

No. 766,130.

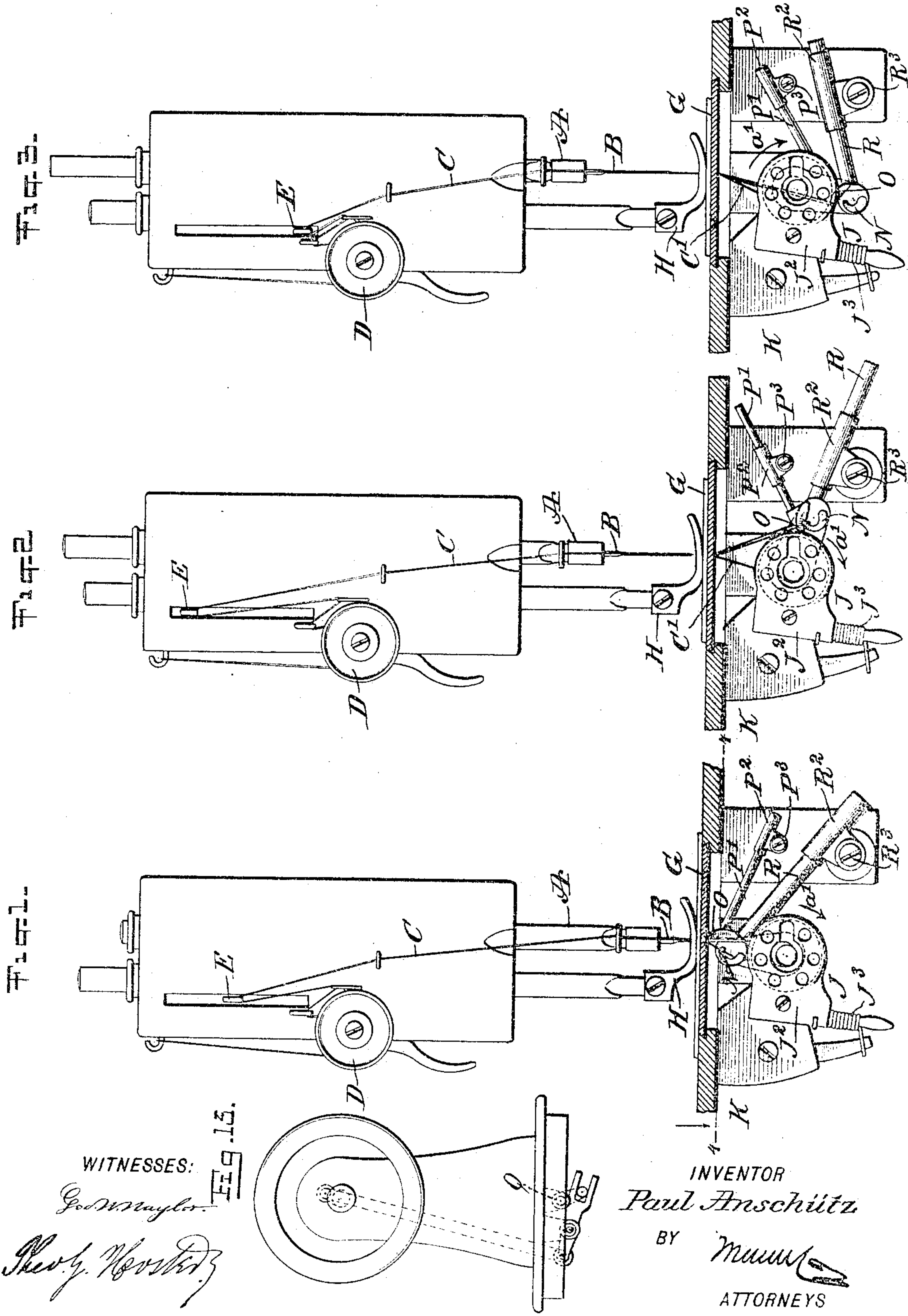
PATENTED JULY 26, 1904.

P. ANSCHÜTZ.
REVOLVING HOOK SEWING MACHINE.

APPLICATION FILED NOV. 11, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



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WITNESSES:

Geo. H. Maylor.

Rev. Hester

INVENTOR

Paul Anschütz.

