(No Model.)

F. O. JERRAM.

TAKE-UP FOR SEWING MACHINES.

No. 566,767. Patented Sept. 1, 1896.

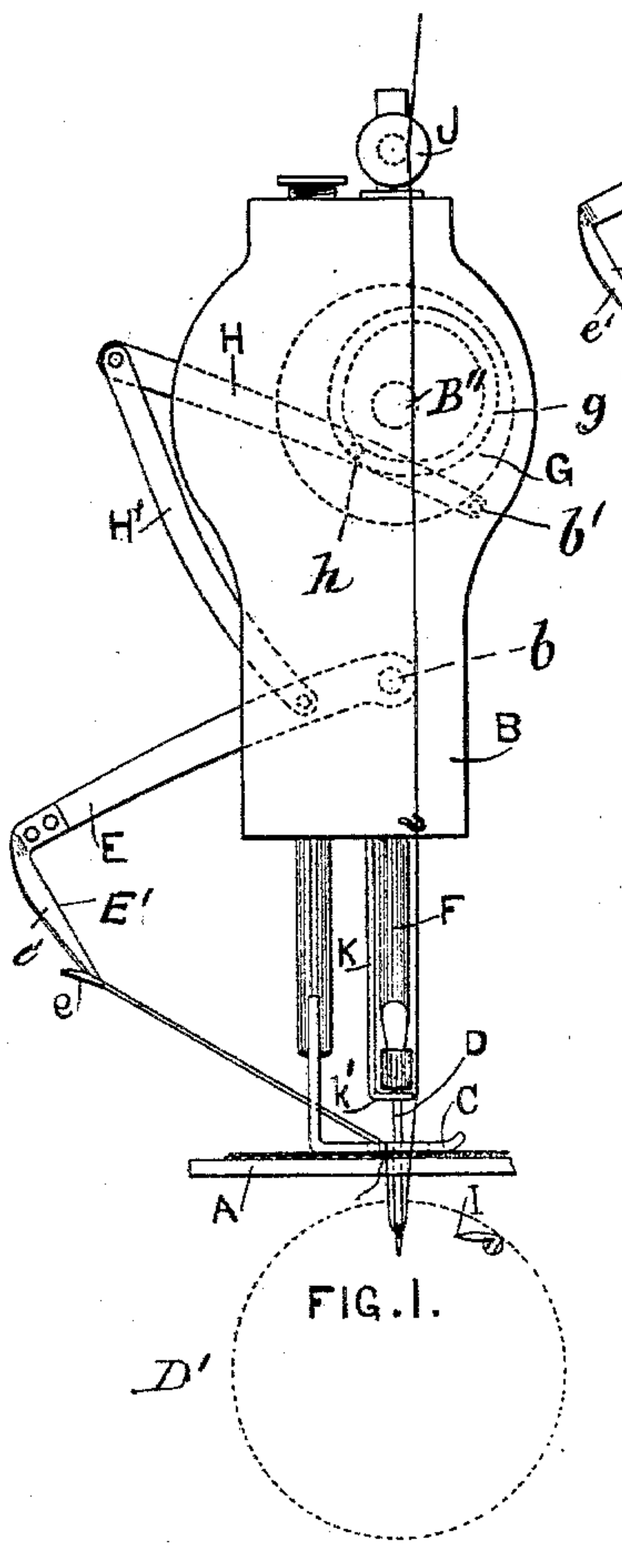

FIG. 1.

