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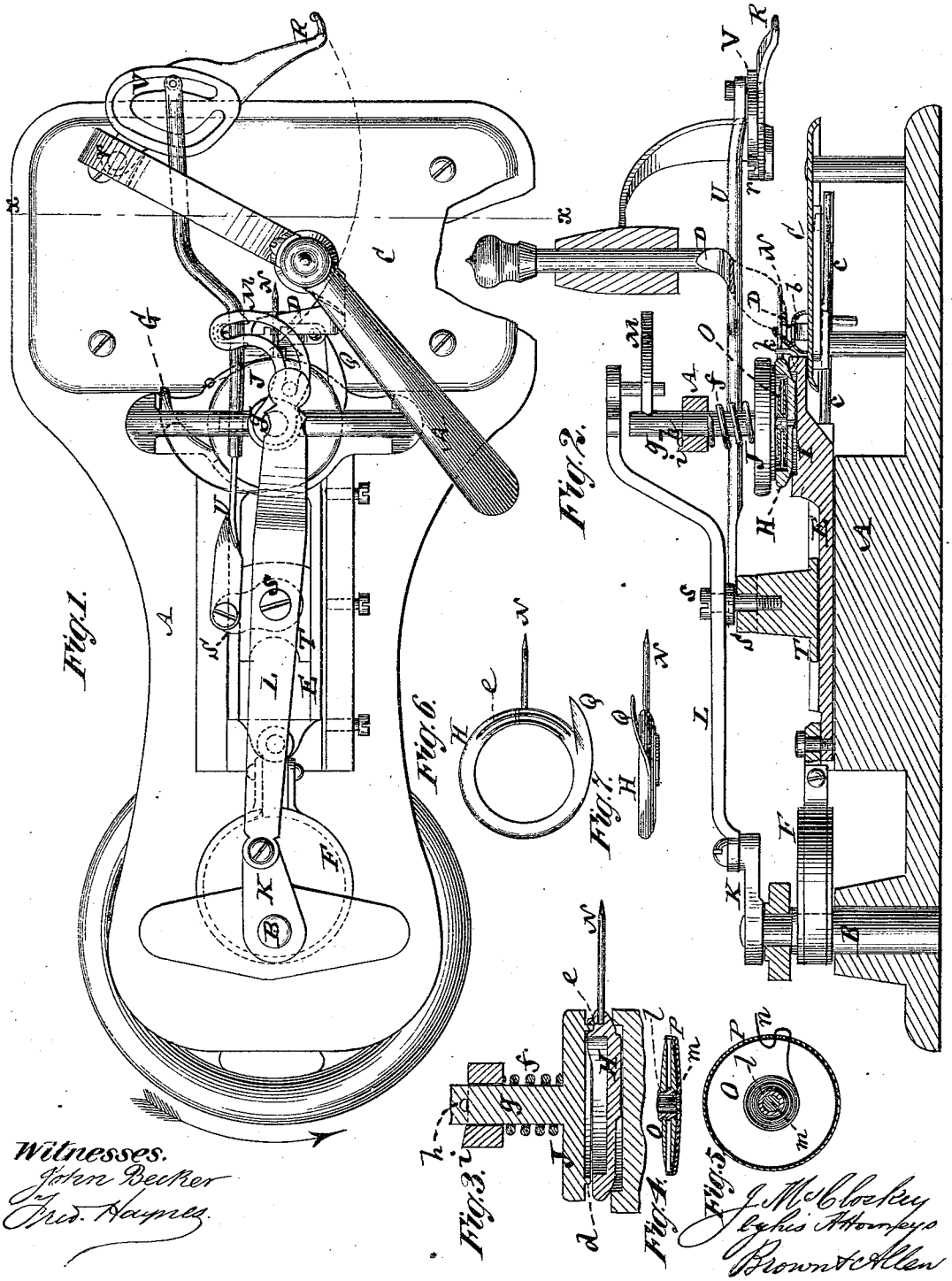
J. McCLOSKEY.

Sewing-Machine for Stitching Button-Holes, &c.

