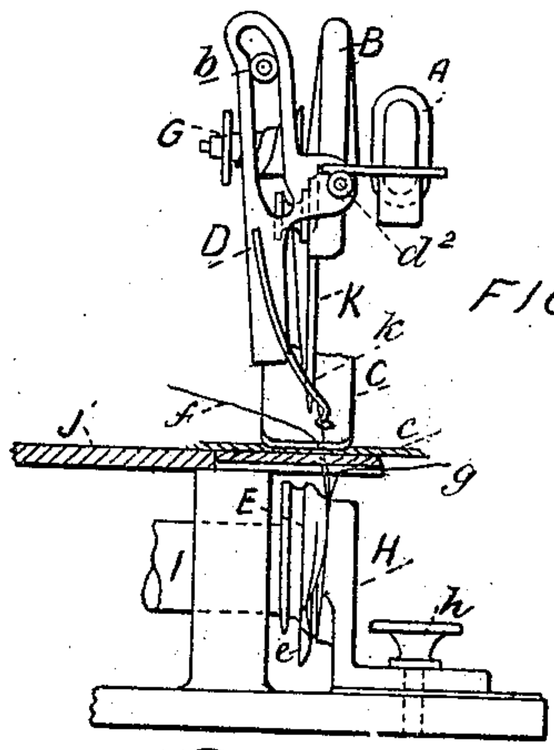

FIG. 2a

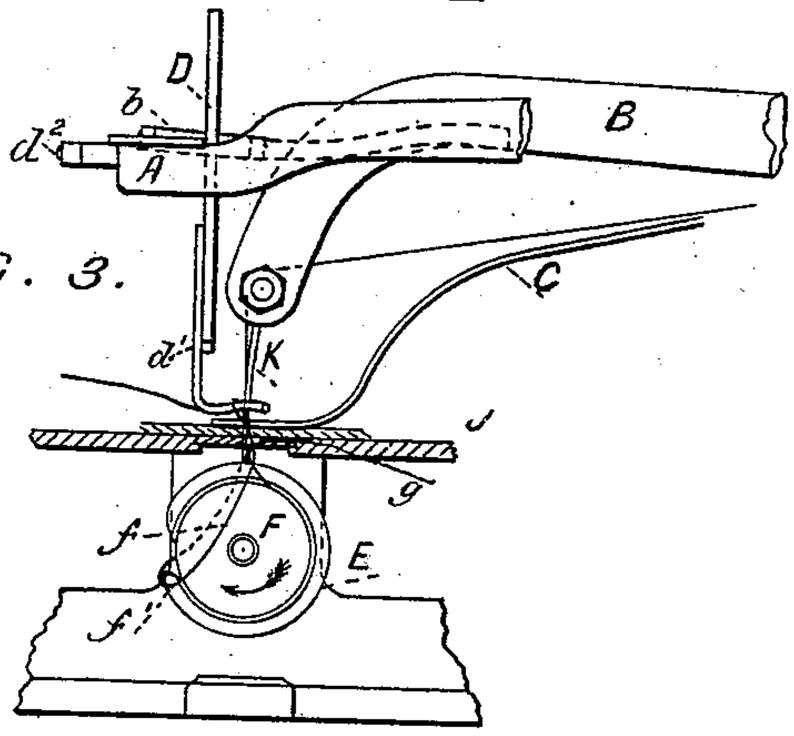

FIG. 3.

