

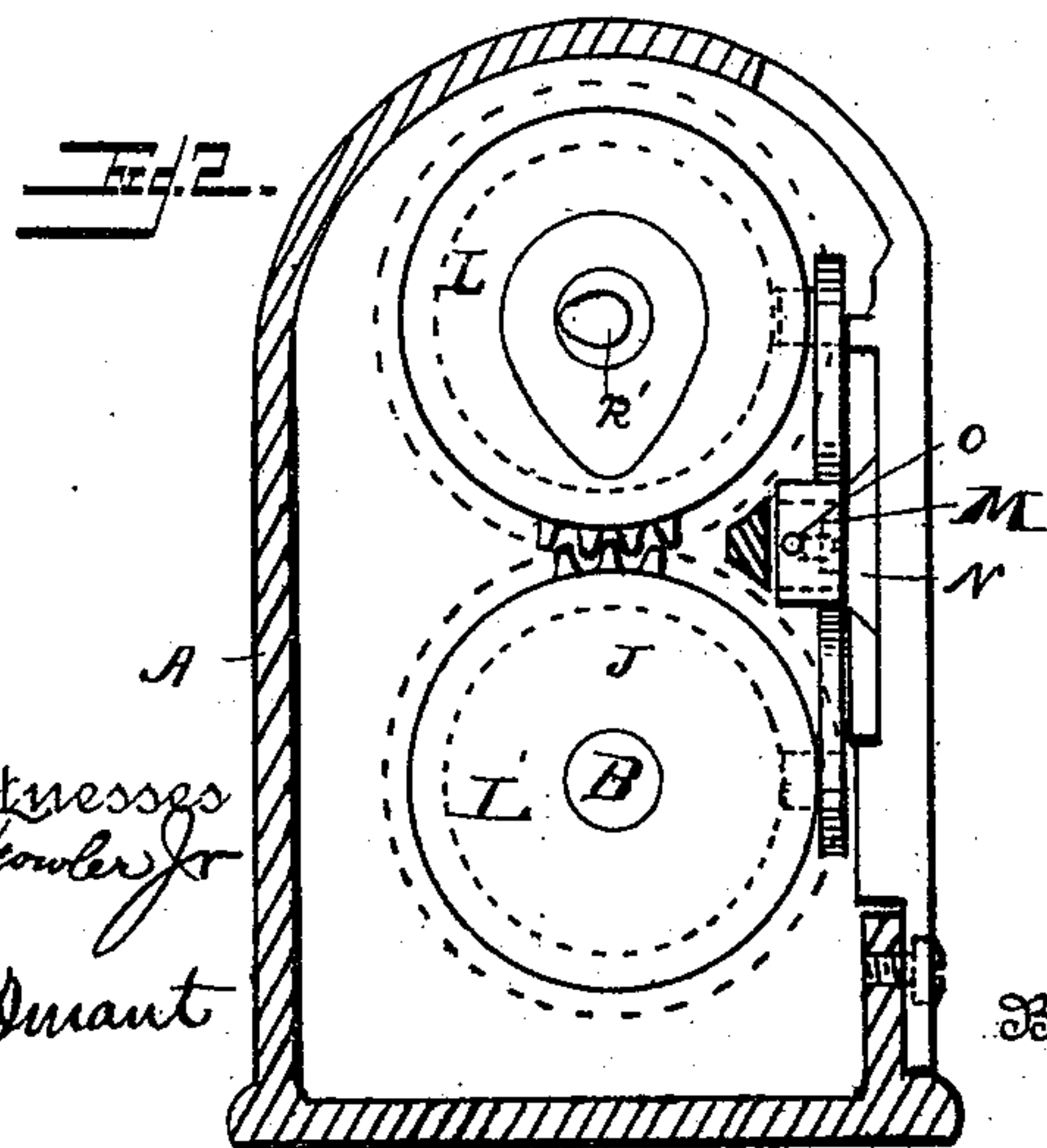
