

(Model.)

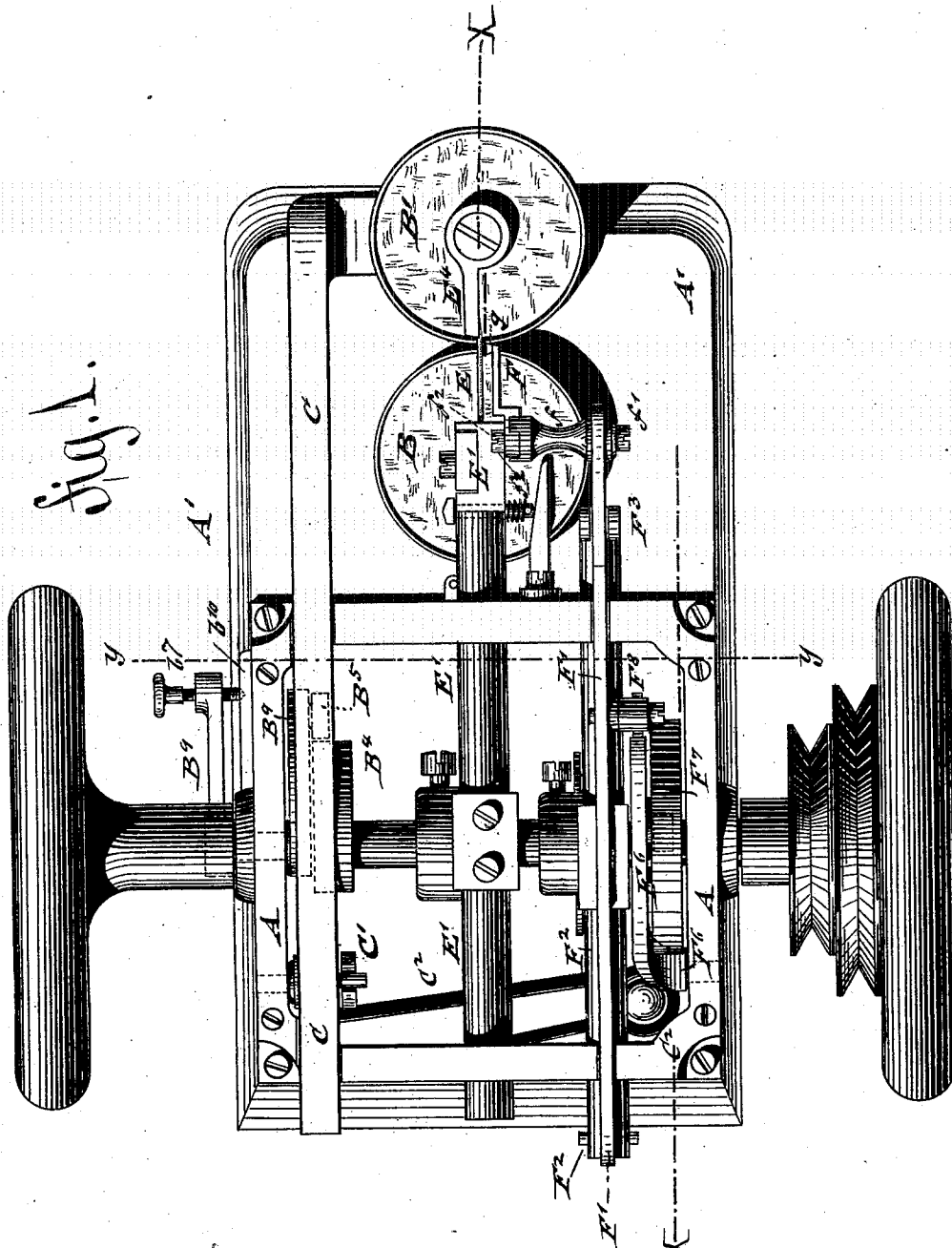
4 Sheets—Sheet 1.

W. LÜDEKE.

GLOVE SEWING MACHINE.

No. 275,506.

Patented Apr. 10, 1883.



WITNESSES:

J. H. Rosenbaum.
Otto Kisch.

INVENTOR

Waldemar Lüdeke

BY *Paul Goppel.*

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(Model.)