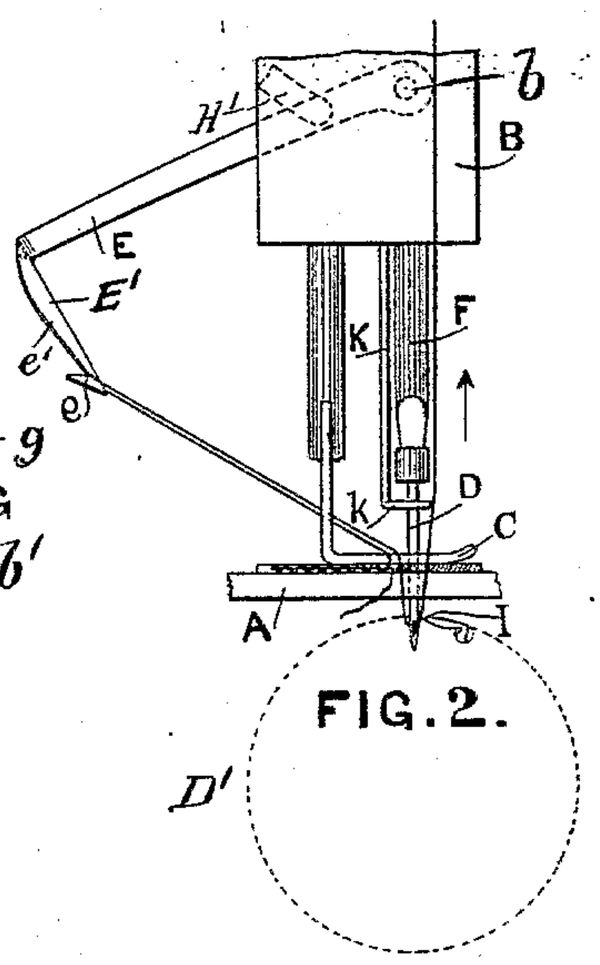

FIG. 2.

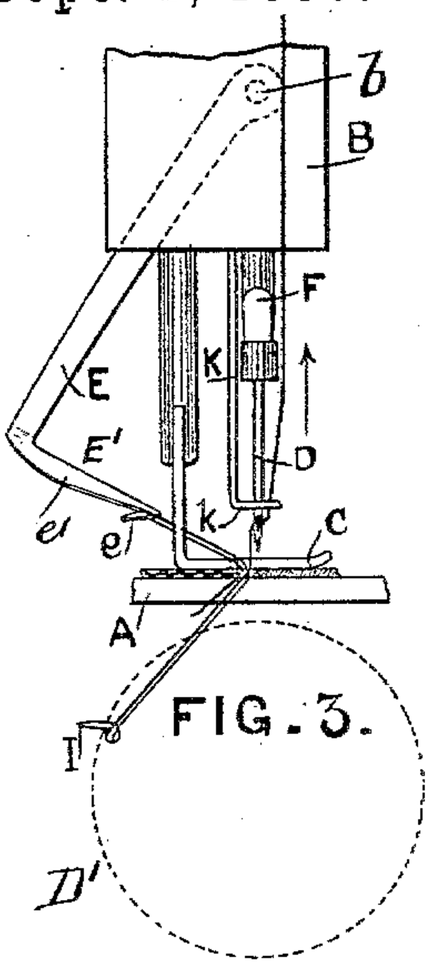

FIG. 3.

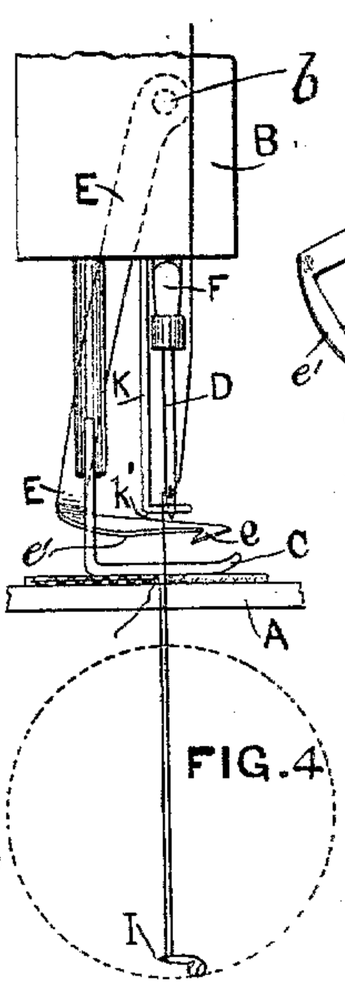

FIG. 4.

