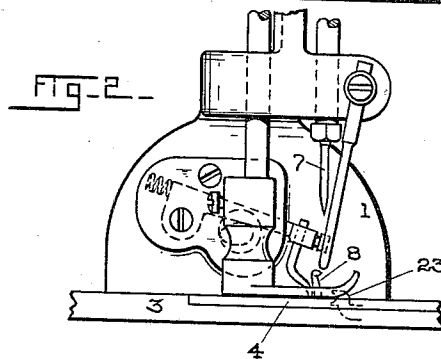
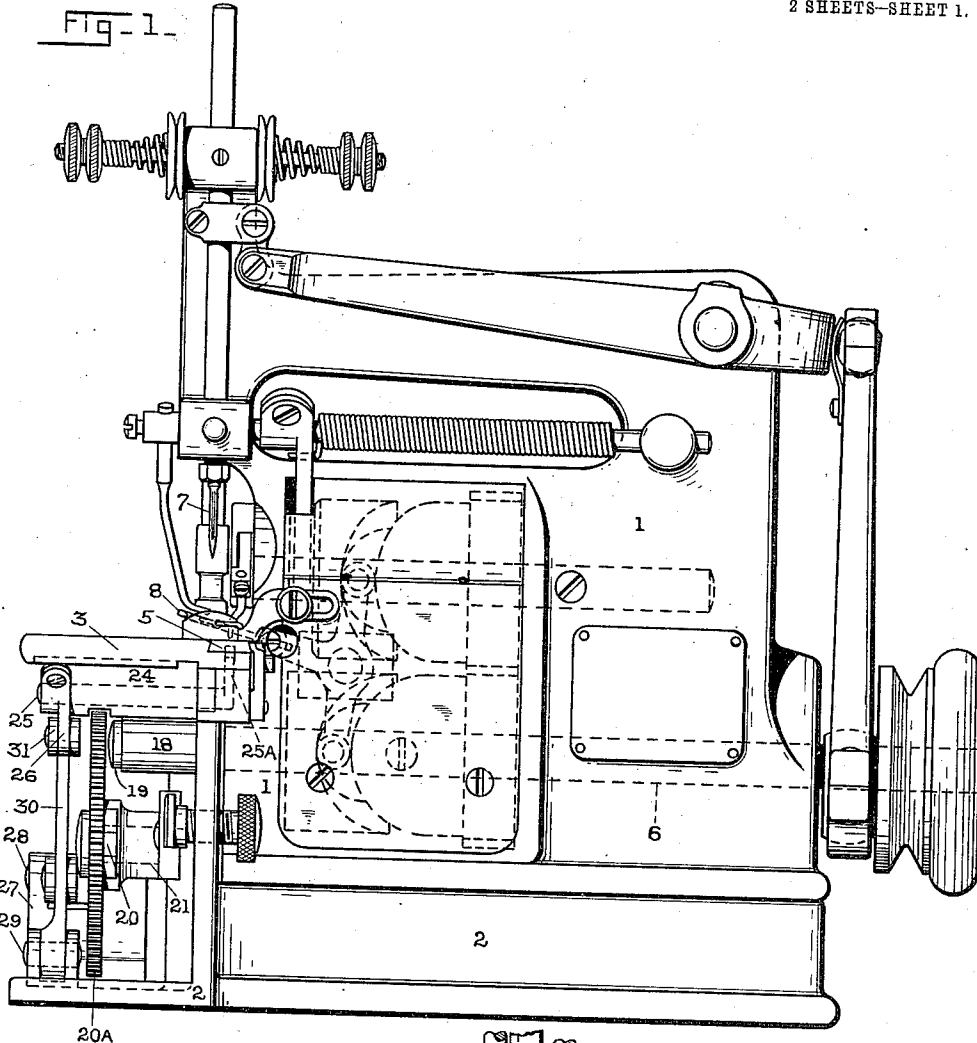


J. M. MERROW.
CROCHET MACHINE.
APPLICATION FILED FEB. 9, 1911.

1,045,163.

Patented Nov. 26, 1912.
2 SHEETS—SHEET 1.



