

(No Model.)

J. M. MERROW & W. H. STEDMAN.  
CROCHETING OR OVERSEAMING MACHINE.

No. 414,234.

Patented Nov. 5, 1889.

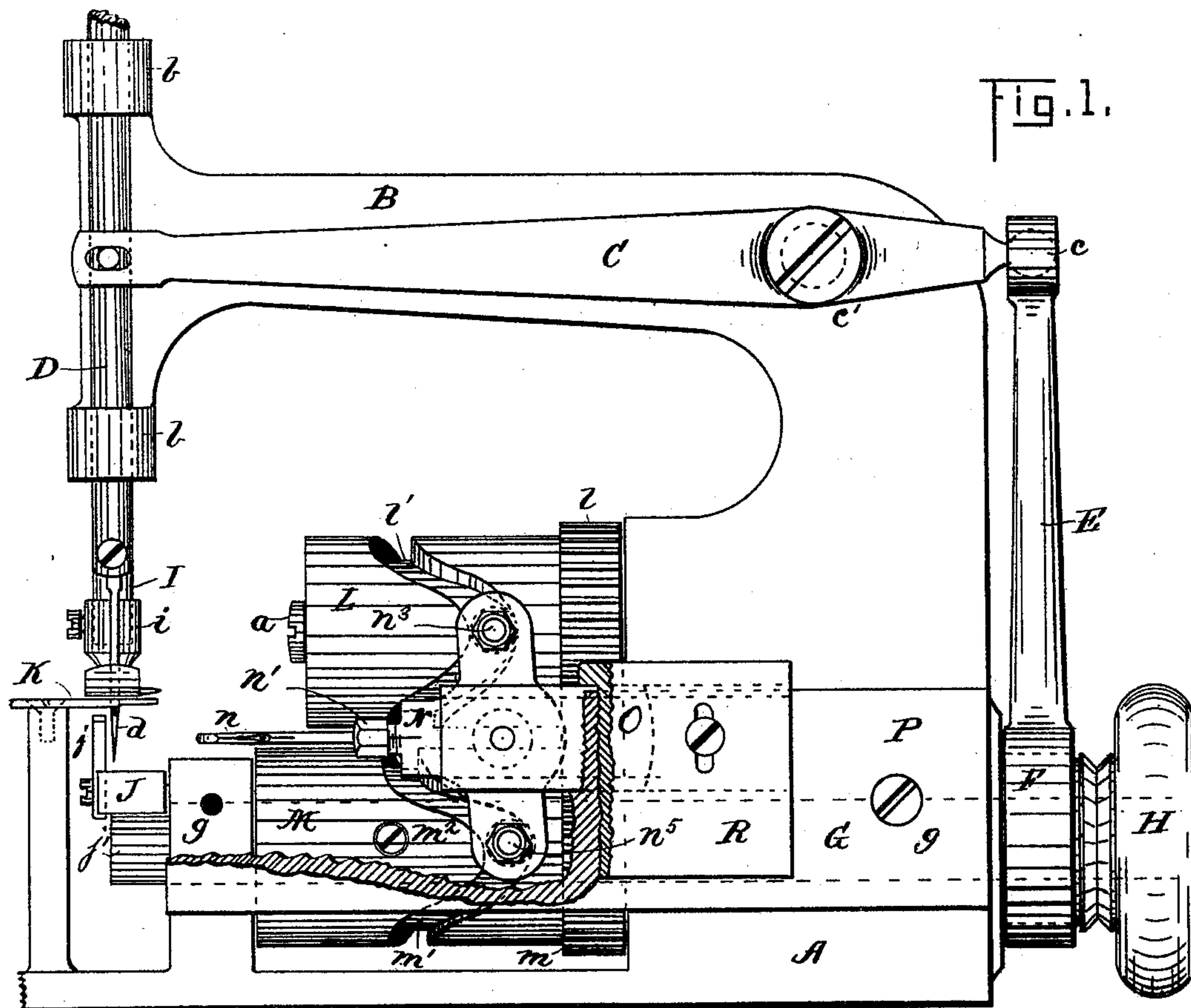


Fig. 3.