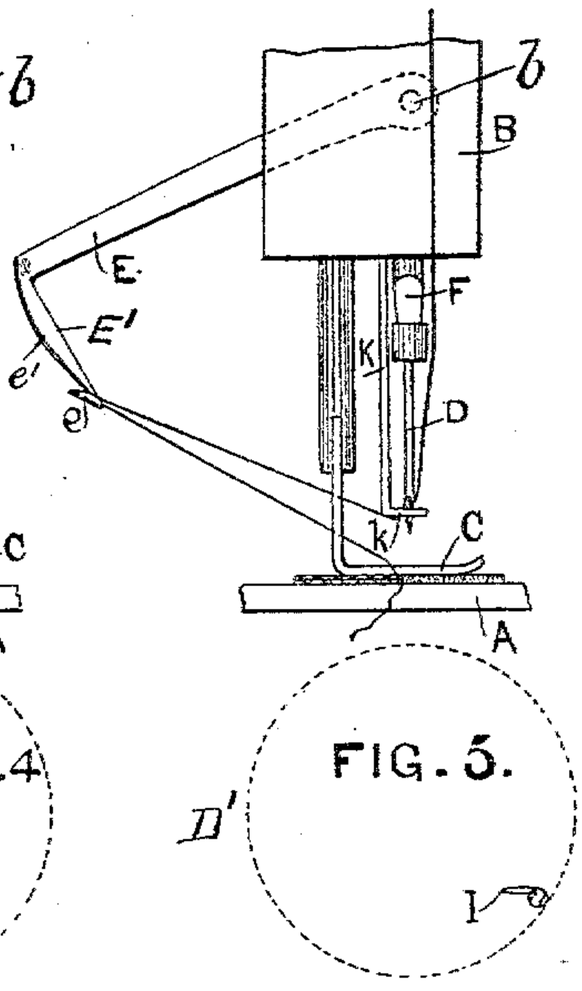

FIG. 5.