No. 161,534. Patented March 30, 1875.



Witnesses.
John Becker
Fred. Haynes.

J. McCloskey
by his Attorneys
Brown & Allen

3 Sheets--Sheet 2.

J. McCLOSKEY.

Sewing-Machine for Stitching Button-Holes, &c.

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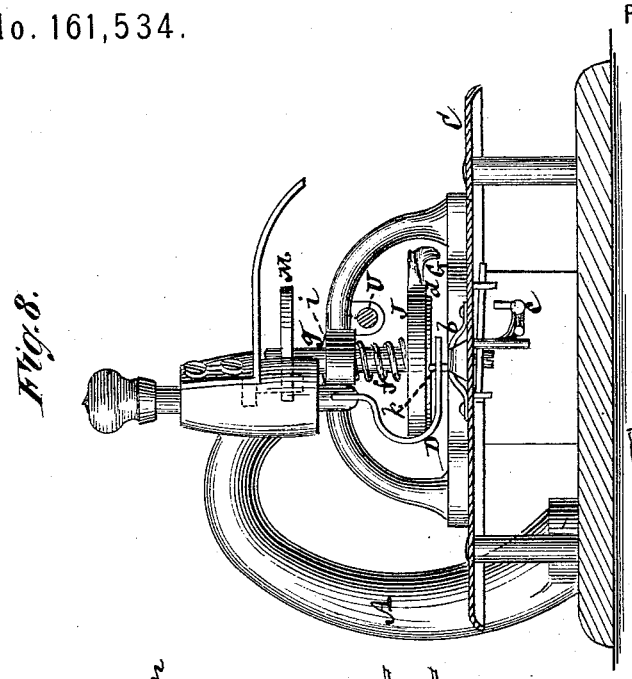