BY

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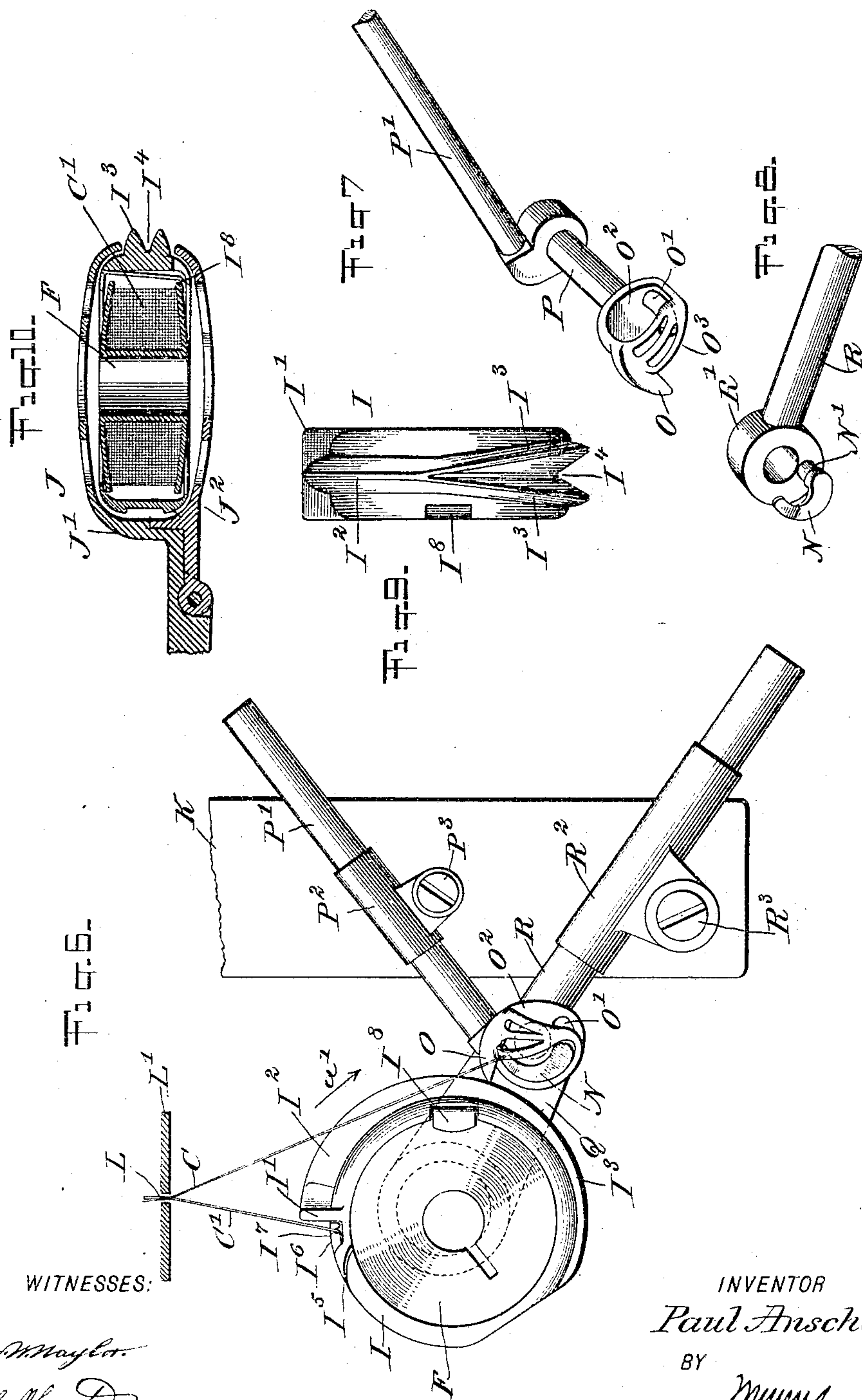
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WITNESSES:

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UNITED STATES PATENT OFFICE.

PAUL ANSCHÜTZ, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
GEORGE BICKELHAUPT, OF NEW YORK, N. Y.

REVOLVING-HOOK SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 766,130, dated July 26, 1904.

Application filed November 11, 1903. Serial No. 180,695. (No model.)

To all whom it may concern:

Be it known that I, PAUL ANSCHÜTZ, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Revolving-Hook Sewing-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved revolving-hook sewing-machine which is simple and durable in construction, very effective in operation, and arranged to insure the formation of a uniform lock-stitch in a simple manner without danger of missing stitches.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an end elevation of the improvement. Figs. 2 and 3 are like views of the same, showing the parts in different positions. Fig. 4 is an enlarged sectional plan view of the same on the line 4-4 of Fig. 1. Fig. 5 is an enlarged end elevation of the needle and the cooperating loop-taker and loop-spreader for the thread-loop. Fig. 6 is an enlarged end elevation of the improvement, showing the bobbin-case carrier removed and the throat-plate in section. Fig. 7 is a perspective view of the loop-spreader. Fig. 8 is a like view of the loop-taker. Fig. 9 is a front elevation of the bobbin-case. Fig. 10 is a sectional plan view of the bobbin, the bobbin-case, and the bobbin-case carrier. Fig. 11 is a sectional side elevation of the improvement. Fig. 12 is an enlarged plan view of the bobbin. Fig. 13 is a reduced end elevation of the improvement, showing the operating mechanism for oscillating the shaft employed for actuating the loop-taker and the loop-spreader; and Fig. 14 is a like view of the operating mechanism for imparting a rotary motion to the said shaft.