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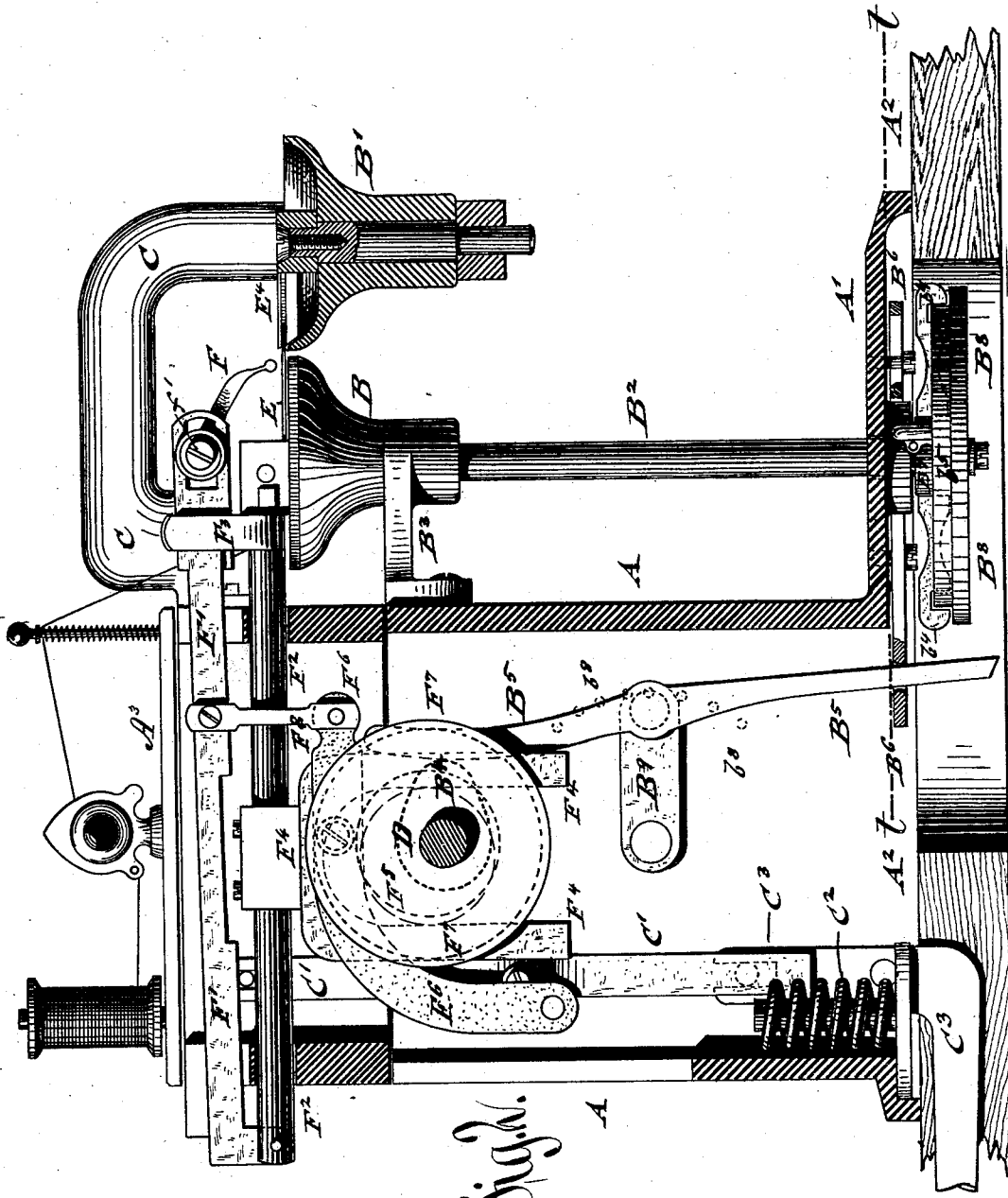


Fig. 2.