WITNESSES-

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Robert P. Brown

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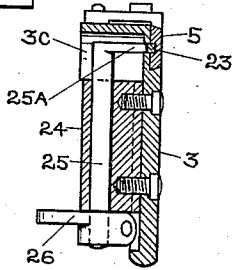
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Fig. 6-



Patented Nov. 26, 1912.

Fig. 3-

2 SHEETS-SHEET 2.

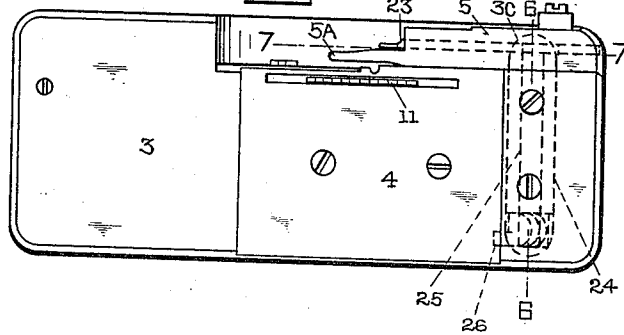


Fig. 5-

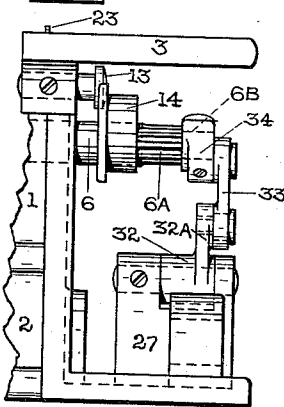


Fig. 4-

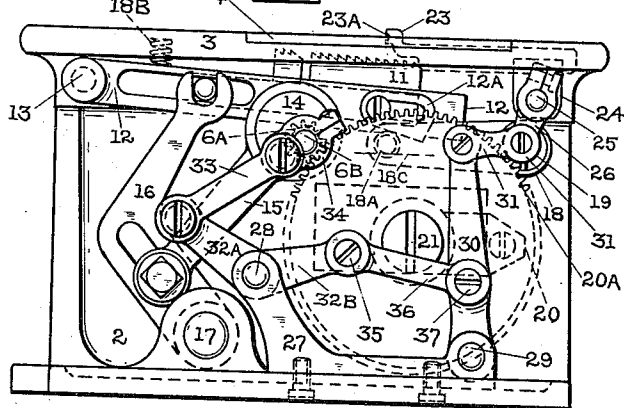


Fig. 8-

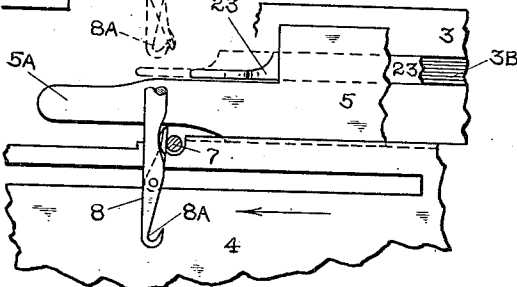
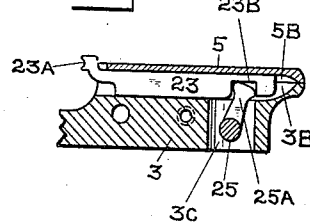


Fig. 7-



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UNITED STATES PATENT OFFICE.

JOSEPH M. MERROW, OF HARTFORD, CONNECTICUT.

CROCHET-MACHINE.

1,045,163.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed February 9, 1911. Serial No. 607,497.

To all whom it may concern:

Be it known that I, JOSEPH M. MERROW, a citizen of the United States, residing in the city of Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Crochet-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, and to the characters of reference on the said drawings.