The sewing-machine in its general construc-

tion is provided with the usual reciprocating needle-bar A, carrying the needle B, through the eye B' of which (see Fig. 5) extends the thread C, unwinding from a spool and passing through a tension device D of usual construction. The thread C between the needle-eye B' and the tension device D passes through the eye of a take-up E, and the said thread forms, with the bobbin-thread C', unwinding from the bobbin F, a lock-stitch in the fabric G, moved transversely by the feed-bar and pressed on by the usual presser-foot H. The parts so far mentioned are of usual construction and operation, so that further description of the same is not deemed necessary.

The bobbin F is mounted to turn in a bobbin-case I, contained loosely in a bobbin-case carrier or cage J, (see Figs. 4 and 10,) preferably formed of a member J', fixed on the sewing-machine frame K, and a hinged member J², adapted to swing open to allow the insertion or removal of the bobbin-case I and its bobbin F, the said hinged member J² being normally held in a closed position by a spring J³. (See Figs. 1, 2, and 3.)

In order to engage the thread-loop C² alongside the needle at the time the latter is in a lowermost position—that is, with the needle-eye B' below the needle-throat L of a throat-plate L'—a loop-taker N is provided, which delivers the thread-loop C² (see Fig. 4) to a loop-spreader O (see Figs. 7 and 11) during the time the loop-taker N and the loop-spreader O move bodily in a segmental path in the direction of the arrow a' (see Fig. 6) along the peripheral edge of the bobbin-case F from the top thereof (see Fig. 1) to a distance somewhat beyond the bottom thereof (see Fig. 3) to cast the loop off for the take-up E to draw up the loop and with the bobbin-thread C' extending through the loop C² to form a lock-stitch on the under side of the cloth G.

Now in order to impart the desired swinging motion to the loop-taker N and the loop-spreader O relative one to the other and to move the said loop-taker and loop-spreader simultaneously and bodily in a segmental path in the direction of the arrow a' the following means are provided: The loop-spreader O is se-

cured on the outer end of a longitudinally-extending shaft P, having its bearing in the free end of a crank-arm Q, (see Figs. 4 and 11,) attached to a rock-shaft Q', driven from the main shaft of the sewing-machine, so as to reciprocate once for every full stroke of the needle-bar A. (See Fig. 13.) On the inner end of the shaft P is secured a guide-rod P', mounted to slide loosely in a sleeve P², fulcrumed at P³ on the main frame K of the sewing-machine.

The loop-taker N is provided with a longitudinal shank N', (see Fig. 8,) extending through a segmental slot O' in a supporting-plate O² for the loop-spreader O, and the said shank N' is secured to the outer face of an eye R', through which extends loosely the shaft P, and the said eye R' is provided with a guide-rod R, mounted to slide in a sleeve R², fulcrumed at R³ on the main frame of the sewing-machine a distance below the pivot P³, as plainly indicated in Fig. 6.

When the crank-arm Q swings downward and upward during the time the needle-bar A makes a full reciprocating motion, then the shaft P is carried along by the crank-arm Q, and in doing so the shaft is turned in its bearing in the crank-arm by the action of the guide-rod P', sliding in the pivot-sleeve P², so that the loop-spreader O is rocked and at the same time is carried bodily in a segmental path, as previously mentioned. In a like manner the loop-taker N is rocked as the eye R' is hung loosely on the shaft P and is held on the guide-rod R, mounted to slide in the sleeve R², and by arranging the sleeves P² and R² one above the other, as described, the loop-taker N and the loop-spreader O are rocked first toward each other during the downstroke of the crank-arm Q and from each other during the upstroke of the crank-arm Q.