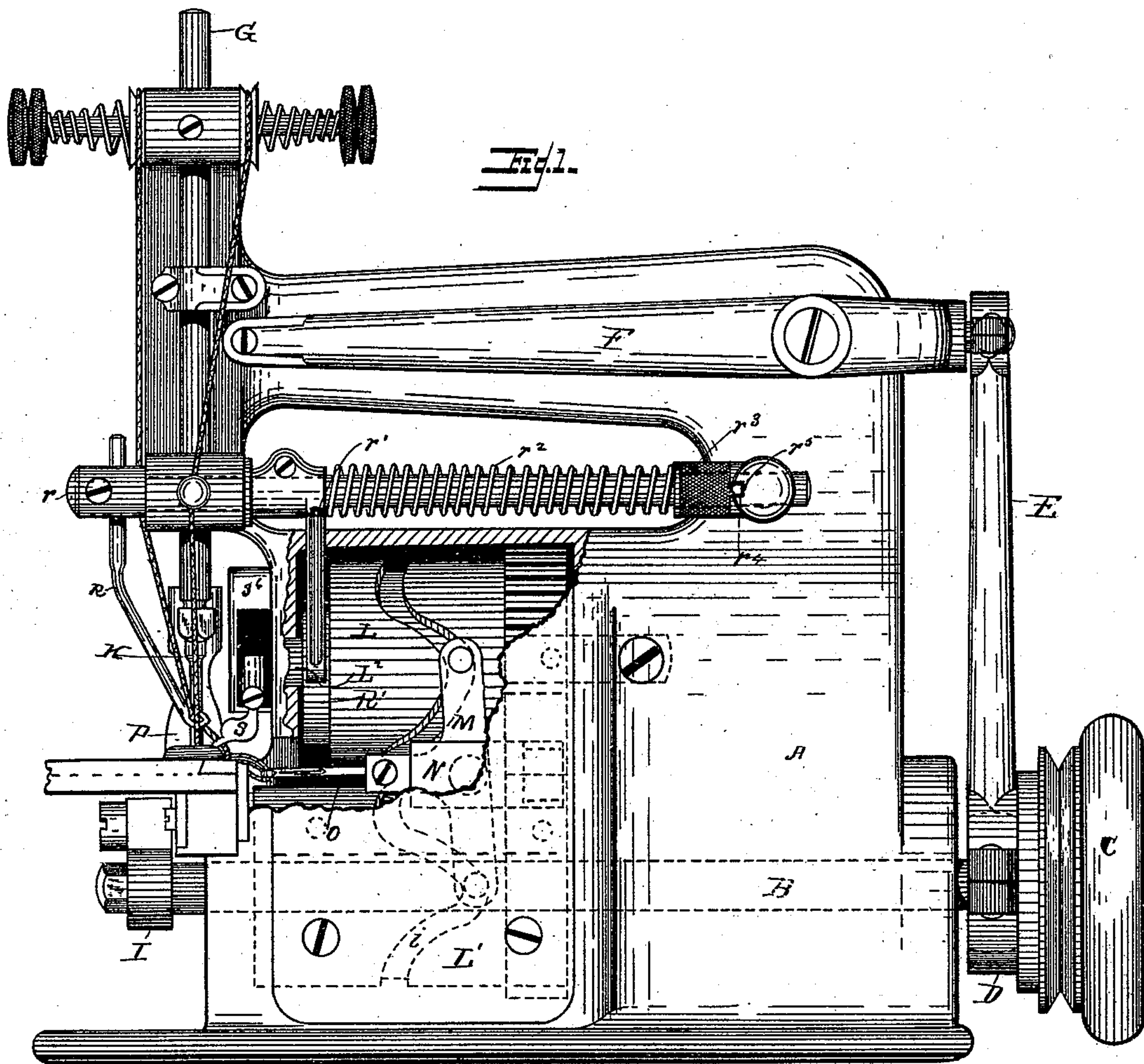
(No Model.)