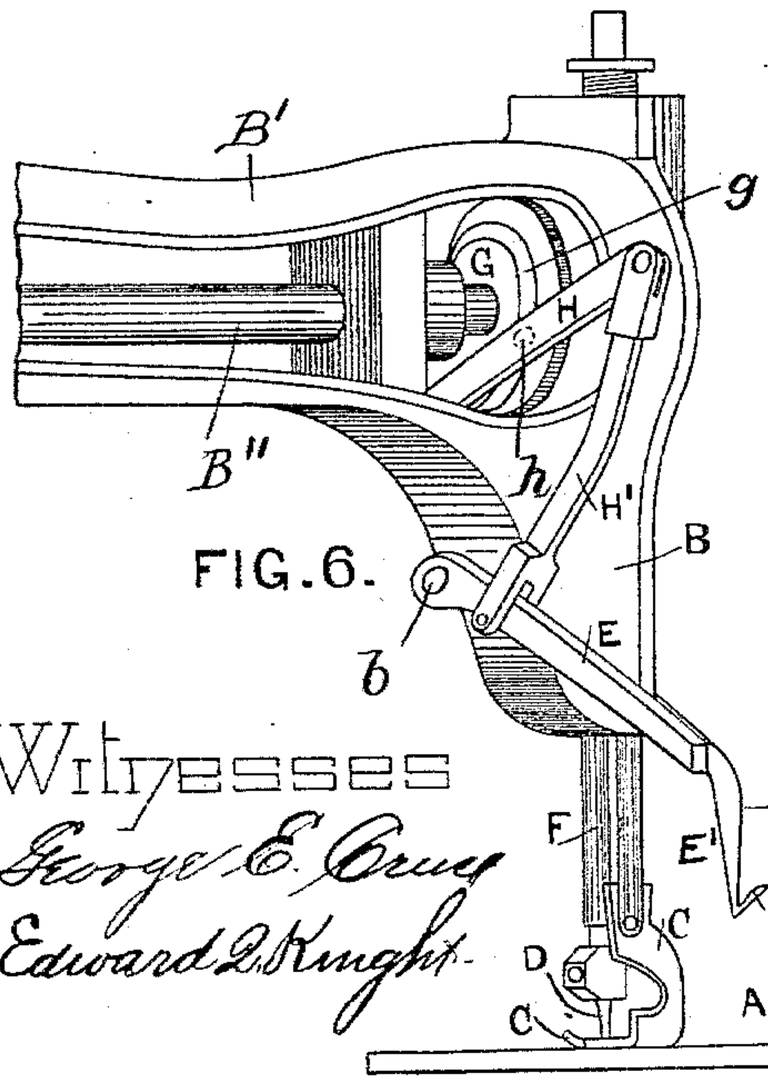

FIG. 6.

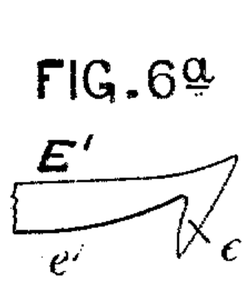

FIG. 6a

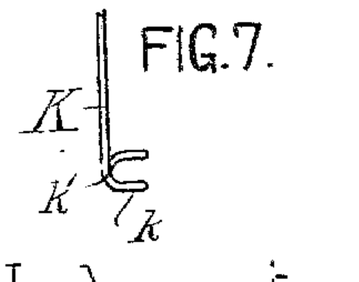

FIG. 7.

Witnesses
George E. Crum
Edward L. Knight.

Inventor
Frederic O. Jerram.
By Knight Bros
Attys.

UNITED STATES PATENT OFFICE.

FREDERIC O. JERRAM, OF LIVERPOOL, ENGLAND.

TAKE-UP FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 566,767, dated September 1, 1896.

Application filed February 3, 1892. Serial No. 420,181. (No model.) Patented in England June 18, 1891, No. 10,350.

To all whom it may concern:

Be it known that I, FREDERIC OLDERSHAW JERRAM, a subject of the Queen of Great Britain, and a resident of No. 14 Lower Breck Road, Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Take-Ups for Sewing-Machines, (for which a patent was obtained in Great Britain, No. 10,350, dated June 18, 1891,) of which the following is a specification.

My invention relates to an attachment for sewing-machines, and has more especially for its object a take-up device to draw upon the thread and take up its slack to tighten the stitch while the needle is rising or resting at its highest point.

By my invention I take up the slack between the needle and the top of the work or the presser-foot, and thereby overcome the disadvantage of having to draw the thread backward and forward through the eye.

My improvement consists in novel features of construction hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which the invention is shown applied, by way of example, to a sewing-machine of the rotatory hook lock-stitch type, but it must be understood that the invention is not limited to this type of sewing-machine alone, as it may also be used in connection with a shuttle or other lock-stitch sewing-machine.

Figures 1, 2, 3, 4, and 5 are elevations of the forward end of a sewing-machine, showing the various positions the take-up device assumes during the cycle of its operations, Fig. 1 also showing the cam and lever mechanism by which such device may operated. Fig. 6 is a perspective view of a part of the arm and the head of a sewing-machine, showing a rear view of the take-up device. Fig. 6ª is a detail enlarged view of the dart-shaped claw and part of the right-angle extension of the take-up arm. Fig. 7 is a detail perspective view of the needle-guide.