This invention relates to that class of overedge sewing machines known as crochet machines, in which the stitch forming implements include an eye pointed needle carrying a thread and a crochet hook, the latter usually being a slight modification of the ordinary latch needle of knitting machines. The needle reciprocates vertically in the manner common in sewing machines and penetrates the fabric near its edge to carry the thread through the fabric. The crochet hook has combined horizontal reciprocatory and vertical motions and makes its reciprocations alternately on opposite sides of the needle plate supporting the cloth, and passes around the edges of the cloth and the needle plate and a chaining finger. The crochet hook engages the thread and draws it out in a loop both above and below the cloth and the needle plate and chains the loops together at the edge of the cloth and around the chaining finger in overseam stitches into which there may be interlooped a second or auxiliary thread. The chaining finger around which the stitches are formed serves to support the edge of the cloth and the stitches at its edge and to limit the size of the loops and also as far as may be, to assist in holding the loops into the throat of the crochet hook. Heretofore the form of the chaining finger has been largely depended upon to hold the loops upon the crochet hook but in many cases it has proven inadequate.

In one form of machine (designated as the plain crochet machine) feeding mechanism is provided adapted to advance the cloth upon the completion of each stitch; *i. e.*, one advancing feed movement to one cycle of movements of the stitch forming implements. A plain crochet machine forms the subject of Patent No. 497,587 is-

sued May 16th, 1893, to Joseph M. Merrow and John T. Collins.

The present invention is shown as embodied in one of the well known Merrow shell stitch crochet machines which is a modification of the plain crochet machine. This machine is provided with mechanism, hereinafter briefly described, so organized that the fabric is advanced only once to a given number of complete cycles of the stitch or loop forming mechanism and thus several sets of loops are formed at practically the same point which, when the fabric is advanced to begin a new cluster, are spread or stretched out into a shell or fan shaped form beyond and outside the edge of the cloth.

In crochet machines there is a liability of the thread or loops of thread drawn out from the needle by the crochet hook, to prematurely drop from the point of the hook when the latter is in its retracted position relative to the needle and particularly as the hook is moving upwardly or downwardly and just beginning to travel toward the needle, the loops having a tendency to crowd in front of the point of the hook and escape from it. This dropping of thread loops causes skipping or breaking of stitches, resulting in imperfect work. The tendency for dropping loops is much greater in shell stitch machines, where several stitches are made at approximately the same point, than in the plain stitch type of machine.

The primary object of this invention is to obviate the dropping of thread loops from the crochet hook.

The mechanism provided for the accomplishment of the object of this invention is shown and described as designed and arranged for use with a particular type of shell stitch crochet machine as heretofore made, but it will be understood that the mechanism might take a different form in a redesigned machine or in a machine of another type while retaining all the essential features of this invention.

In the accompanying drawings:—Figure 1 is a front elevation, showing in a general way a crochet machine having this invention embodied therein, with some parts of the feeding mechanism omitted. Fig. 2 is an end view of a portion of the machine.

Fig. 3 is a plan view of the work plate and adjacent parts and shows partly in full and partly in dotted lines portions of the mechanism of this invention. Fig. 4 is an end elevation of the work plate and adjacent parts of the machine and shows also mechanism located mostly beneath the work plate, relating to this invention and to the feed. Fig. 5 is a rear elevation showing many of the elements of the Fig. 4 but with much of the feeding mechanism omitted. Fig. 6 is a view largely in section, taken on the line 6—6 of the Fig. 3 looking from the left thereof. Fig. 7 is a view largely in section, taken on the line 7—7 of the Fig. 3. Fig. 8 is a view in plan and section, showing on an enlarged scale portions of the machine and of this invention adjacent the needle opening the needle plate.

Throughout the several figures of the drawings, like reference characters denote the same parts.

The numeral 1 denotes the frame of the machine, 2 the base, 3 the work plate, 4 the needle plate, 5 the finger plate, 6 the main shaft, 7 the needle and 8 the crochet hook.

The needle and the crochet hook derive their motions respectively through the needle lever mechanism and through the cam mechanism both actuated from the main shaft and said mechanisms cause the stitch forming implements to effect a complete cycle of their movements at each rotation of the shaft as well understood and as pointed out in the earlier patent referred to.