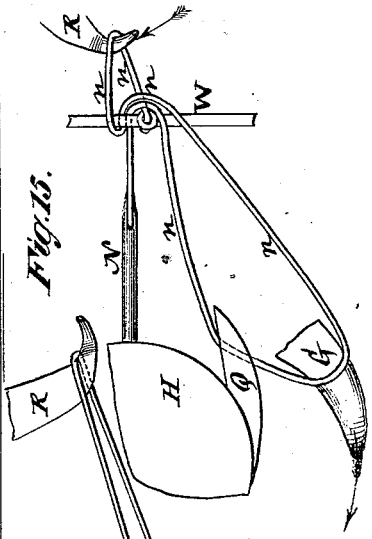

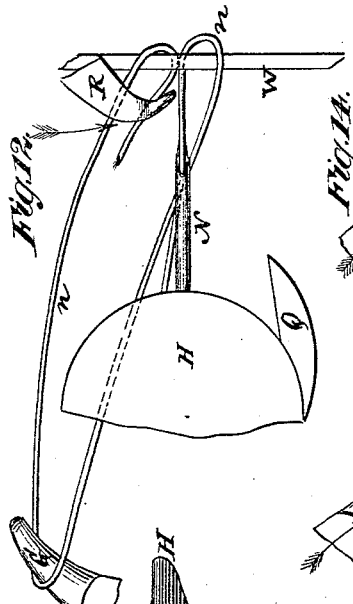

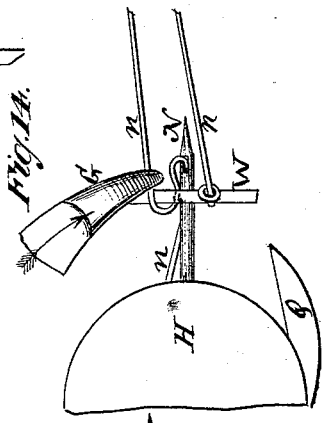

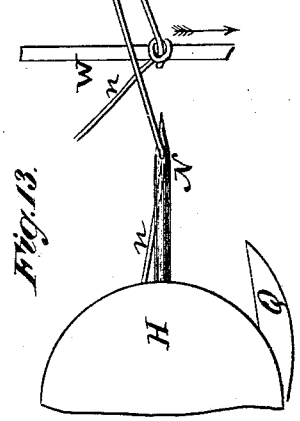

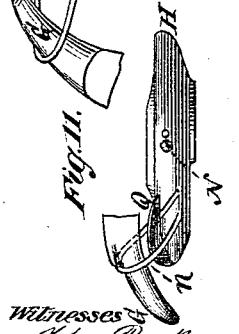

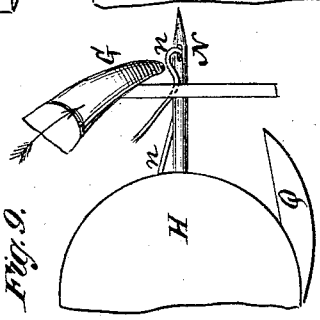

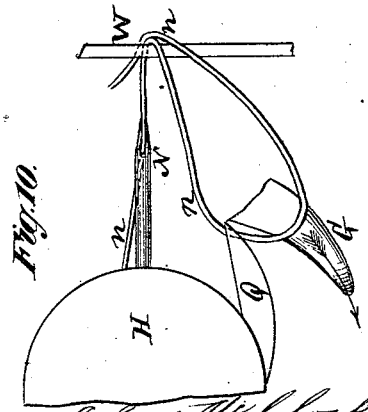

Witnesses:
John Becker
Fred Haynes

John McCloskey
by his attorneys
Brown & Allen

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J. McCLOSKEY.

Sewing-Machine for Stitching Button-Holes, &c.

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Fig. 16.

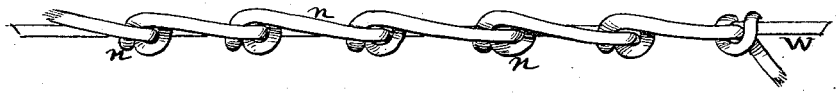


Fig. 17.

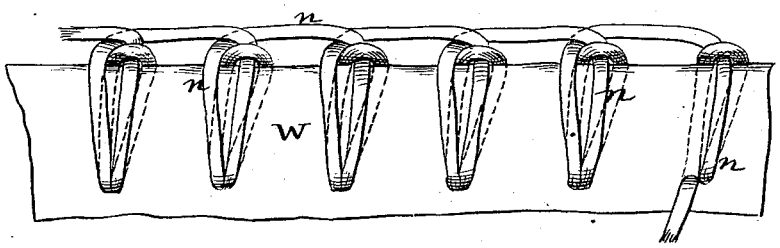


Fig. 18.

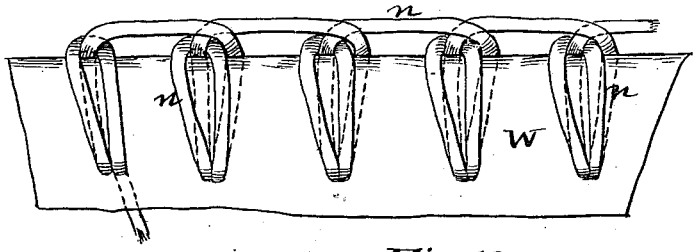


Fig. 19.

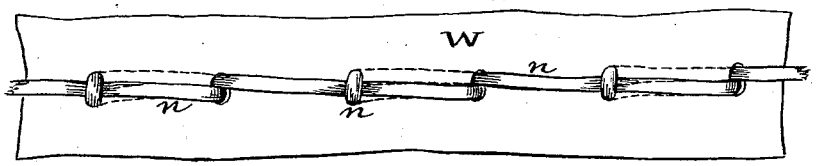


Fig. 20.

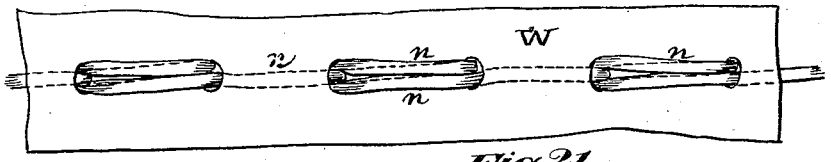
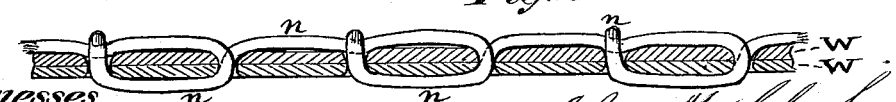


Fig. 21.