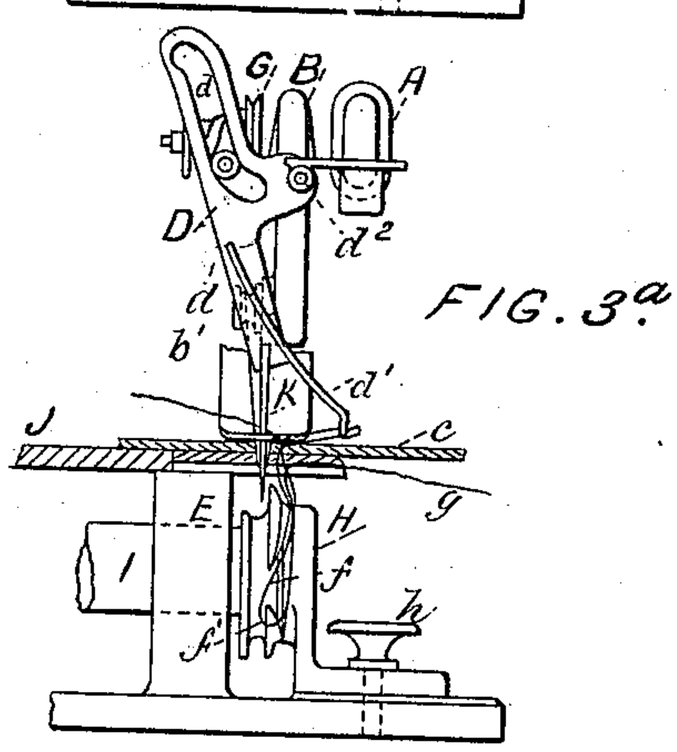

FIG. 3a

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2 Sheets—Sheet 2.

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FIG. 4.

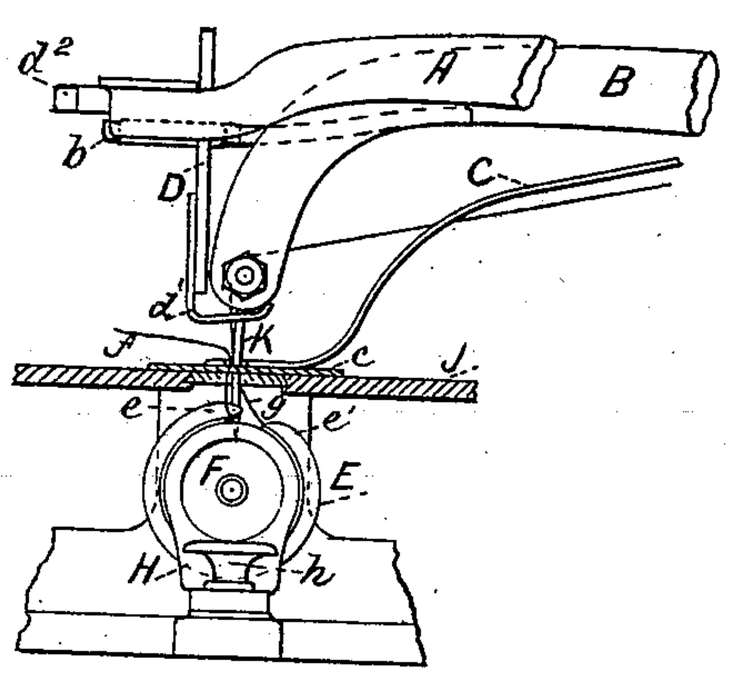


FIG. 5.