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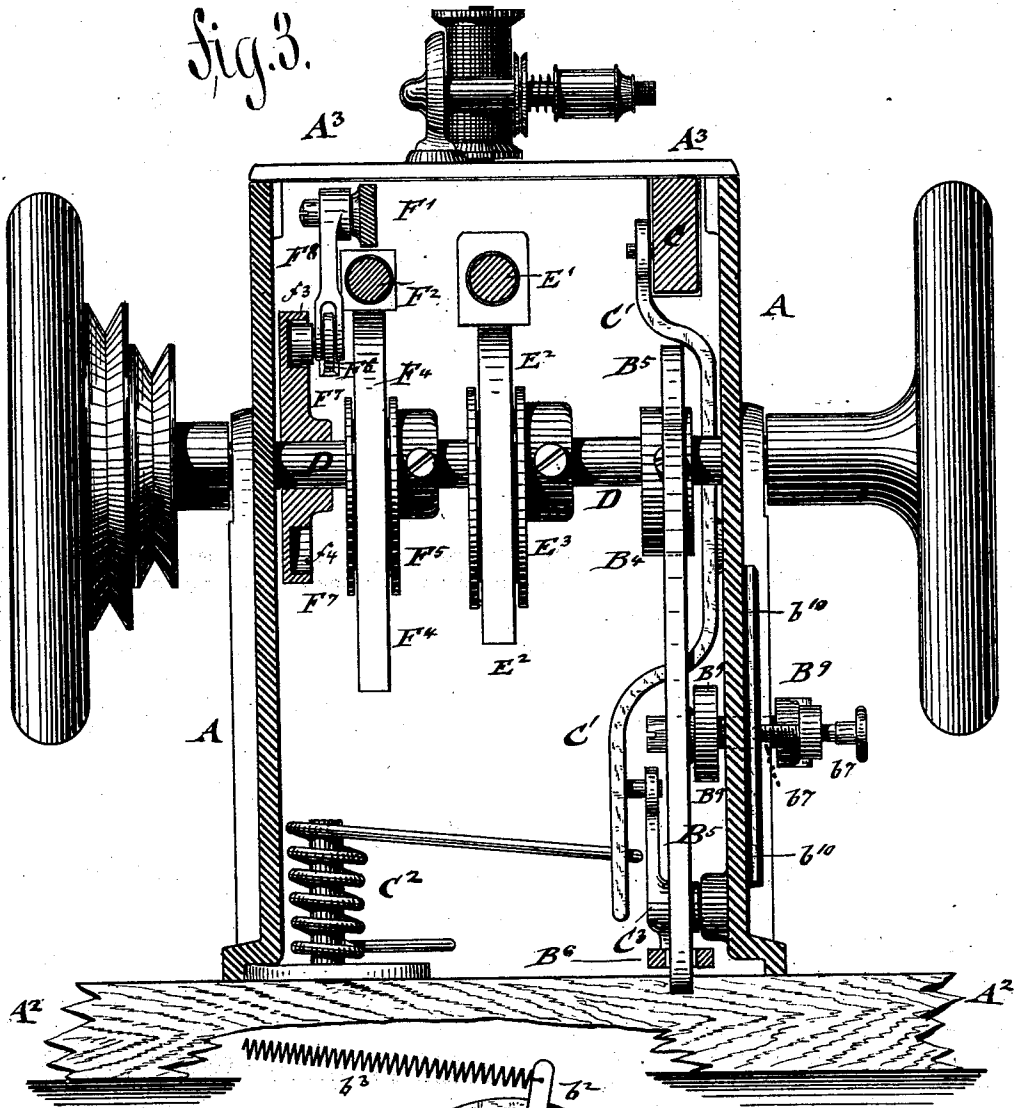


Fig. 3.

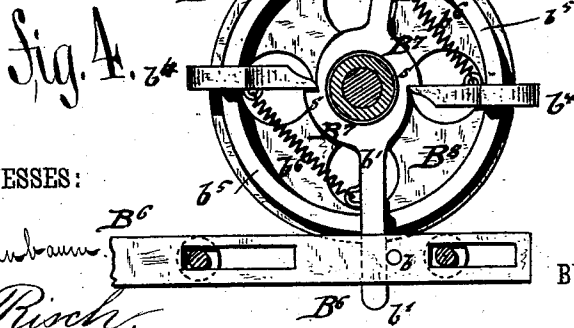


Fig. 4.

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Fig. 5.