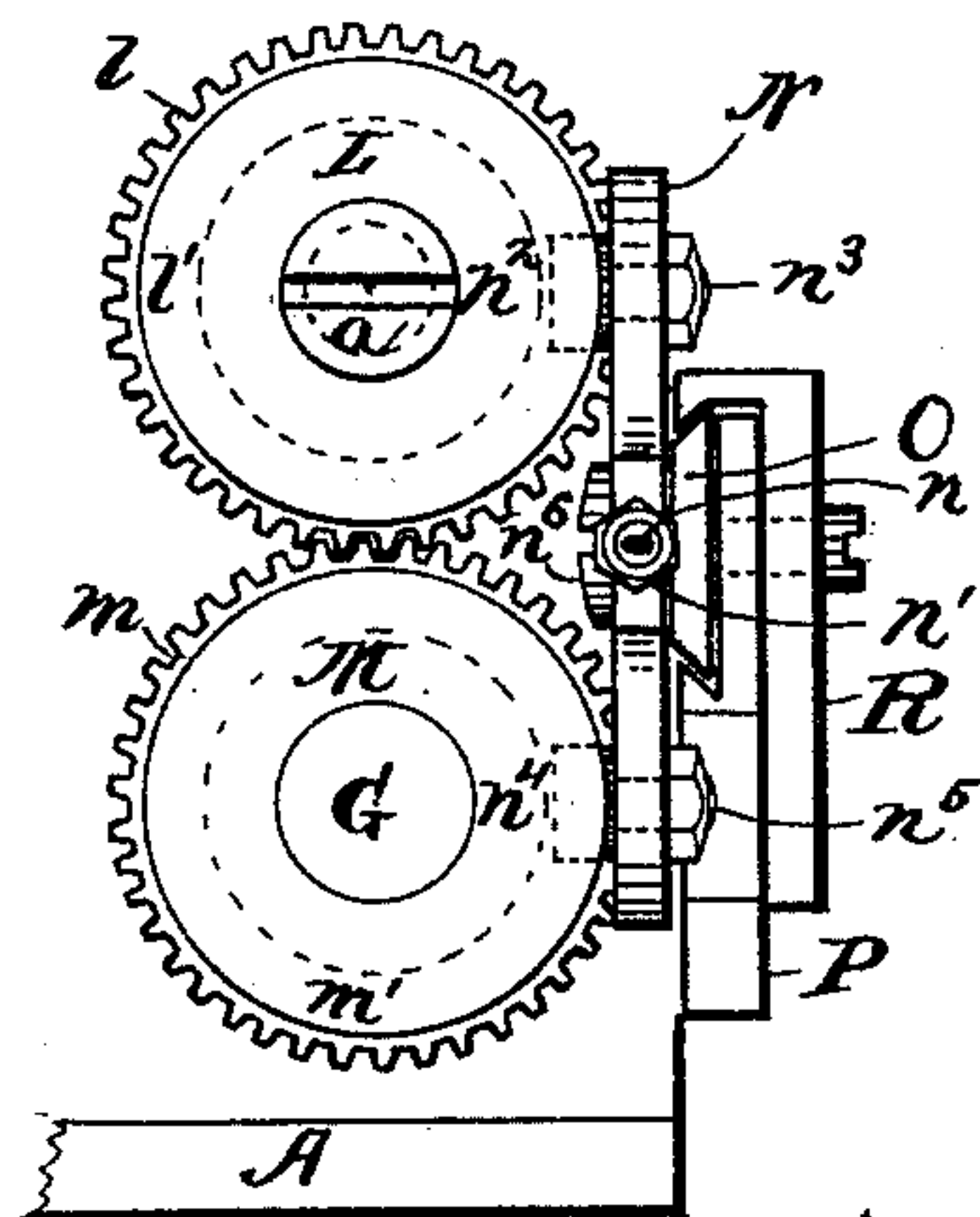


Fig. 2.