Witnesses
John Becker
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by his Attorneys
Brown & Allen

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JOHN McCLOSKEY, OF NEW YORK, ASSIGNOR OF ONE-THIRD HIS RIGHT TO DEBORAH C. FOLK, OF BROOKLYN, N. Y.

IMPROVEMENT IN SEWING-MACHINES FOR STITCHING BUTTON-HOLES, &c.

Specification forming part of Letters Patent No. **161,534**, dated March 30, 1875; application filed November 19, 1874.

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 new and useful Improvements in Sewing-Machines for Stitching Button-Holes, and for other purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

This invention consists in a process of producing a single-thread lock-stitch by interlacing a loop of a needle-thread after its passage through the cloth with a loop of the same thread formed without passing it through the cloth, and then passing the outside or supply portion of said thread through the first-named loop. This it is proposed to do by first passing an eye-pointed needle with its thread through the material or materials to be stitched, and, as the needle retires, leaving a loop, after which the subsequent operations are as follows:

The loop formed by the needle is caught by a revolving hook, which, together with a shuttle that is stationary in relation with the hook, reciprocates in direction of and simultaneously with the needle, and said loop then passed round the shuttle by or during the rotation of the hook and its travel in common with the shuttle and needle. At such period, and shortly before the needle penetrates the cloth again, and the feed of the cloth or materials takes place, the thread on the needle is caught by a reciprocating take-up or secondary looper, and the slack formed by the portion of the thread cast from the shuttle is drawn outward while the needle penetrates the cloth again, and the next loop formed by the needle is interlaced with the doubled thread or loop of the take-up, and is carried round the shuttle, during which the doubled thread is cast from the take-up, and the stitch is drawn tight by the next outward action of the take-up. This operation being repeated, a stitch is produced which, when applied to button-holes, or to whipping over the edge or edges of cloth, has the thread whipped in double lines over said edge or edges, and each of such doubled whippings united by a single line of the same thread. When said operation, however, is applied to surface, as distinguished from edge, stitching in joining two pieces of cloth together, then a lock chain-stitch presenting only a single line of thread on the outer surface, with knots at the lock, is produced.

The invention furthermore consists in certain means for carrying it out, including a combined shuttle and needle; also, a combined shuttle with attached needle and a bobbin, likewise bobbin-case, constructed to control the tension, and a combination of a reciprocating take-up with a revolving hook, which also has a reciprocating motion in common with the needle; likewise means connected with the shuttle for holding down on the needle-thread, and for releasing said thread when it is required to cast it from the shuttle.

Figure 1 represents a plan of a machine embodying my improvements; Fig. 2, a longitudinal vertical section of the same; Fig. 3, a vertical section of the combined shuttle and needle and immediate devices, together with means for holding down and releasing the needle-thread, as required; Fig. 4, a transverse vertical section of the bobbin and its case, which lies within the shuttle; and Fig. 5, a horizontal section of the same. Fig. 6 is a plan of the combined needle and shuttle, and Fig. 7 a side or edge view of the same. Fig. 8 is a transverse vertical section of the machine on the line *x x* of Fig. 1. Figs. 9, 10, 11, 12, 13, 14, and 15 are views in illustration of the production of the stitch at different stages of the operation. Fig. 16 represents an edge view of the stitch as it appears in whipping over the edge or edges of the cloth; and Figs. 17 and 18 are views from reverse sides of said stitch under similar circumstances, and showing the relation of the same with the edge or edges of the cloth. Figs. 19 and 20 are views from the reverse sides of the material or materials when the stitch is applied to surface-sewing as distinguished from whipping over the edge; and Fig. 21 is a longitudinal sectional edge view of two thicknesses of material as united by the stitch applied to the surface.