2 Sheets—Sheet 1.

J. M. MERROW & J. T. COLLINS.
OVERSEAMING SEWING MACHINE.

No. 497,587.

Patented May 16, 1893.



Witnesses
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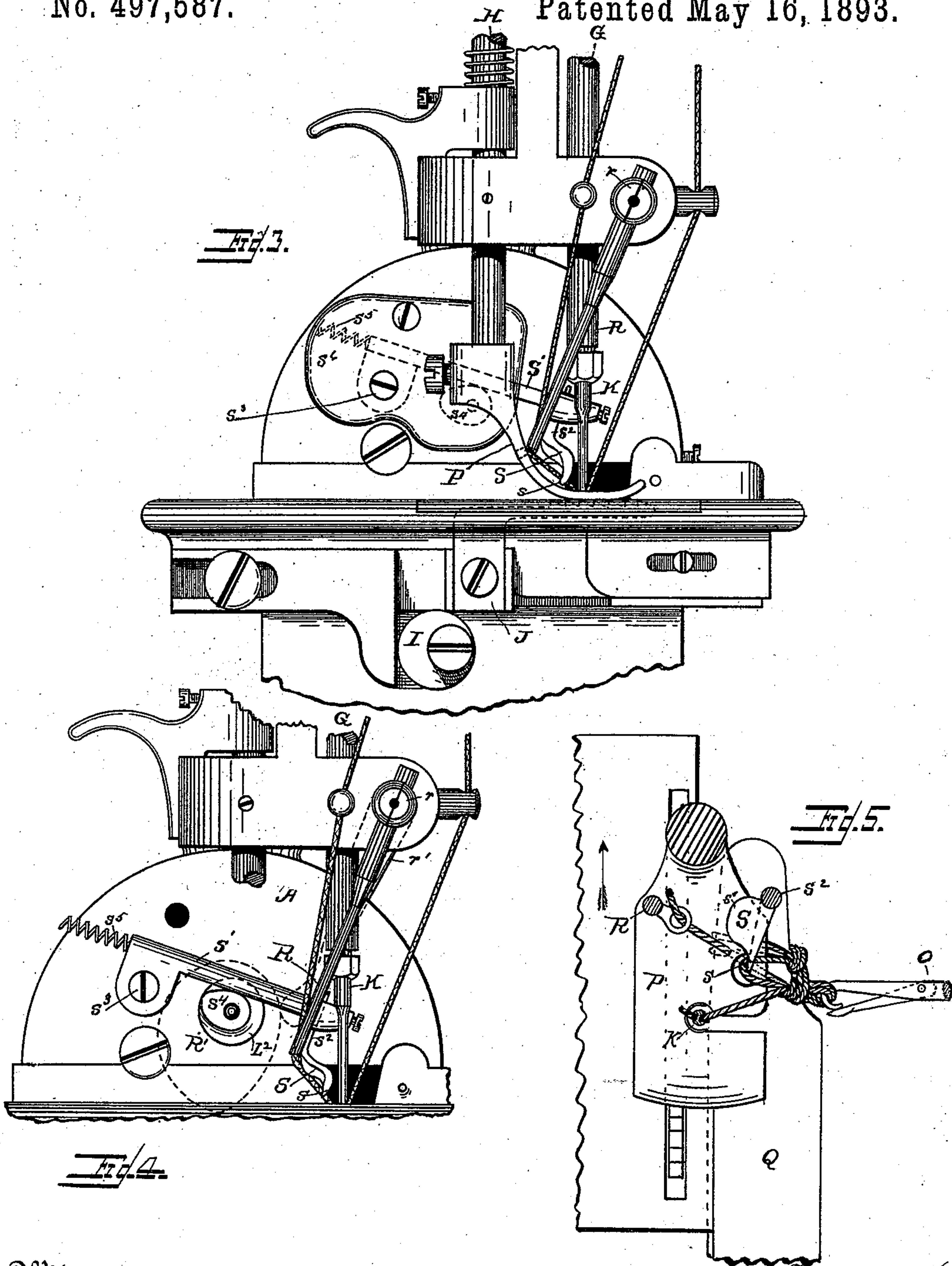
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UNITED STATES PATENT OFFICE.

JOSEPH M. MERROW, OF MERROW, AND JOHN T. COLLINS, OF NORWICH,
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OVERSEAMING SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,587, dated May 16, 1893.

Application filed January 19, 1892. Renewed February 24, 1893. Serial No. 463,633. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH M. MERROW, of Merrow, in the county of Tolland, and JOHN T. COLLINS, of Norwich, in the county of New London, State of Connecticut, have invented certain new and useful Improvements in Crocheting or Overseaming Machines; and we do hereby declare the following to be a full, clear, and exact description of the same, reference
10 being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates, generally, to improvements in or appertaining to that class of overseaming or crocheting machines provided with a thread carrier and a looper co-operating to pass a thread through the fabric and draw loops on opposite sides thereof to or beyond the edge, said loops being success-
20 ively interlooped or interlocked along the edge of the fabric to form a binding or ornamental finish; and said improvements are more especially adapted for use in connection with machines of this kind wherein provision is
25 made for interlooping or incorporating one or more threads into the finish in addition to that which penetrates the fabric.