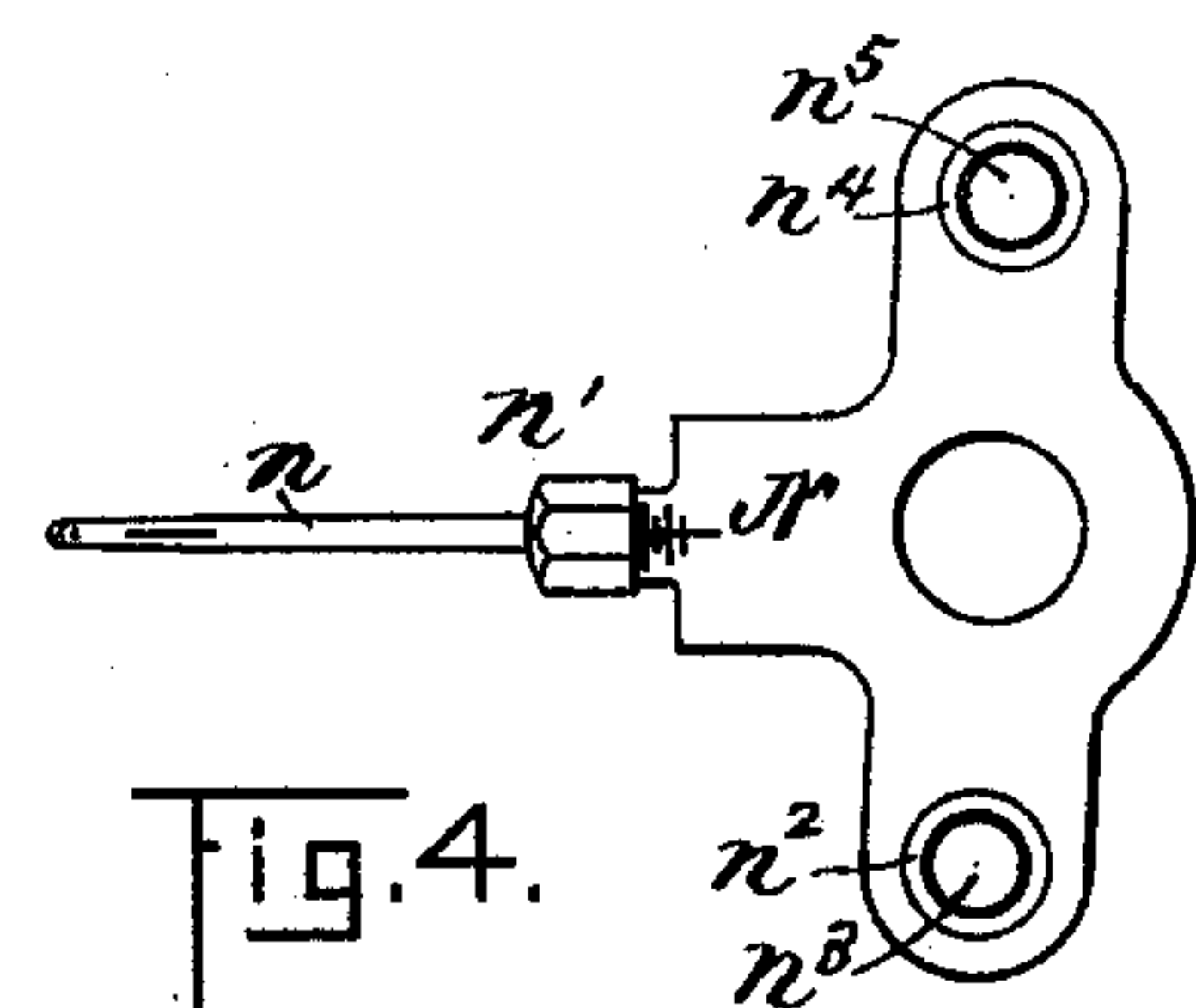


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## CROCHETING OR OVERSEAMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 414,234, dated November 5, 1889.