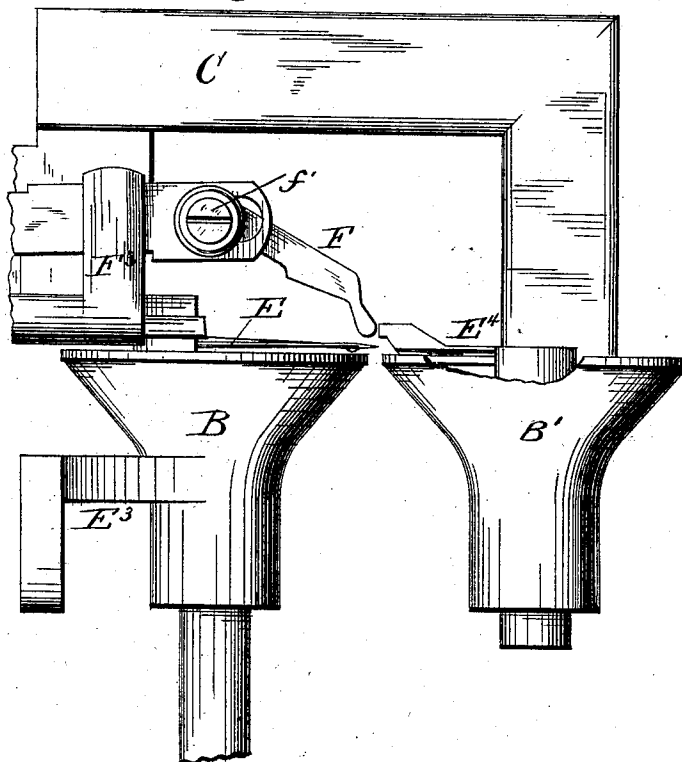
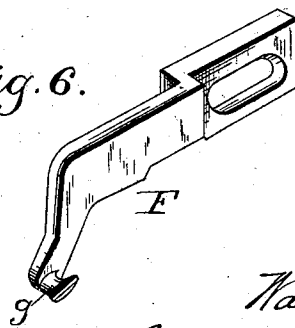


Fig. 6.



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UNITED STATES PATENT OFFICE.

WALDEMAR LÜDEKE, OF HOBOKEN, NEW JERSEY, ASSIGNOR OF ONE-HALF
TO HERMANN BAUMEISTER, OF NEW YORK, N. Y.

GLOVE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 275,506, dated April 10, 1883.

Application filed October 27, 1882. (Model.)

To all whom it may concern:

Be it known that I, WALDEMAR LÜDEKE, a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Glove-Sewing Machines, of which the following is a specification.

This invention has reference to certain improvements in overseam sewing-machines for gloves, furs, and other articles, in which the well-known elements of glove-sewing machines—to wit, two parallel feed-disks, a reciprocating needle, and an oscillating looper—are employed, the improvements being designed with a view to simplify the construction of the actuating mechanisms, reduce them to a smaller compass, render them more durable and less liable to get out of order while in use, and admit the easy and convenient regulation of the stitches.

The invention consists, principally, in the combination of a pair of rotary feed-disks, a horizontal reciprocating needle, the eye of which is arranged horizontally, and an oscillating looper, which has a horizontal and an up-and-down movement in front of the needle or on that side thereof from which the goods are fed, as contradistinguished from those oscillating loopers which have a lateral movement across the path of the needle or at an angle thereto.

The invention consists, further, in a peculiarly-constructed looper, in a peculiarly-constructed needle-guide, in a peculiarly-constructed casting-off device, and in certain combinations embracing one or more of these parts, as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a plan view of my improved glove-sewing machine with the top plate removed, so as to show the interior mechanism. Fig. 2 is a vertical longitudinal section of the same on line X X, Fig. 1. Fig. 3 is a vertical transverse section on line y y, Fig. 1. Fig. 4 is a detail top view of the mechanism for imparting intermittent rotary motion to the inner feed-disk, partly in section, on line t t, Fig. 2. Fig. 5 is an enlarged side view of the sewing mechanism, and Fig. 6 is a perspective view of the looper.

Similar letters of reference indicate corresponding parts.