Examples illustrating the style of machine and general character of the stitching or finish referred to are to be found in Patents Nos. 394,783, 413,761, 414,233, 414,234, and 422,142.

One of the principal objects of the present improvement is to facilitate and regulate the formation of the loops at the edge of the fabric and to control the thread or threads during
35 the process of forming the stitch.

In the accompanying drawings: Figure 1 is a front elevation of a crocheting machine, a portion of the casing being broken away to disclose the interior. Fig. 2 is an end view of the cam cylinders and crochet-hook carrier, a portion of the casing being in section. Fig. 3 is an end view showing the principal operating parts of the machine on an enlarged
45 scale. Fig. 4 is a similar view, the covering plate for the thread detaining finger and its cam being removed. Fig. 5 is a detail illustrating the operation of the detaining finger and its relation to the finger-plate and presser-
50 foot.

Similar letters of reference in the several figures indicate the same parts.

As illustrating one of the preferred embodiments of the present invention it has been shown applied to the well known Merrow
55 crochet machine (described at length in patents, Nos. 414,234 and 414,718, dated respectively November 5, 1889, and November 12, 1889,) of which A, is the frame; B, the main shaft; C, the hand-wheel; D, the eccentric; 60 E, the connecting rod; F, the needle lever; G, the needle bar; H, the presser-foot rod; I, the feed cam; J, the feed dog and carrier; K, the needle; L, L', the upper and lower crochet-hook operating cams; M, the oscillatory-recip- 65 rocating crochet-hook carrier; N, the sliding support for the carrier; O, the crochet-hook; P, the presser foot; and Q, the finger-plate. The needle is reciprocated vertically to carry the needle-thread back and forth through the
70 fabric, while the crochet-hook is reciprocated horizontally on opposite sides of the fabric, to grasp the needle thread alternately above and below the fabric, drawing loops around the finger plate, and interlocking said loops along
75 the edge of the fabric in a well known manner. The same form of machine is adapted for making plain over edge stitching and scalloped or shell work according to the adjustment of the feed; thus for single stitch or
80 plain work the feed movement is arranged to take place between successive reciprocations of the needle; and for shell or scalloped work, the feed is effected only after a series of reciprocations of the needle and looper or cro- 85 chet-hook.

In the present example the machine is arranged for plain stitching, and the introduction of an additional or supplemental thread after the manner illustrated in patents, Nos. 90 394,783, 414,235 and 422,142, hereinbefore referred to, for which purpose it is provided with a thread carrier R attached to a rock-shaft r pivotally supported or journaled in the head and carrying an arm r' riding upon
95 a cam R' on the upper cam-shaft L^2 and held in engagement therewith by a spring r^2 . The thread carrier R is radially adjustable with reference to its shaft r and the arm r' is laterally adjustable upon said shaft so that the 100

position of said carrier R with relation to the
 crochet-hook and needle can readily be varied.
 The spring r^2 which serves to retract the thread
 carrier and hold the arm r' in contact with its
 5 cam, surrounds the rod or shaft r and one end
 of said spring engages the arm r' or a collar
 on the shaft, while the opposite end is attached
 to a collar r^3 free to turn on the shaft, but
 normally held from rotation by a clutch de-
 10 vice—such as the pin or projection r^4 engag-
 ing the wall of a recess r^5 in the post or sup-
 port for the shaft—whereby the collar can be
 turned to increase the tension of the spring
 by pressing it back against the spring to open
 15 the clutch, and when the proper tension has
 been given, the collar will be forced into
 clutched position and then held by the end-
 wise pressure of the spring.

The thread carrier R operates substantially
 20 as does the corresponding element in Patent
 No. 414,718, that is to say, it is swung or vi-
 brated across the path of the crochet hook so
 as to carry the supplemental thread in posi-
 tion to be grasped by said crochet-hook as the
 25 latter reciprocates above the presser-foot.

The machine thus far described represents
 one of the ordinary plain crochet machines
 with improved appliances for adapting it to
 produce the double thread stitch, and it is in
 30 connection with such a machine that the pres-
 ent invention is more especially applicable.