The feed dog 11 is slidably supported for horizontal motion in a horizontally extending arm or lever or carrier 12 that is pivotally supported on the pin 13 located toward the rear of the machine. An eccentric 14 on the main shaft 6 through a connection 15 oscillates a lever 16 that is pivotally supported at 17, the outer end of the lever 16 having connection with the feed dog to effect its horizontal reciprocations in the carrier 12. The carrier 12 is supported near its forward end at the outer end of an arm or feed raising lever 18 that is mounted on a stud 19 and extends rearwardly toward the carrier so that a pin 18^A may engage the carrier or preferably an adjustable plate 12^A thereon. The feed dog 11 reciprocates horizontally with each cycle of movements of the stitch forming implements but the support for the feed carrier 12 by the feed raising lever 18 is at such an elevation that the teeth of the feed dog 11 travel below the surface of the work plate 3 and therefore do not come in contact with the cloth which may be on the work plate, excepting at such times as the feed dog is raised to project its teeth above the needle plate 4. The raising of the feed dog into operative engagement with the cloth is effected by means of one or more

that is supported at 21 and meshes with a much smaller gear 6^A formed on or secured to the main shaft 6. In raising the feed dog the cam 20 engages the end of the feed raising lever 18 and the said lever in turn engages and raises the feed carrier 12 against the pressure of a spring 18^B which acts normally to hold the carrier 12 and the feed raising lever 18 downward, such downward pressure being limited by the engagement of the feed raising lever or its pin 18^A with a stop indicated by dotted line 18^C.

In the accomplishment of the primary object of this invention, a loop diverter has been provided, arranged to reciprocate in a path crossing the plane of movements of the crochet hook 8 and between the needle 7 and the crochet hook and preferably in close proximity to the chaining finger 5^A of the finger plate 5 and adjacent the end of the crochet hook 8 when the latter is in its retracted position. This loop diverter, which is denoted as a whole by the number 23, is partially illustrated and its relation to the needle 7 and the crochet hook 8 perhaps best shown in the Fig. 8. The loop diverter which in this machine is made in the form of a slide, is supported for horizontal reciprocation (as will be explained) in a path parallel with the direction of the feed, said direction being indicated by the arrow in the Fig. 8. When the crochet hook is in its retracted position shown in dotted lines in the Fig. 8 (in which it is assumed that a thread loop has been drawn out from the needle 7) the loop diverter has been moved to its rearward position, shown approximately by dotted lines in the Fig. 8, the rear end of the loop diverter crossing the plane of movement of the crochet hook. The loop diverter in moving from the position shown in full lines to that shown in dotted lines in the Fig. 8, carries its rear end into engagement with the thread loop or loops which have been drawn out from the needle 7 by the crochet hook 8 and slightly diverts the said loops rearwardly, thus carrying the loops closely enough into the throat 8^A of the crochet hook and retaining them there until after the crochet hook begins its outward travel, whereupon the crochet hook first slips through the loops until the latter are well secured on the neck of the hook when the loop diverter moves forward to the position shown in full lines in the Fig. 8. It will be seen that the loop diverter operates upon the thread or loops while the crochet hook is moving around the edge of the cloth or stitch finger and when the said hook begins to travel forward or outward. To better engage the thread loops the rear end of the diverter 23 may be notched as at 23^A.

It is understood and has already been explained that the crochet hook draws from the needle two thread loops (one from above and

one from beneath the needle plate) upon each reciprocation of the needle. To engage each of such thread loops the loop diverter makes two reciprocations for one of the needle.

5 The loop diverter 23 is shown as supported for reciprocation in grooves 3^B—5^B in the work plate and finger plate respectively, the grooves registering with each other and the finger plate when secured in position serves

10 to retain the loop diverter in the raceway provided by the said grooves. To the underside of the work plate is secured a block 24 which provides a bearing for a rocker shaft 25 which extends at right angles to the

15 line of movement of the loop diverter. The rocker shaft 25 at its end adjacent the loop diverter enters a recess 3^C in the work plate 3 and within the recess the rocker shaft has an arm 25^A the outer end of which enters a

20 notch 23^B in the lower edge of the loop diverter. At its opposite end the rocker shaft 25 carries an arm 26 shown as having a pinch hub that it may be easily secured to the rocker shaft. By means of a train of

25 mechanism connecting the main shaft 6 and the arm 26 the rocker shaft 25 is oscillated and the loop diverter reciprocated as is explained immediately hereinafter.