A in the drawings represents a rectangular casing, having a forwardly-extending base-plate, A', which latter and the casing A are supported on a table, A². The casing A is closed by a top plate, A³, upon which the customary thread-holding and tension devices required in this class of machines are arranged. The casing A incloses the actuating mechanism of the reciprocating needle and the oscillating looper, while the mechanism for operating the parallel feed-disks is arranged below the base-plate A', and connected to the inner feed-disk, B, by a vertical pillar or shaft, B². All the working parts of the machine—to wit, the rotary feed-disks, the reciprocating needle, and the oscillating looper—are arranged outside of and at one side of the casing A, while the mechanisms for actuating the same are inclosed by the casing and base-plate, so as to be protected against dust and injury. The inner feed-disk, B, is supported in bearings of a bracket-plate, B³, which is attached to the end wall of the casing A, while the vertical shaft of the same turns in bearings at the under side of the base-plate A'. The circumference of the feed-disk B is milled in the usual manner, so as to engage by friction the similarly-milled circumference of the feed-disk B'. The latter is supported in bearings at the lower end of an angular arm, C, which is extended backward through guide-recesses in the end walls of the casing A, so as to be guided parallel to the longitudinal axis of the machine. The outer angular part of the arm C extends first upward, then forward, then downward, then horizontally sidewise, the latter portion supporting the center shaft of the feed-disk B'. The arm C is connected to a fulcrumed lever-rod, C, at the interior of the casing, said lever being acted upon at its lower end by a spiral or other spring, C², as shown in Figs. 2 and 3, so that the arm C is drawn into the casing, and consequently the outer feed-disk, B', held in close frictional contact with the inner feed-disk, B. The outer feed-disk is thereby caused to turn simultaneously with the latter, but in opposite direction thereto, so that the goods which are inserted between the disks

for being stitched are properly taken hold of in being fed forward. The lower end of the lever-rod C' of the angular arm C is engaged by one arm of a fulcrumed bell-crank lever, C³, the other arm of which is applied to a connecting-rod, operated from a treadle at the lower part of the supporting-frame of the machine, so that by simply depressing the treadle the angular arm C is moved forward by the intermediate lever mechanism, and consequently the feed-disk B' moved away from the feed-disk B, whenever it is necessary to remove the goods from or insert them between the disks.

The different operating parts of my improved glove-sewing machine receive motion from a driving-shaft, D, that extends transversely through the casing A, and which is provided with proper driving-pulleys and balance-wheels, so as to receive motion by a transmitting-belt, as customary in this class of machines. The inner feed-disk, B, receives intermittent rotary motion from an eccentric cam, B⁴, of the driving-shaft D, which cam acts upon a fulcrumed lever, B³, the lower end of which engages a slotted slide-bar, B⁶, that is guided on headed pins on the under side of the extension-plate A', as shown clearly in Fig. 2. The slide-bar B⁶ engages by a stud, b, the radial arm b' of a sleeve, B⁷, that is placed loosely around the hub of a disk, B⁸, which latter is keyed to the lower end of the shaft B² of the feed-disk B. A second radial arm, b², extends from the sleeve B⁷, and is acted upon by a spiral spring, b³, shown in Fig. 4. The sleeve B⁷ is provided at diagonally-opposite points with shoulders s, against which rest the inner ends of radial pawls b⁴, the outer ends of which are recessed so as to ride on the circumferential flange b⁵ of the disk B⁸. The pawls are connected by spiral springs b⁶ to the radial arms b' b² of the sleeve B⁷, so as to cause the biting of the flange b⁵ by the edges of the recesses of the pawls b⁴, when the arm b' is moved forward by the slide-bar B⁶ in following the motion of the lever-rod B³ as caused by the cam B⁴. The pawls b⁴ carry the flanged disk B⁸ along, and simultaneously the feed-disk B and the goods placed between it and feed-disk B'. The lever-rod B³ is held in contact with the cam B⁴ by the action of the spiral spring b³, which returns the slide-bar B⁶ and the sleeve B⁷, so as to release the pawls b⁴ from the flange b⁵, and admit their moving over the same without engaging the disk B⁸.