The crank-arm Q begins its downward swinging motion at the time the needle-bar A starts on the upstroke, and when the crank-arm Q swings upwardly the needle-bar A descends, and at the time the coacting loop-taker N and the loop-spreader O have reached their uppermost positions the loop-taker N stands somewhat in the rear of the needle B (see Figs. 1 and 4) and with its free end in alignment with the thread-loop C², so that on the next bodily downward movement of the loop-taker N and the loop-spreader O the loop-taker N passes into the loop C², and thus draws the loop along, (see Fig. 2,) and as the loop-taker N and the loop-spreader O swing toward each other it is evident that the loop finally passes from the loop-taker N onto the loop-spreader O, (see Fig. 6,) and the latter now carries the loop along past the lower end of the bobbin-case to finally assume such a position as to cast off the loop for the take-up E to draw the loop upward. (See Fig. 3.)

The axis of the pivot P³ is slightly above the horizontal plane extending through the

axis of the rock-shaft Q, while the axis of the pivot R³ is a distance below the said plane to cause the loop-taker N and the loop-spreader O to swing properly toward and from each other for the loop-taker N to first engage the thread-loop C² and then deliver the thread-loop to the loop-spreader O and for the latter to finally assume a cast-off position to cast off the thread-loop at the time the loop-taker N and the loop-spreader O are at the end of the downward throw.

The bobbin I (see Figs. 6, 9, and 10) is provided at its top with a longitudinally-extending lug I', fitting loosely into recesses on the inner edges of the members J' and J² of the carrier J to hold the bobbin-case from turning in the bobbin-case carrier, but to allow a slight up-and-down movement of the said bobbin-case for the passage of the thread-loop, as previously explained.

From the lug I' extends a peripheral rib I² downwardly, and this rib splits into diverging rib-arms I³, leaving a groove I⁴ between the arms for the end of the loop-spreader O to travel in the groove, the loop-spreader being preferably V-shaped, so that the thread-loop C² in sliding from the point of the loop-spreader O toward the back of the bobbin-case readily passes to the outside of the rib-arms I³ and finally to the sides of the bobbin-case. (See Fig. 3.)

The loop-spreader O is formed at its front face with a perforated rib O³ for preventing the needle-loop C² from sliding too far back on the loop-spreader O when the latter carries the loop around the lower portion of the bobbin-case, as previously explained.

As soon as the loop-spreader O passes the bottom of the bobbin-case I the thread-loop slides off the loop-spreader owing to the action of the take-up E, and as the loop has now passed the bottom of the bobbin-case it is evident that the loop is drawn up at the rear edge of the case and must necessarily engage the bobbin-thread C', extending from the bobbin F up to the previous stitch in the cloth G. The rib I² gradually diminishes in height from the top of the bobbin-case I toward the bobbin, as will be readily understood by reference to Fig. 6; but the groove I⁴ gradually increases in depth for sliding the loop easily over the loop-spreader and over the arms I³ to the sides of the bobbin-case.

The axis of the shaft Q' is slightly out of alignment with the axis of the bobbin F and its bobbin-case I, as indicated in Fig. 6, to permit the loop-spreader O to travel snugly in the groove I⁴, which deepens gradually from the beginning point at the end of the rib I² to the end beyond the bottom of the case. By this arrangement the thread-loop C² cannot possibly get caught between the rib-arms I³ and the loop-spreader O, and hence the loop C² is properly passed over the bobbin-case I from the front to the rear.

The bobbin F is mounted to revolve freely in the bobbin-case to pay off thread as called for by the formation of the stitches.

The bobbin-case I is provided in its rim with an angular slot I⁵ (see Fig. 6) for the passage of the thread C from the bobbin F, the thread then passing under a tension-plate I⁶ and through a recess I⁷ in the said plate to the under side of the cloth. By this arrangement sufficient friction is given to the thread to prevent the bobbin F from turning too far when paying off thread. A spring-catch I⁸ on the bobbin-case I serves to hold the bobbin against accidentally falling out of the case.

The opposite members J¹ and J² of the bobbin-case carrier stand far enough apart (see Fig. 10) to accommodate the rib I² and its arms I³ and to allow the loop-spreader O to travel in close proximity to the peripheral face of the bobbin-case, as previously explained.

The operation is as follows: When the sewing-machine is in operation and the thread C has been carried by the needle B through the cloth G (see Fig. 1) and the loop C² is formed on the side of the needle at the beginning of the return stroke of the needle-bar A, then the loop-taker N engages the loop C² and carries the same along in the direction of the arrow a', as the loop-taker N and the loop-spreader O now travel downwardly at the front peripheral edge of the bobbin-case I. During this downward travel of the loop-taker N and the loop-spreader O the loop-spreader O finally passes with its outer end into the loop C² and the latter finally passes over the free end of the loop-taker N, so that the loop is now carried solely by the loop-spreader O past the bottom of the bobbin-case I, at which time the loop-spreader O assumes a cast-off position, so that the loop readily slides off the loop-spreader O and is drawn upward by the action of the take-up E. By the arrangement described the loop is carried transversely with the bobbin-case, passing through the loop for the latter to finally engage the bobbin-thread C' to form a stitch on the under side of the cloth G as the loop is drawn up by the take-up E. During the descent of the needle-bar A the loop-taker N and the loop-spreader O swing back in the inverse direction of the arrow a' to finally again assume their uppermost positions, as previously explained and illustrated in Fig. 1, and then the above-described operation is repeated.