In forming the double thread stitch—
 whether for plain or scallop work—the cro-
 chet-hook operates to grasp the needle thread
 35 above the presser foot and draw a loop over
 the edge of the fabric and finger-plate as the
 needle descends through the fabric. The
 next reciprocation of the crochet hook is per-
 formed beneath the fabric and results in the
 40 drawing of a second loop of the needle thread,
 so that two loops, one from above and the
 other from beneath the fabric are carried upon
 the crochet-hook as it rises and is again re-
 ciprocated above the fabric. During this
 45 third reciprocation the crochet-hook again en-
 gages the needle-thread and also the supple-
 mental thread, (the latter being presented in
 position to be engaged by the hook by the
 motion of the thread carrier R) and in its
 50 rearward movement draws the needle thread
 and supplemental thread through the two pre-
 ceding loops. The next reciprocation of the
 crochet-hook beneath the fabric or finger-
 plate results in the drawing of another loop
 55 of the needle thread from beneath, and the
 succeeding reciprocation of the crochet-hook
 on the upper side results in drawing loops
 of the needle-thread and the supplemental
 thread through the loops then on the crochet-
 60 hook, *i. e.*, the two needle thread loops, one
 above and the other below the fabric and the
 preceding loop of the supplemental thread,
 all of which operations are repeated, the
 needle thread loop above the fabric or finger
 65 plate together with a loop of the supplemental
 thread being each time drawn through the

two loops of needle thread and one loop of
 supplemental thread.

It will be observed that the needle thread
 alone penetrates the fabric and forms the 70
 over-edge stitching while the supplemental
 thread is enchained or interlooped upon itself
 and with the loops of the needle thread clear
 of the fabric, the stitches of the supplemental
 thread being in effect formed in and uniting 75
 the stitches of the needle thread. As the
 crochet-hook advances above the presser-foot
 to engage the main or needle thread and the
 supplemental thread, the latter is extended
 and held in position to be grasped by the 80
 crochet-hook between the eye in the thread
 carrier R and the point of attachment in the
 last preceding stitch of the main thread.
 From various causes the point at which the
 supplemental thread is attached to the fabric 85
 or to the stitches of the main thread is liable
 to become shifted so that said thread will not
 be properly presented to the crochet-hook,
 thereby causing the machine to skip one or
 more stitches or producing variations in the 90
 lengths of the loops or stitches formed from
 the supplemental thread. Thus as the cro-
 chet-hook is advanced above the presser foot
 the loops carried by it have a tendency to
 slip forward on the finger-plate, and the 95
 supplemental thread being supported by a
 vibrating carrier will be swung too far to
 one side of the crochet-hook. It is for the
 purpose of overcoming these and other de-
 fects in the practical operation, as well as 100
 to afford means for more accurately measur-
 ing and adjusting the lengths of the loops
 formed from the supplemental thread, that a
 thread holder or controller in the form of a
 finger S has been introduced and arranged to 105
 engage and hold the supplemental thread at
 a point between carrier R and the line of
 stitches, said finger serving to regulate the
 length of the loop and afford a fixed point be-
 tween which and the carrier R the supple- 110
 mental thread will be held extended in posi-
 tion to be engaged by the crochet-hook.

In the form of embodiment illustrated
 herein the finger S is provided with a down-
 wardly projecting point s , a lateral projec- 115
 tion or fluke s' and a stem s^2 , located to one
 side of the point s so that by the rotation of
 the stem in its carrier the position of the
 point can be changed or adjusted. The fin-
 ger carrier S' is pivotally attached at s^3 to the 120
 frame so that it can be swung vertically upon
 said pivot and motion is communicated to the
 carrier through a cam s^4 on the upper cam
 shaft L^2 acting in opposition to a spring s^5 in-
 125 terposed between the carrier and its inclos-
 ing case s^6 . The arrangement shown for giv-
 ing motion to the finger carrier has been
 found satisfactory, although other equivalent
 means, such as a grooved cam for effecting
 motion in both directions, may be substituted 13
 for the peripheral cam and spring.

The finger S is reciprocated toward and

from the presser foot or other equivalent support and it operates to engage the supplemental thread and between the last stitch and the carrier R and to hold said thread while the crochet hook draws the loops of main and supplemental threads from the upper side of the finger through the loops held on said hook, so that a loop of the supplemental thread is formed or produced around said finger from the bight of thread connecting succeeding stitches, which extra loop is absorbed in the interlooped portion of the chain when the latter is drawn out or extended.