FIG. 4ª

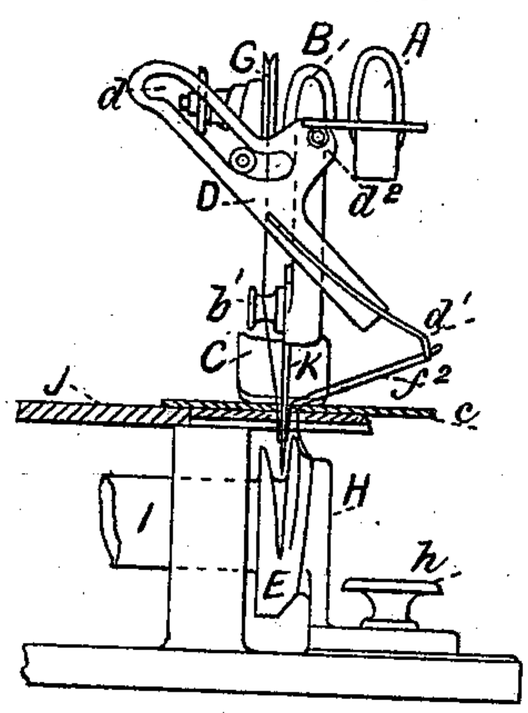


FIG. 5ª

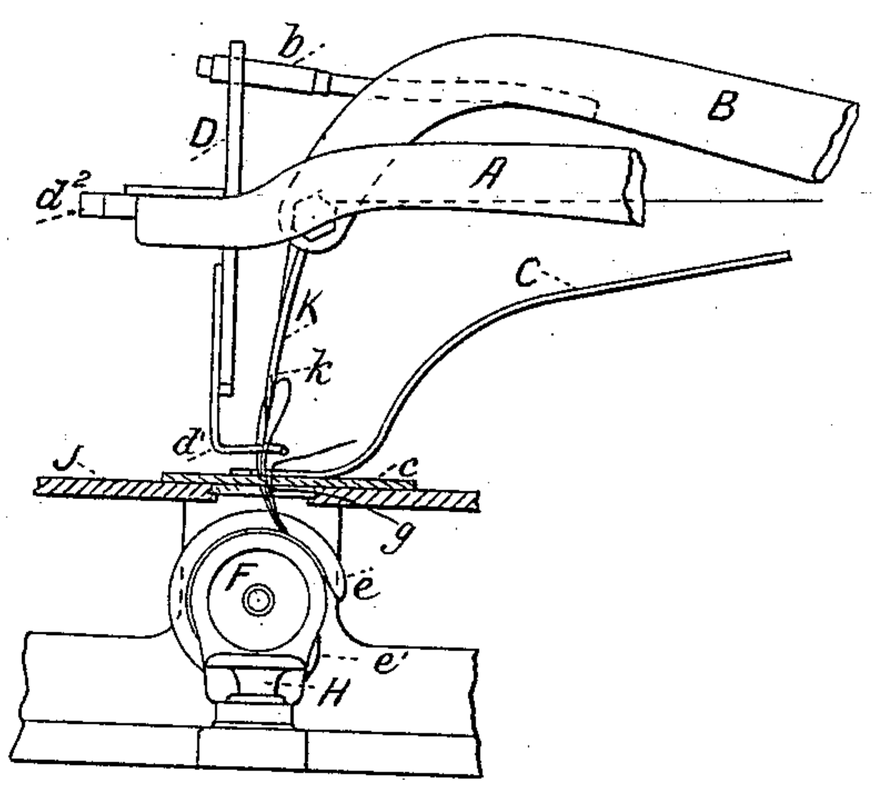
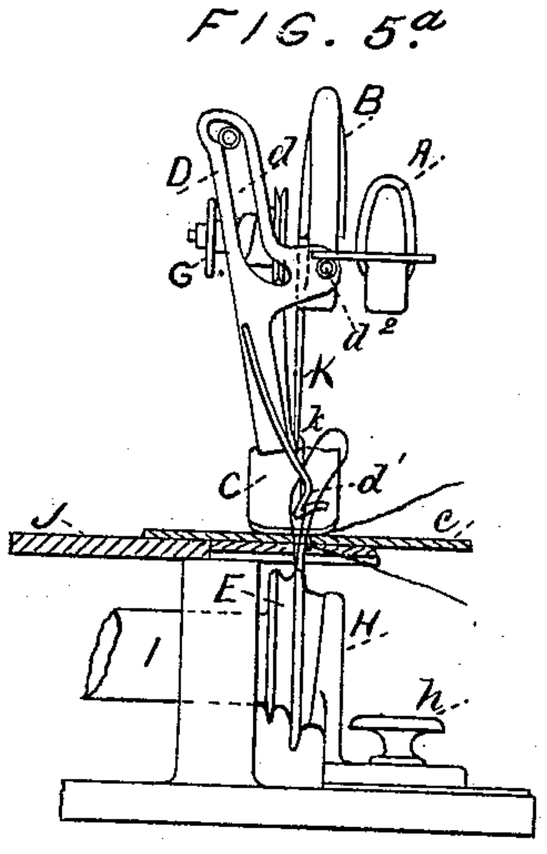
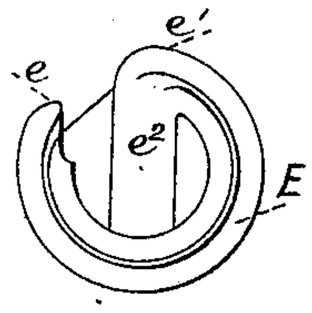


FIG. 6.