A is the frame of the machine, and B its main or driving shaft. C is the cloth-table,

of any suitable construction, according to the work to be performed, but which is here shown as having mounted on it an arched rise, *b*, to provide for the adjustment and arrangement of the materials to be stitched in relation with the needle. D is an elastic presser-foot.

Any suitable feeding devices may be employed, or the cloth may be fed by hand; but in the example represented in the drawing, the feeding dog or slide is supposed to be operated by inclines on a rod, *c*, to give it a forward and upward movement, while springs operate it downwardly and backward. Such does not differ materially from any other ordinary four-motion feed, and such, when applied to button-hole stitching, would require the cloth to be slightly directed by hand, in accordance with the shape of the button-hole, and further necessitate the cloth being turned half around, or thereabout, by hand after stitching the one edge of the button-hole, and prior to commencing the opposite edge thereof; but such feed forms no part of this invention, and the feeding devices used in other button-hole-stitching machines may be employed for the purpose. The rise *b*, through which the feed works as against the presser-foot above, serves to bend the cloth, so as to present the edge to be stitched to the action of the needle. This rod *c* is attached to the forward end of a horizontal slide, E, which serves to give the necessary reciprocating movement to the needle, with its combined or attached shuttle, and to the revolving hook, all at the same time. The slide E derives its motion from an eccentric, F, on the main shaft. B is the revolving hook, which catches the needle-loop and passes it round the shuttle. H is the shuttle, which, in the example represented in the drawing, is lenticular, and which is held between a shuttle-carrier, I, fast to or part of the slide E, and an upper disk, J, to which the hook G is attached. This disk J has a rib, *d*, on its under face, arranged to enter a crease, *e*, on the upper surface of the shuttle in front, thereby forming a thread-trap, which not only produces a certain tension on the thread, but holds it from being drawn or cast out of time from the shuttle. To effect this the revolving hook-disk J is borne down by a spring, *f*, arranged around its spindle *g*, and said trap is opened at the proper time to allow of the extended loop being cast from off the shuttle by the travel of a stud, *h*, on the spindle *g*, over a fixed cam, *i*. The disk J, with its attached hook G, derives its revolving motion, while reciprocating in common with the shuttle and needle, by a crank, K, on the shaft B, a connecting-rod, L, pivoted at *s* to a sliding fulcrum, and a curvilinearly slotted arm, M, on the spindle *g*. The shuttle H has attached to it the eye-pointed sewing-needle N, which, together with the shuttle and revolving hook, is reciprocated by the action of the slide E, and the shuttle and needle are prevented from rotating in common with the hook G, and the needle always made to point in the same direction by its bearing or sliding against a fixed guide, *k*. O is the circular bobbin containing the sewing-thread, and P a circular dished bobbin-case, within which the bobbin is centered by a central eye, *l*, in it fitting over a stud, *m*, on the upper surface of the bottom of the bobbin-case at its center, and on or round which the bobbin rotates when thread is being drawn from it. The thread *n* (see Fig. 5) is passed from the bobbin to the needle by entering successively through a series of holes in the rim of the bobbin-case, whereby a proper tension on the thread is produced, and the centering stud *m* on the bobbin-case prevents the bobbin being drawn by the pull of the thread against the side or edge of the bobbin-case, and insures a free supply of thread till used up from the bobbin. Attached to the shuttle in front, on the one side of the needle, at a suitable distance from the latter, is a projecting oblique or spiral guide, Q, which serves to direct the loop, as taken from the needle by the revolving hook G, round the shuttle H. R is the reciprocating take-up or secondary looper of the needle-thread, as hereinbefore referred to. This take-up, as here represented, is in the shape of a vibrating hooked lever, working on a center at *r*, and moving over the cloth-table to and from a point on the opposite side of the needle to that on which the guide Q is arranged, as indicated by dotted line in Fig. 1. This motion may be communicated in proper timely relation with the needle and revolving hook by an arm, S, connected with a slide, T, which is free to reciprocate within the slide E, and which is moved backward and forward by its pivoted connection at *s* to the vibrating and reciprocating rod L, and a rod, *v*, connecting the arm S with a grooved cam, V, on the take-up R.