To regulate the length of feed the fulcrum of the lever-rod B³ is applied to the inner arm of a U-shaped lever, B⁹, the connecting or bridge portion of which passes through the side wall of the casing A, while the outer arm is provided with a set-screw, b⁷, that is set into socket-holes b⁸ of an exterior plate, b¹⁰, of the casing A, said socket-holes being arranged in an arc of a circle. By setting thus the exterior arm of the U-shaped lever B⁹, by means of the set-screw and socket-holes b⁸, a longer or shorter stroke of the lever-rod B³ and slide-bar B⁶ is obtained and consequently the radial arms of

the sleeve B⁷ will be oscillated more or less, so as to impart to the flanged disk B⁸ and the feed-disk B a greater or less extent of intermittent axial motion. In this manner the feed can be regulated with great facility and convenience by the simple adjustment of the exterior arm of the lever B⁹ and set-screw b⁷ without requiring the interchanging of the feed-disks, as in many of the glove-sewing machines heretofore in use.

The horizontal reciprocating needle E is applied to the outer end of a needle-bar, E', which is guided in recesses of the end walls of the casing A. To the needle-bar E' is applied by a sleeve a downwardly-extending U-shaped arm, E², that is engaged by a grooved eccentric, E³, keyed to the driving-shaft D. The needle is secured by a suitable clamping device to the outer end of the needle-bar in such a manner that its eye is horizontal. At the end of the needle-bar are applied suitable means whereby the thread is guided in the usual manner to the eye of the needle.

To the shaft of the outer feed-disk, B', is fitted a radial guide, E⁴, in line with the axis of the needle-bar, said guide being grooved in its side facing the needle, so as to guide the latter when it passes across the contact-point of the two feed-disks, as shown in Figs. 1 and 2. The end of this radial guide is square or blunt, whereby said guide is adapted to serve as a casting-off device for the loop from the looper after said loop is pierced by the needle.

The oscillating looper F receives a sextuple motion, consisting of, first, an upwardly-inclined forward or upward vertical movement; secondly, a horizontal forward movement; thirdly, a downwardly-inclined forward or downward vertical movement; fourthly, an upwardly-inclined backward or upward vertical movement; fifthly, a horizontal backward movement; and, sixthly, a downwardly-inclined backward or downward vertical movement to the place of beginning. These movements being the resultant of the combined horizontal and vertical movements imparted by the longitudinal reciprocating guide-bar F² and the vertically-oscillating looper-rod F'.
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In the first movement of the looper, as aforesaid, at the beginning of the stitch, said looper is raised above the rim of the disks and holds the loop formed by the preceding stitch while said loop is being pierced by the needle at the beginning of its forward stroke. At the beginning of the second movement of the looper said loop comes in contact with the blunt inner end of the radial arm E⁴, which serves as a needle-guide and a casting-off device, and as said looper moves forward said loop is released therefrom. In its third movement, as aforesaid, said looper passes down over the front disk below the path of the needle. In its fourth movement, as above enumerated, the looper passes close to the needle and grasps the thread, carrying it upward in the form of a loop. In its fifth movement the looper carries said loop backward over the seam of the glove or other ar-
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125
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article being stitched. In the sixth movement of the looper the loop is carried down to the opposite side of the seam from which it was taken. Then the partial rotation of the disks carries the goods forward for the next stitch; and as the looper is arranged in front of the needle, or on that side thereof from which the goods are fed, the loop is drawn across the path of the needle. Said loop is pierced, released, and fastened during the formation of the succeeding stitch. Thus the looper operates at one side of the needle only, its up-and-down and horizontal movements being all in the same vertical plane.

The longitudinal guide-bar F^2 slides in the bearings of the end walls of the casing A, and is pivoted at its outer rear end to the rear end of the looper-rod F' . The opposite end of the looper-rod F' , near where the looper F, is secured thereto, is guided in a forked vertical arm, F^3 , that is attached to that end of the guide-bar F^2 near the looper F.

The guide-bar F^2 is reciprocated by a downwardly-extending U-shaped arm, F^4 , keyed thereto, which is engaged by an eccentric, F^5 , on the driving-shaft D. The looper F is secured by an intermediate horizontal stud, f , and clamp-screw f' to the slotted end of the looper-rod F' . The end of the stud f is recessed, so as to admit the up-and-down adjustment of the looper F by a set-screw, f^2 , while the slot of the looper-rod admits of the adjustment of the looper longitudinally of the looper-rod.