WITNESSES.

C. E. Cole

H. M. Haviland

INVENTOR:

John McCloskey

UNITED STATES PATENT OFFICE.

JOHN McCLOSKEY, OF NEW YORK, N. Y.

IMPROVEMENT IN TAKE-UPS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **201,260,** dated March 12, 1878; application filed December 14, 1877.

To all whom it may concern:

Be it known that I, JOHN MCCLOSKEY, of the city, county, and State of New York, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

My invention is more especially designed as an improvement on the well-known Wheeler & Wilson old-style sewing-machines, in which the stitch is drawn tight and completed by the rotating hook at the same time that the next stitch is in course of formation, the slack thread that has to be taken up to complete the stitch being detained below the cloth-plate by a brush or pad until the rotating hook can act upon it. My invention may, however, be adapted, to a greater or less extent, to other sewing-machines, shuttle as well as hook machines, and may be used with straight needles and needle-bars, or with vibratory arms and curved needles, as specially shown and described hereinafter.

The object of my invention is mainly to take up and complete each stitch without drawing the needle-thread back through the eye of the needle, thereby obviating the friction and wear upon the thread from its alternate to-and-fro movement through the eye of the needle in passing out to a sufficient extent for the shuttle or bobbin, as the case may be, to pass through its loop, and then back and up to complete and tighten the stitch. Its object is, further, with reference to the Wheeler & Wilson sewing-machine first above mentioned, and other similar machines, to dispense with the pad or brush before mentioned, and thereby avoid the friction of the same upon the rotating hook, with the consequent heating of the latter and adjacent parts, resulting at times in so much expansion of the metal parts in contact as to cause imperfect working of the machine; its object being also to tighten the stitch in one direction only at a time, and not in two directly-opposite directions, as is the case with the pad or brush machines just mentioned, which unfits them for stitching through heavy fabrics, owing to the great friction of the thread in the fabric.

To overcome the objections to the pad or brush machines, various devices have been employed for rotating hook-machines, to enable the stitch to be drawn tight and completed before the re-entering of the fabric by the needle; but, owing to the size of the loop drawn out by the hook being so much greater than the loop requisite for shuttles in shuttle-machines, and so little time existing in which to draw up the stitch from the period at which the hook reaches that stage in its rotation at which the loop can escape and the period at which the needle must descend and re-enter the fabric to meet the hook for the succeeding stitch, none of these devices have accomplished the desired object without entailing other disadvantages. Such, for instance, is the differential rotating motion imparted to the hook in most instances, which motion is a hard and unnatural one, and, although it gives more time for the action of the take-up, it does so at the cost of reduced speed and greater power to run the machine, with more wear of parts. My object is to retain the uniform rotation of the hook with the attendant speed and light running, while securing the other advantages herein mentioned.

My invention comprises, in a sewing-machine, a take-up so arranged as to take up or draw tight each stitch in succession by drawing upon the needle-thread between the eye of the needle and the fabric, whereby, instead of taking up the stitch between the time the needle leaves the fabric and re-enters it, the stitch may be taken up and tightened while the needle, in the act of joining the next succeeding stitch, is descending and passing into and through the fabric, and before it begins its ascent, the action of the needle lessening the length of thread necessary to be taken up by the take-up, allowing the action of the take-up to commence at a later period in the rotation of the hook in hook machines, or in the motion of the shuttle in shuttle machines, and to continue till the needle begins its ascent, thereby permitting of a uniform rotation of the hook with great speed and ease and a minimum of wear and friction, obviating the necessity of a tension upon the bobbin-thread, as in cases where the hook rotates with a differential motion, and, above all, obviating the friction and wear of the thread incident to taking up the stitch by drawing upon the thread between the needle-eye and spool or supply thread,

which causes a constant to-and-fro movement of the thread through the needle-eye, accomplishing my object, as I do, by drawing the thread in one general direction only to take up the stitch, thereby exerting a minimum strain upon the thread and wear upon the fabric, with consequent light running of the machine, enabling heavy fabrics to be stitched with ease and accuracy.