Application filed October 8, 1888. Serial No. 287,533. (No model.)

*To all whom it may concern:*

Be it known that we, JOSEPH M. MERROW, a citizen of the United States, residing at Merrow, in the town of Mansfield, county of Tolland, and State of Connecticut, and WILLIAM H. STEDMAN, also a citizen of the United States, residing in the city of Norwich, county of New London and State aforesaid, have invented new and useful Improvements in Crocheting or Overseaming Machines, of which the following is a specification.

Our invention relates to that class of machines in which a looper is employed to form and carry the loops around the edge of the fabric from either side thereof; and this invention consists, principally, in new and improved means for supporting, controlling, and carrying said looper.

The object of our invention is to control and operate the looper or crochet-hook in vertical and horizontal planes by positive, substantial, and simple means.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of a machine embodying this invention, parts being broken away to show the looper and its operating mechanism. Fig. 2 is a detached view showing the looper and its operating mechanism, looking in a direction from the left to right in Fig. 1. Fig. 3 is a detached end view of the supporting-block for the looper-carrier. Fig. 4 is an inverted or back view of the looper or crochet-hook carrier detached.

Similar letters of reference indicate similar parts throughout the illustrations.

A indicates the bed of the machine. B indicates the needle-arm; C, the needle-operating lever; D, the needle-spindle; *d*, the needle; E, the eccentric-strap or connecting-rod; F, the eccentric; G, the main shaft; H, the hand-wheel; I, the presser-foot spindle; *i*, the presser-foot; J, the feed-bar; *j*, the feed-dog; *j'*, the feed-cam, and K the work-plate.

The parts above enumerated are substantially the same in construction as have heretofore been used in sewing-machines, and it is not deemed necessary to give herein a more complete description of such parts or of their operation.

L and M indicate cam-cylinders.

N indicates the looper or crochet-hook carrier; *n*, the looper or crochet-hook; O, the supporting-block for the looper-carrier; P, the guide-plate, and R the cap for the looper-carrier supporting-block.

The main shaft G is journaled in the frame or bed of the machine at *g*, and the cam-cylinder M is secured to said shaft G by means of the set-screw *m*<sup>2</sup>.

The cam-cylinder L is secured to the frame or bed of the machine by means of the stud *a*, upon which the said cam-cylinder is adapted to rotate.

Formed on or secured to one end of each of the cam-cylinders L and M are toothed gears *l* and *m*, which mesh or gear into each other, as shown in Fig. 2. The cam-cylinders L and M are further provided with cam-grooves *l'* and *m'*.

The looper-carrier N is pivoted to its supporting-block O upon a stud or projection *o*, and is operatively secured to said block by means of the screw *n*<sup>6</sup>.

Secured to the looper-carrier O are two small studs *n*<sup>3</sup> and *n*<sup>5</sup>, which studs are provided with anti-friction rolls *n*<sup>2</sup> and *n*<sup>4</sup>, adapted to run in the cam-grooves *l'* and *m'*, hereinbefore mentioned.

The looper or crochet-hook *n* is held securely into its carrier by means of a nut *n'*, screwed onto said carrier, which at this point is made tapering, and is split so as to tightly pinch or clamp the looper when said nut is screwed up tightly.

The looper-carrier supporting-block O is formed with beveled edges, and is guided and supported and adapted to slide in a groove or way, a portion of which is formed on a guide-plate P, the vertically-adjustable cap R forming the upper surface of said way or groove.

The looper-carrier N is adapted to swing upon its pivot *o*, and also to be carried bodily with its supporting-block, which latter is adapted to slide in a direction parallel to the main driving-shaft of the machine and at right angles to the direction of the feeding of the fabric.