From the foregoing it will be seen that the stitch-forming mechanism is exceedingly simple in construction and absolutely positive in operation without danger of missing stitches.

Although I have shown and described the loop-taker N and the loop-spreader O as oscillating bodily, it is evident that the said loop-taker N and the loop-spreader O may be caused to swing completely around—that is,

have a rotary instead of an oscillating motion—the shaft Q then running continuously in the direction of the arrow a'. (See Fig. 14.) The hinge for the bobbin-case carrier J is arranged somewhat to one side (see Fig. 10) to allow a ready passage of the loop-taker N and the loop-spreader O.

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

1. A sewing-machine provided with a bobbin-case carrier, adapted to be opened, a bobbin-case loose in the carrier and having means for holding the bobbin-case against turning and to allow up-and-down movement thereof, the bobbin-case having on a portion of its peripheral face a ridge terminating in diverging arms, a loop-taker and a loop-spreader operating in conjunction one with the other, for the loop-taker to take the needle-loop and deliver it to the loop-spreader, the point of the latter being adapted to travel in the groove formed by the said diverging arms, and means for rocking the loop-taker and loop-spreader toward and from each other and moving the loop-taker and loop-spreader bodily along the said ridge, as set forth.

2. A sewing-machine provided with a bobbin-case carrier, adapted to be opened, a bobbin-case loose in the carrier and having transverse lugs fitting recesses in the said carrier, to hold the bobbin-case against turning and to allow up-and-down movement thereof, the said bobbin-case having on a portion of its peripheral face a ridge terminating in diverging arms, the ridge and its arms extending from the top of the bobbin-case past the bottom thereof, a loop-taker and a loop-spreader operating in conjunction one with the other, for the loop-taker to take the needle-loop and deliver it to the loop-spreader, the point of the latter being adapted to travel in the groove formed by the said diverging arms, and means for rocking the loop-taker and the loop-spreader toward and from each other and moving the loop-taker and the loop-spreader bodily along the said ridge, as set forth.

3. In a sewing-machine, the combination with a bobbin, of a loop-taker and a loop-spreader rocking toward and from each other, the loop-taker taking the needle-loop and delivering it to the loop-spreader and the latter passing it around the said bobbin, the said loop-taker and the said loop-spreader moving bodily in a circular path along and approximately parallel to the peripheral edge of the said bobbin, the said path being transverse to the axis in which the said loop-taker and loop-spreader rock and in the plane in which the said loop-taker and the said loop-spreader rock, the said bobbin lying in the said plane.

4. In a sewing-machine, the combination with a bobbin, of a loop-taker and a loop-spreader rocking toward and from each other, the loop-taker taking the needle-loop and delivering it to the loop-spreader and the latter

passing it around the said bobbin, the said loop-taker and the said loop-spreader moving
bodily in a circular path along and approxi-
mately parallel to the peripheral edge of the
5 said bobbin, the said path being transverse to
the axis in which the said loop-taker and loop-
spreader rock and in the plane in which the
said loop-taker and the said loop-spreader
rock, the said bobbin lying in the said plane,
10 means for bodily carrying the said loop-taker
and the said loop-spreader bodily in the said
path, and means for rocking the said loop-
taker and the said loop-spreader in the said
plane at the time they are traveling in the said
15 path.

5. A sewing-machine provided with a bob-
bin-case carrier, a bobbin-case loose in the
carrier, a loop-taker and a loop-spreader rock-

ing toward and from each other in a plane in
which the said bobbin-case carrier and the said 20
bobbin-case are disposed, the said loop-taker
and the said loop-spreader being capable of
working toward and from each other from a
common axis and in concentric circular paths,
means for rocking the said loop-taker and the 25
said loop-spreader, and means for simultane-
ously carrying the said loop-taker and loop-
spreader bodily in a circular path along the
peripheral edge of the said bobbin-case.

In testimony whereof I have signed my name 30
to this specification in the presence of two sub-
scribing witnesses.

PAUL ANSCHÜTZ.

Witnesses:

THEO. G. HOSTER,
EVERARD B. MARSHALL.