In the example illustrated, which is but one of numerous obvious forms in which the present features of invention are susceptible of embodiment, when the crochet-hook is on its way outward and upward around the edge of the fabric or finger plate, the supplemental thread is carried back of the point or downwardly projecting part of finger S by the motion of the thread carrier R as shown in Fig. 3. As the crotch-hook is advanced the finger is depressed, and, engaging the supplemental thread, holds it down and back from the point of the crochet-hook, and, incidentally, operates to restrain or hold back the loops which would otherwise be carried forward somewhat by the crochet-hook in its forward motion. The thread carrier R now advances to carry the supplemental thread into the throat of the crochet-hook which latter upon its return grasps both the main and supplemental threads drawing the latter from between the thread carrier and finger S as shown in Fig. 5, wherein the supplemental thread which has been carried back over finger S, is shown broken away for a short distance to better display the loop and finger. After the stitch has been completed the loop held by the finger is released as the latter rises and is elevated above the supplemental thread preparatory to the formation of the next stitch. The presser foot is provided with an opening *p* to accommodate the point of the finger, and a similar opening may be formed in the finger plate for the same purpose, but these openings may be omitted if desired. By adjusting the finger upward the loop is made smaller and vice versa; similar results may be effected by turning or twisting the finger in its carrier, owing to its curved or bent form, and, within limits, by timing the cam earlier or later.

The fluke *s'* serves to prevent the loop from running too far back of the point *s*, and, as the finger rises, to shed the supplemental thread around and beneath the point so that upon the descent it will be caught. The fluke may be made integral with the finger or separate and secured thereto.

As is obvious, in the absence of a fabric the stitches may be formed around the finger plate, (illustrated in Fig. 5) as, for example, in making a fabric, such as is described in Patent No. 422,142.

Having thus described our invention, what we claim as new is—

1. In a machine, of the character described and in combination with its thread carrying needle, reciprocating crochet-hook, finger-plate and supplemental thread carrier movable laterally of the needle, a finger engaging the supplemental thread at a point intermediate the thread carrier and finger plate; substantially as described.

2. In a machine, such as described, and in combination with the stitch forming devices including the needle, looper, finger around which the stitches are formed, and a supplemental thread carrier, a reciprocating thread detaining finger engaging the supplemental thread and provided with a lateral extension or fluke operating to divert the supplemental thread; substantially as described.

3. In a crocheting or overseaming machine of the character described, the combination with the thread carrier R of the rock-shaft, the arm engaging the actuating cam, the spring, the fixed clutch section and the adjustable clutch collar mounted loosely on the rock shaft, and attached to one end of the spring, by which it is held in engagement with the fixed clutch section; substantially as described.

4. In a machine, such as described, and in combination with its stitch forming mechanism including a main thread carrier and a looper and a supplemental thread carrier, a reciprocating finger for engaging the supplemental thread, and a presser foot provided with a recess for the point of said finger to enter and thus prevent the escape of the thread; substantially as described.

5. In a machine, such as described, the combination of a reciprocating needle, a crochet-hook reciprocating in planes transverse to that of the needle, a finger or plate around which the loops are formed from the thread carried by the needle, a supplemental thread carrier movable laterally of the needle for presenting the supplemental thread to the crochet-hook, and a loop controlling finger overlapping the supplemental thread; substantially as described.

6. In a machine, such as described, and in combination with the stitch forming mechanism comprising a needle and cooperating looper, a reciprocating loop controlling finger cooperating with a plate provided with a recess for the reception of the point of the finger; substantially as described.

7. In a machine, such as described, and in combination with the stitch forming mechanism comprising a needle and a looper for manipulating the main thread to form a series of stitches, a supplemental-thread carrier for presenting said supplemental thread to the stitch forming devices at intervals, and a loop controlling finger embracing the supplemental thread at a point intermediate that at which the stitch forming devices engage said thread and the previously formed stitches to

hold a loop of the supplemental thread between the points of attachment to the main thread; substantially as described.

8. In a crocheting or overseaming machine,
5 such as described, and in combination with its stitch forming mechanism including the needle, crochet-hook, finger plate, feeding devices and presser foot, a supplemental thread carrier reciprocating laterally and in advance
10 of the crochet-hook and a loop controlling

finger engaging the supplemental thread at a point in rear of the crochet-hook when the latter is in position to engage said supplemental thread; substantially as described.

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