A is the cloth-plate; B the head, and B′ the arm, of the framework; B″, the main shaft; C, the presser-foot; D, the needle; D′, the complementary stitch-forming mechanism, and E the pivoted vibratory or swinging take-up arm, having a right-angle extension E′, formed with a dart-shaped claw *e* above the work, but below the point of the needle D when the latter is raised, through which passes the needle-thread. The take-up arm is pivoted at *b* to the inner side of the head. The extension has a tapered or sloped outer edge *e′*, so that the thread shall slide along the extension into the dart-shaped claw with the arm E on the inner side of the thread, as shown in Fig. 4. F is the vertically-reciprocating needle-bar; G, the disk, formed with a cam-groove *g* in its inner face and mounted on the main shaft and operating the swinging take-up arm E through certain connections to be hereinafter described. The cam-groove is so formed that during a part of the movement of the needle the take-up arm E remains stationary, while during the remaining part of the needle's movement the motion of the take-up arm is accurately timed to give out the needle-thread for the rotating hook I to carry over the bobbin of the complementary stitch-forming mechanism and afterward to draw upon the thread to take up the slack and complete the stitch.

H is a lever pivoted at *b′* to the inner side of the head, and H′ is a link connecting the lever H with the take-up arm beneath it for communicating the motion of the disk to the take-up arm E, the lever H having a pin *h* working in the cam-groove *g* of the disk, and the link H′ providing a connecting-bar between the lever H and the take-up arm E.

J is a tension-disk arranged to rise and fall in unison with the needle-bar.

I is the point of the revolving hook for seizing the needle-thread and throwing its loop over the circular bobbin containing the under thread, the dotted lines showing the circular path of the hook.

K is a vertical guide-bar secured to the head for preventing the needle from being bent by the tension of the thread when the take-up arm E is swung sidewise. The end of this guide-bar has a horizontal U-shaped piece *k*, (see Fig. 7,) through which the needle and its thread are adapted to pass. The guide-bar is secured to the head B of the machine or to the presser-bar C.

It will be seen, by reference to Fig. 5, that the thread passes through this U-shaped

piece, and the tendency is for the thread to pull the needle downward under the heel *k'* of the guide rather than laterally. The guide K, therefore, resists the lateral pull of the take-up arm and overcomes whatever tendency may exist to bend the needle. The bobbin is not shown, and certain other parts common to sewing-machines are omitted in order not to complicate the drawings.

The mode of action is as follows: The machine being put into motion, the needle descends, passing through the material and carrying the bight of the thread through the material. The positions of the various parts with the needle at its lowest dead-point and beginning to rise are represented in Fig. 1, in which the take-up arm E is raised to its highest position, having taken up the slack in the thread, and the point of the rotating hook I is approaching to enter the loop of the needle-thread. As the needle rises and the rotating hook rotates, the take-up arm E begins to move toward the needle-bar and in doing so slackens the thread to form the loop, which is immediately engaged by the point of the hook I, as shown in Fig. 2. The hook now pulls and expands the loop of the needle-thread, which the take-up arm E still further moves forward and gives a relative amount of thread (see Fig. 3) to be carried over the bobbin. A little further motion causes the take-up arm E to give out the whole of the slack thread and its dart-shaped claw and extension to pass beneath the needle, as shown in Fig. 4, in which position the dart-shaped claw of the arm stands clear of the thread. The needle has now passed its highest point and is beginning to descend. While in this position the loop is ready to be cast off the hook I. As soon, therefore, as the loop is cast off the hook and passed over the bobbin or spool the take-up arm E moves rapidly back as the needle descends, drawing the loop upward and completing the stitch, as shown in Fig. 5.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

A sewing-machine comprising a swinging take-up arm E, having a right-angle extension E' formed with a tapered or sloping outer edge *e'* and a dart-shaped claw *e*, the vertical guide-bar K having a horizontal U-shaped piece *k* and a heel *k'* beneath which the needle-thread is drawn downward and laterally by said claw, and mechanism for operating the take-up arm to swing it back and forth beneath the needle-bar; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERIC O. JERRAM.

Witnesses:
G. C. DYMOND,
W. H. BEESTON.