When the cam-cylinders L and M are rotated, the irregular grooves or cam-surfaces in



said cam-cylinders act upon the cam-studs and their rolls to move the looper-carrier N, the looper  $n$ , and the supporting-block O forward and back bodily—that is, in a direction to-  
 5 ward and from the vertical needle  $d$ . The irregular cam-grooves also act at the proper times to swing the looper-carrier N upon its pivot  $o$ , as will be more fully explained. It will be seen that the relative positions of these  
 10 points in the grooves  $l'$  and  $m'$ , which come in contact with the anti-friction rollers upon the cam-studs  $n^3$  and  $n^5$ , determine the vertical positions of the point or outer end of the looper or crochet-hook. In order that this action  
 15 may be more clearly understood, let it be supposed that the cam-grooves are of such form that the studs  $n^3$  and  $n^5$ , together with their rolls, will be carried toward the vertical needle  $d$  at the same rate of speed and in the  
 20 position shown in Fig. 1, in which case it is obvious that the looper-carrier, together with the looper, will be carried bodily in a horizontal direction, and that the point or forward end of the looper will neither be swung up-  
 25 ward or downward; but if the cam-groove  $m'$  is made of such form as to carry the stud  $n^5$ , together with its roll, at a greater speed than the stud  $n^3$  and its roll are carried by the groove  $l'$ , it is clear that the point or forward  
 30 end of the looper will be tilted or swung upward, while if the inverse be the case and the upper stud  $n^3$ , with its roll, is carried forward more rapidly than the lower one, it is clear that the looper-carrier will be swung  
 35 upon its pivot in a direction to carry the point or outer end of the looper downward; hence it is obvious that the vertical positions of the point or outer end of the looper or crochet-hook  $n$ , and also its horizontal positions in  
 40 one plane, are controlled by the cam-grooves  $l'$  and  $m'$ .

In this machine the looper or crochet-hook is arranged to be reciprocated below, around the edge of, and above the work-plate, the fab-  
 45 ric, and the presser-foot, to form loops around a finger or plate and upon the edge of the fabric in the same general manner as shown and described in the patent issued to J. M. Merrow, dated September 25, 1877, No.  
 50 195,520, and in the application of J. M. Merrow, filed on January 18, 1886, Serial No. 188,912.

The operation of this machine is as follows, viz: The fabric is placed under the  
 55 presser-foot  $i$ , and the needle  $d$  is provided with a thread. By the application of any convenient power to the hand-wheel H the shaft G is rotated, carrying with it the eccentric F, the feed-cam  $j$ , and cam-cylinder M, which latter drives or rotates the cam-cylinder L by means of the meshing gear-teeth. The rotation of the eccentric F vertically reciprocates the needle  $d$  through the connection E, the lever C, and needle-spindle D, as is com-  
 60 mon in sewing-machines. The rotation of the cam-cylinders L and M operates the looper or crochet-hook  $n$  in such a manner as to

grasp the needle-thread from the side of the needle below the fabric and carry a loop of  
 said thread around the edge of the fabric to 70 the opposite side, where the looper again grasps the thread to form a new loop, which is in turn carried around the edge of the fabric by the looper on its way to again grasp the thread below the fabric. While the needle  $d$  is out of or above the fabric the latter  
 75 is fed along by the feed-dog  $j$ , secured to the feed-bar J, which latter is operated by the feed-cam  $j'$  on the main shaft. The presser-foot is held down upon the fabric by a spring. 80 (Not shown on drawings.)

Any convenient known mechanism may be employed for operating the vertical or eye-pointed needle and for feeding the fabric.

We do not wish or intend to be understood 85 as limiting ourselves to the particular styles and arrangement of cams, slides, &c., nor the special connection of the hook-carrier to the actuating cross-bar, as those parts can be modified or changed in many particulars, as 90 will be readily understood by a skilled mechanic, without involving any material departure from the spirit of our invention, which relates, broadly, to the employment of devices acting positively to reciprocate and 95 oscillate the hook, and to a mechanism therefor which embraces as one of its distinguishing features a cross-bar or equivalent connected to the hook and supported so as to be capable of reciprocatory and oscillatory mo- 100 tions, with cam-surfaces operating upon said bar or equivalent part on opposite sides of its center of oscillation to control and effect the motions of the hook.