My invention further comprises a take-up hook, constructed and arranged to take up the stitch, and then to recede, letting go the slack, and passing the needle-thread to resume its position to engage the latter in its next motion, whereby all eyes or other fixed positions for holding the thread while being taken up are dispensed with.

My invention further comprises novel arrangements and combinations of parts, whereby a more simple, durable, effective, and perfect sewing-machine is secured than has been hitherto devised.

Figures 1, 2, 3, 4, and 5 represent face views of that part of a sewing-machine embracing my invention, Figs. 1ª, 2ª, 3ª, 4ª, and 5ª being side views of same, with the various parts in corresponding positions, respectively, Fig. 6 representing a face view of the rotating hook.

A is the fixed arm of the machine, to which is attached the presser arm and foot C, the fixed arm A likewise constituting at its outer end a support for the take-up hook, D, which consists of an arm or lever, pivoted at d^2 to the fixed arm A, and having at its lower end d^1 a hook so shaped that it will readily engage with and retain hold of the thread while taking it up or drawing it outward, and will slip or shoulder past the taut thread on its return, the end of the hook for that purpose being slightly curved or bowed toward the direction in which it takes up the thread. At the upper end of the take-up hook D is a slot, *d*, of suitable shape to impart the proper time and motions to the take-up hook D, which is actuated by a pin and roller, *b*, attached to the outer end of the vibratory or rocking needle-arm B, said roller *b* working in the slot *d*.

G is the tension, through which the spool-thread passes to the roller *b'*, (which may, however, be an eye instead,) and thence to the needle K, being carried through the eye *k* of the latter. E is the rotating hook, of substantially the shape of the old-style Wheeler & Wilson hook, except, as shown in Fig. 6, the heel *e'* is turned inward, and continued until it meets the opposite side of the hook, in order to present an unbroken surface, free from corners and angles, to the passage of the slack thread when carried upward by the take-up hook D after being released by the rotating hook E.

F is the lenticular bobbin, of usual construction, retained in its place in the rotating hook E by the ring-slide H, which is in turn secured by the thumb-screw *h*. The hook E has its rotating motion transmitted to it by the shaft I, in which it is secured.

J is the table or cloth-plate, upon which the fabric to be stitched is held by the presser-foot C. The needle K is, in this instance, a curved one, rigidly secured in the vibratory arm B. A straight needle may, however, be used with suitable holding mechanism, whether needle-bar or other device.

In operating the machine, the various parts being in position, as shown in Figs. 1 and 1ª, the needle K having descended through the cloth *c*, carrying with it the needle-thread *f*, and then risen sufficiently to form the loop *f'*, into which the nose *e* of the rotating hook E has entered, the further rotation of the hook E, as seen in Figs. 2 and 2ª, carries the needle-loop *f'* partially over the bobbin F, with its thread *g*, the needle K having meanwhile risen out of and above the cloth *c*, and the take-up hook D being near the needle-thread, between the needle-eye *k* and the cloth *c*, and ready to engage with such thread to take it up.