30 Secured to the base 2 is a support 27 having bearings for two pivotal pins 28—29 that are parallel with each other and with the rocker shaft 25. Upon the pin 28 there is mounted a vertically extending swinging lever 30 which at its upper end has connection through a link 31 with the rocker shaft

35 arm 26. Upon the pin 28 there is mounted an angle lever 32 one arm 32^A of which has connection through a pitman 33 with a crank 34 secured by its pinch hub to the

40 reduced end 6^B of the main shaft 6 so that upon each rotation of the shaft the angle lever is oscillated once upon its pivotal support 28. The other arm 32^B of the angle lever extends toward the lever 30 and at its

45 outer end the said arm is pivotally connected at 35 with one end of a link 36 the opposite end of which link is pivotally connected at 37 with the lever 30. The angle lever arm 32^B forms with the link 36 a toggle joint

50 and, as the swinging end of the angle lever arm carries the central joint 35 of the toggle twice across the line between the centers formed by the pivot pin 28 and the pivotal joint 37 for each rotation of the main shaft

55 two complete oscillations of the swinging lever 30 result and thus, through the connections described, there will be two complete reciprocations of the loop diverter to each complete cycle of operations of the

60 stitch forming implements.

Having thus described my invention, I claim:—

1. In combination, in a crochet machine including a thread carrying needle and a

65 crochet hook arranged to engage the needle

thread twice at each reciprocation of the needle to draw out successive thread loops; a loop diverter operating between the needle and the crochet hook to engage the said thread loops in succession to hold them in the throat of the crochet hook and means for actuating the loop diverter.

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2. In combination, in a crochet machine including a thread carrying needle arranged to reciprocate through the needle plate and a crochet hook to draw out loops of needle thread both above the elbow the needle plate and toward the edge thereof; a loop diverter to engage and divert the said thread loops successively when drawn out by the crochet hook and means for actuating the diverter.

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3. In combination, in a crochet machine; a loop diverter arranged to reciprocate between stitch forming implements and mechanism whereby the diverter is reciprocated twice for each complete cycle of movements of the stitch forming implements.

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4. In combination, in a crochet machine having stitch forming mechanism including a thread carrying needle and a crochet hook arranged to engage the needle thread and draw out loops thereof twice at each reciprocation of the needle; a loop diverter arranged to operate substantially parallel with the direction of the machine's feed and between the needle and the crochet hook to engage and divert the thread loops and mechanism intermediate the main shaft and the diverter to operate the latter twice at each rotation of the main shaft.

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5. In combination, in a crochet machine; a loop diverter, mechanism intermediate the main shaft and the diverter including a toggle having a central and two outer joints and means for actuating its central joint on either side of a right line between its other two joints whereby the diverter is operated twice at each revolution of the main shaft.

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6. In combination, in a crochet machine; a loop diverter operating between stitch forming implements, a swinging lever for actuating the diverter, mechanism intermediate the main shaft and the swinging lever comprising a crank on the shaft, a pitman connecting the crank and a pivotally supported angle lever and connection between the angle lever and the swinging lever whereby the diverter is operated twice for each rotation of the main shaft.

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7. In combination, in a crochet machine; a loop diverter and actuating mechanism therefor including a crank on the main shaft, an angle lever, a pitman connecting said crank with one arm of the angle lever, a support for the angle-lever, a swinging lever, a support for the swinging lever, a connecting link between the swinging lever and the angle-lever, a rock shaft, a support for the rock shaft, a lever at one end of the

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rock shaft, a connection between the last
named lever and the swinging lever, an
arm at the other end of the rock shaft and
having connection with the diverter, the
5 angle lever and its connections being ar-
ranged so that one arm of the angle lever
travels twice across the line of centers of
its pivotal point and its connection with

the swinging lever whereby the swinging
lever and its connections operate twice for 10
each rotation of the main shaft.

JOSEPH M. MERROW.

Witnesses:

ARTHUR B. JENKINS,
EVA L. STOUGHTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