The up-and-down motion is imparted to the looper by means of a curved lever, F^6 , which is pivoted at its lower end to the front wall of the casing A, and actuated by a cam, F^7 , of the driving-shaft D, said cam engaging by a cam-groove, f^4 , in its face an anti-friction roller, f^3 , of the curved lever F^6 . A pivot-link, F^8 , connects the upper end of the curved lever F^6 with the looper-rod F' , so as to impart thereby oscillating motion to the same and the looper, as shown clearly in Fig. 2. The outer end of the looper is provided with an enlarged flat-faced hook having a groove, g , parallel to the needle, back of a sharp edge of the hook, as shown in Figs. 1 and 6. The grooved hook of the looper facilitates the taking up of the thread and laying it across the seam of the glove, fur, or other article, ready for being tightened for the next stitch of the needle. The flat face of the hook moves across the front face of the radial guide-arm. The thread is stretched in the usual manner, so as to bind off and tighten the loop. The loop is released from the looper before it is finally tightened, and the looper is then returned to the other side of the seam by the simultaneous forward motion and upward motion imparted thereto by the guide-bar F^2 and the looper-rod F' . After the needle has passed through the goods the looper takes up the thread again and brings it back over the seam to be bound off again, and so forth. As the looper can be set by its adjusting mechanism in the exact rela-

tive position toward the needle and feed-disks, and as it requires, owing to the horizontal position of the needle-eye and the grooved needle-guide bar, only a horizontal movement in line with the movement of the needle, and an up-and-down movement in front of or on the feed-side of the needle. The construction of the actuating mechanism of the looper is considerably simplified and rendered more reliable and durable as compared to the complex motion of the loopers of the glove-sewing machine heretofore in use, in which, in addition to said horizontal movement in line with the movement of the needle and the up-and-down movement, there is also imparted to the looper a movement across the path of the needle or at an angle thereto.

I do not lay any claim to the motion of the feed-disks and the mechanism for adjusting the feed of the same, as that has been used heretofore in glove-sewing machines.

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

1. The combination of a pair of rotary feed-disks, a horizontal reciprocatory needle, the eye of which is arranged horizontally, a looper arranged in front of the needle, and mechanism for imparting to said looper combined horizontal and up-and-down movements in the same vertical plane, substantially as described.

2. The combination of a pair of rotary feed-disks, a horizontal reciprocatory needle the eye of which is arranged horizontally, a looper arranged in front of the needle, a radial needle-guide attached to the shaft of the outer feed-disk, and mechanism for actuating said looper, needle, and feed-disks, substantially as described.

3. The combination of a pair of rotary feed-disks, a horizontal reciprocatory needle, the eye of which is arranged horizontally, a looper arranged in front of said needle, mechanism for imparting to said looper combined horizontal and up-and-down movements in the same vertical plane, and a radial arm attached to the shaft of the outer feed-disk having a blunt inner end, whereby it is adapted to serve as a casting-off device, substantially as described.

4. The combination, in a glove-sewing machine, of the looper F and the looper-rod F' , reciprocating guide-bar F^2 , curved lever F^6 , connecting-link F^8 , and eccentric F^5 and cam F^7 of the driving-shaft, whereby simultaneous horizontal and an up-and-down motion is imparted to the looper, substantially as described.

5. A looper for glove-sewing machines having an enlarged flat-faced hook, substantially as described.

6. A casting-off device for glove-sewing machines consisting of a radial arm having a blunt inner end attached to the shaft of the outer feed-disk, substantially as described.

7. In a glove-sewing machine, a radial arm attached to the shaft of the outer feed-disk, provided with a longitudinal groove for the nee-

dle, and a blunt end adapted to serve as a casting-off device, substantially as described.

8. The combination of a pair of rotary feed-disks, a horizontal reciprocatory needle, a radial arm attached to the shaft of the outer feed-disk, and an oscillating looper having an enlarged flat-faced hook, which passes across the front face of said arm, substantially as described.

9. In a glove-sewing machine, the vertically and longitudinally adjustable looper F, the

stud *f*, to which said looper is attached, and the slotted looper-rod F', in which said stud is adjustable, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

WALDEMAR LÜDEKE.

Witnesses:

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SIDNEY MANN.