Any other suitable means, however, may be employed to vibrate the hooked take-up R, to revolve the hook G, and to give said hook, the shuttle, and needle their reciprocating motions in common so long as said take-up, hook, shuttle, and needle operate in relation with each other, as hereinbefore referred to, and the action of which is more clearly demonstrated in Figs. 9, 10, 11, 12, 13, 14, and 15 of the drawing. Thus, supposing the needle N to have penetrated the cloth, and to have commenced its back movement, forming or leaving a loop in the needle-thread *n*, as in Fig. 9. The revolving hook G then approaches the loop, and, as the needle, shuttle, and hook move backwardly in common, and as the hook G continues to revolve, the hook enters said loop and draws or extends it, as represented in Fig. 10, and enters it on the spiral guide Q, and passes it over or around the latter, as in Fig. 11, whereby the loop is directed to, and, by the continued rotation of the hook, round or over, the shuttle H. When the hook G arrives in the position represented for it in Fig. 12 relatively to the shuttle, the loop passed over it by

the hook is ready to be cast from it. This is during the early portion of the advance movement of the needle; but before it penetrates the cloth again, and when the loop is ready to be thus cast off the hook and shuttle, the stud *h* of the spindle *g* of the hook mounts the cam *i*, to counteract the effect of the spring *f* and release the loop. At this point (see Fig. 12) the vibrating or reciprocating take-up R is in an upward position, ready to take a fresh line of thread from the needle, and draw it outward, as represented in Fig. 13, which action takes up the slack of the cast loop, and after which the feed of the cloth takes place, and the needle penetrates the cloth again, and so that the next loop formed by the needle as it commences to retire is interlaced with the double thread or loop of the take-up, as represented in Fig. 14, and the revolving hook G, taking hold of said interlaced needle-thread, carries it onto the guide Q of the shuttle for passage round or over the latter, as before, and while this is taking place, as shown in Fig. 15, the reciprocating take-up R works inward to give thread to the revolving hook, and ultimately to cast off thread from the take-up, the succeeding outward action of which latter draws tight the stitch.

When this stitch is used for button-holes, or the material (of which there may be one or more thicknesses) is disposed on the cloth-table so that the thread is whipped over the edge or edges of the material, then the stitch has the appearance represented in Figs. 16, 17, and 18 of the drawing, and in which the thread is whipped in double lines over the edge of the cloth W, and each of such double whippings united by a single line of the same thread, the whole forming an over-hand single-thread lock-stitch. When the invention, however, is applied to surface as distinguished from edge stitching—as, for instance, in sewing one thickness of material down on another by bending said thickness on the cloth-table so that the needle penetrates four thicknesses—that is, two thicknesses of each piece of cloth—then the reverse surface or sides and edge views of the stitch (which is produced in precisely the same manner as in the other case) is as represented in Figs. 19, 20, and 21 of the drawing, the same forming a lock chain-stitch, which presents a single line of thread on the outer surface, with knots at the lock at every alternate penetration of the cloth or materials by the needle, as shown in Fig. 19 of the drawing.

I claim—

1. A sewing-machine in the working or operation of which the loop of thread from the sewing-needle is passed entirely over said needle, substantially as specified.

2. The shuttle H, provided with an eye-pointed needle, as and for the purpose specified.

3. The combination of a bobbin, O, and a shuttle provided with an eye-pointed needle, essentially as described.

4. The combination of the revolving hook G with the shuttle, provided with an eye-pointed needle, the whole being arranged to reciprocate in common, essentially as described.

5. The combination of the reciprocating needle-thread take-up or secondary looper R with the hook G, having, in addition to its revolving motion, a reciprocating movement in common with the shuttle, having the eye-pointed needle, substantially as specified.

6. The combination of the revolving hook-disk J with its rib *d*, the lenticular shuttle H, with its crease *e*, the bobbin O, the spring *f*, the revolving stud *h*, and the cam *i*, essentially as and for the purpose herein set forth.

JOHN McCLOSKEY.

Witnesses:

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FRED. HAYNES.