Having thus described our invention, we 105 claim—

1. In a machine such as described, the combination, with a thread-carrier and a looper, of a looper-carrier, a reciprocating support to which said carrier is pivotally attached, and 110 actuating devices—such as cams—engaging said carrier to reciprocate and oscillate the latter.

2. In a machine such as described, the combination, with a thread-carrier and a looper, a looper-carrier, and a reciprocating support to which said carrier is pivotally connected, of two cams engaging said carrier at different points remote from its center of oscillation and co-operating to reciprocate and oscillate 120 said carrier and the looper, as set forth.

3. In a machine such as described, provided with a thread-carrier and a reciprocating looper co-operating therewith to form loops, the combination, with said looper, of an oscillatory reciprocating carrier to which said looper is attached, pivotally mounted on a reciprocating support, and two actuating devices—such as cams—engaging said carrier on opposite sides of its center of oscillation, 125 substantially as described.

4. In a machine such as described, and in combination with a thread-carrier and a looper, the looper-carrier pivotally attached



to a support, the latter guided to reciprocate in the plane of the looper, of two separate actuating devices—such as cams—engaging the carrier and co-operating to both reciprocate and oscillate the latter, in the manner and for the purpose set forth.

5. In a machine such as described, the combination, with a thread-carrier, of the looper and its carrier, a support to which the carrier is jointed, a guide in or upon which said support is mounted to reciprocate, and actuating devices for oscillating and reciprocating the carrier.

6. In a machine such as described, the combination, with a thread-carrier and a looper, of an oscillatory reciprocating looper-carrier pivotally connected to its support, two sets of cam-surfaces, and two co-operating projections or studs on the carrier, each of said projections or studs being acted upon by one set of cam-surfaces, as set forth.

7. In a machine such as described, the combination, with a thread-carrier and a looper, of an oscillatory reciprocating looper-carrier pivotally connected to a reciprocating support, and provided with two studs or projections, and two sets of cam-surfaces co-operating to oscillate and reciprocate said carrier, each of the studs or projections on the latter being received between the members of one set of cam-surfaces.

8. A thread-carrier, a looper and its carrier, a support for said carrier, and a guide for said support, in combination with two cam-cylinders with cam-surfaces formed thereon which engage said looper-carrier to actuate the latter, with means for rotating said cylinders, substantially as described.

9. A thread-carrier, a looper, a looper-carrier and its support, and a guide for said support, in combination with two cam-cylinders engaging studs or projections on the carrier and each provided with a gear, supports for said cylinders and gears, and devices for rotating the latter, substantially as described.

10. A thread-carrier and the looper pivot-

ally connected to its support, in combination with a guide for said support, said guide being provided with an adjustable cap, substantially as and for the purpose described.

11. A thread-carrier, a looper, and the looper-carrier N, provided with studs or projections  $n^3$   $n^5$ , and pivotally attached to the reciprocating support O, and a guide for said support, in combination with the cam-cylinder M, provided with cam-groove M', and the cam-cylinder L, provided with cam-groove l', substantially as described.

12. In combination with a thread-carrier, a looper, and the looper-carrier, a support for said carrier mounted to reciprocate in guides and provided with a pivot-bearing for the carrier, the axis of said pivot-bearing being transverse to the line of reciprocation of the support, substantially as described.

13. A thread-carrier, a looper, and an oscillatory reciprocating looper-carrier pivotally attached to a reciprocating support, in combination with two actuating-cams engaging said carrier on opposite sides of its center of oscillation, substantially as described.

14. A thread-carrier, a looper, and a looper-carrier pivotally connected to a reciprocating support and provided with two separate studs or projections, in combination with two moving cams, each provided with opposing cam-surfaces, between which one of the studs or projections on the carrier is received and operates, substantially as described.

15. A thread-carrier, a looper, and an oscillatory reciprocating looper-carrier whose axis of oscillation is transverse to the looper, in combination with two actuating mechanisms—such as two sets of cam-surfaces—each engaging the opposite faces of a stud or projection on the carrier to positively actuate the latter, substantially as described.

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