In Figs. 3 and 3ª, the rotating hook E, in its further movement, has carried the loop *f'* so far that it may readily slip from or be cast off by the nose *e* of the former, and complete its motion over the bobbin; or, in other words, the passage of the bobbin through the said loop, the needle K having again re-entered the cloth *c* in its descent, and the take-up hook D having moved out sufficiently to pass the path of the needle and engage the needle-thread *f*, retaining it until the release of the loop *f'* by the hook E enables the take-up hook D to continue its course, drawing the loop *f'* up through the cloth *c*, and outward, as shown in Figs. 4 and 4ª, locking the bobbin-thread *g* with it as the take-up hook D reaches its extreme course and tightens the stitch. As here shown, at the moment the stitch has been tightened the needle K, which has formed a tension-point for the take-up hook, (the cloth at the preceding needle hole being the other tension-point,) starts upward again, forming another loop for the hook E to enter, which done, the hook E, in its further rotation, carries down the loop released by the take-up hook D, and, when such has been done, drawing from the needle K sufficient thread in addition for the stitch in course of formation, the take-up hook D passing the taut needle-thread by forcing it aside, as seen in Figs. 5 and 5ª, to resume its position for taking up the stitch now being formed.

It will be seen that the take-up hook D is shown as having a swinging or oscillating motion given to it by the vibrating or rocking motion of the arm B, acting through the roller *b*. It will also be observed that the movement of the take-up hook is rather horizontal than vertical. If desired, it may, however, be given more of a vertical motion, to give a more direct draw upward of the thread. Instead, also, of a swinging motion, it may be so constructed and arranged as to pass the path of the needle by such motion, and then acquire more of a

reciprocating vertical motion, which may be preferred, in order to reduce the friction of the thread in the cloth to a minimum.

By employing a second needle adjoining the one shown, and arranged in line with it and the needle-arm B, and providing a second spool or supply-thread, the take-up hook (or, if preferred, two distinct take-ups may be used) may be made to take up the two needle-threads after the rotating hook carries the two loops over the bobbin, to form a double row of stitching on top of the fabric, united or locked below by the one bobbin-thread.

By my invention it will be seen that wax-thread sewing may be more readily accomplished, the thread not having to pass back and forth through the eye of the needle, with its liability to heat and bend or break the needle. It will also be seen that by having the needle in the cloth at the time of taking up the stitch the strain or tension upon the needle is in such a direct line with its length as not to disturb or affect its shape by bending or springing, thus enabling the advantageous use of curved needles, with the accuracy and fineness of stitch thereby obtainable.

I claim—

1. The combination, substantially as set forth, with a stitch-forming mechanism, of a take-up which engages the needle-thread between the needle-eye and the fabric, and operates to take up the slack of and tighten one stitch after the needle has entered the fabric for the next succeeding stitch.

2. The combination, in a sewing-machine, of these elements: an eye-pointed needle, a take-up which engages the needle-thread between the needle-eye and the fabric, and operates to tighten one stitch after the needle has entered the cloth for the next succeeding stitch, and a rotating hook arranged to draw the slack thread as it is given up or released by the take-up, the combination being and acting substantially as set forth.

3. The combination of a stitch-forming mechanism and a take-up, arranged for joint operation, substantially as set forth, whereby the loop of needle-thread is taken up between the needle-eye and the fabric, and while the needle, during the whole or major part of the taking-up of said loop, is in the cloth.

4. In a two or more thread sewing-machine, the combination, with the stitch-forming mechanism, of a take-up arranged to take up direct, between the needle-eye and the fabric, the slack needle-thread of the loop cast off or released by the hook or shuttle, or equivalent thereof, substantially as and for the purpose set forth.

5. In a sewing-machine, the combination, with the needle, of a take-up which moves in a path intersecting the path of the needle, and is operated to cross the needle-path to engage the needle-thread between the eye of the needle and the fabric, for the purpose of tightening the stitch when the needle is descending for the next succeeding stitch.

6. In combination with a stitch-forming mechanism, the take-up hook D, constructed and arranged to take up the slack needle-thread, then to disengage from it, and then to shoulder past the taut needle-thread to resume its first position, substantially as and for the purpose herein set forth.

7. The combination of the take-up hook D, rotating hook E, bobbin F, and eye-pointed needle K, all arranged for operation substantially as and for the purpose herein set forth.

JOHN McCLOSKEY.

Witnesses:

T. E. COLE,

H. M. HAVILAND.