

May 24, 1938.

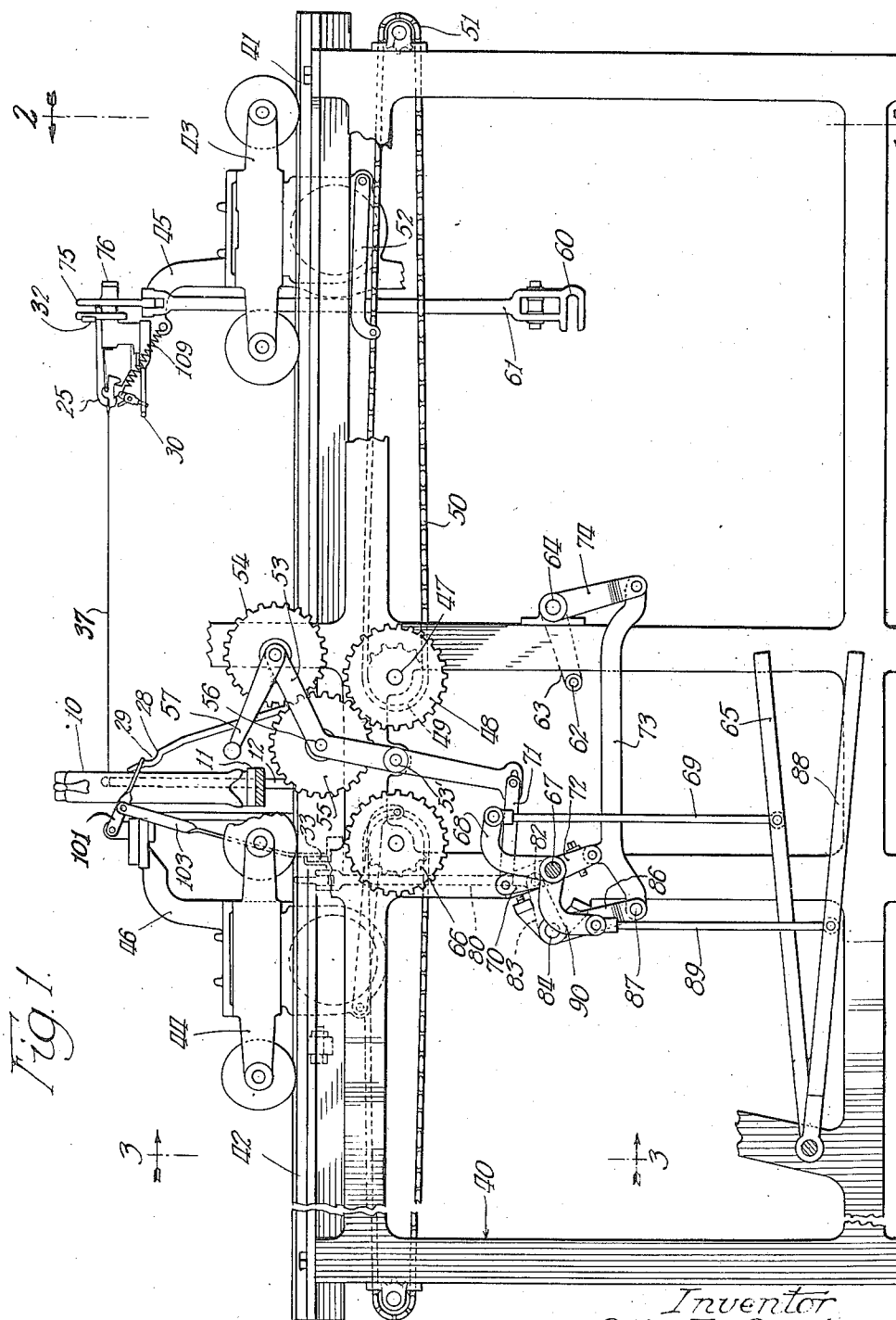
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2,118,788

HAND EMBROIDERY MACHINE FOR SEAMLESS HOSE

Original Filed Sept. 5, 1934

6 Sheets-Sheet 1



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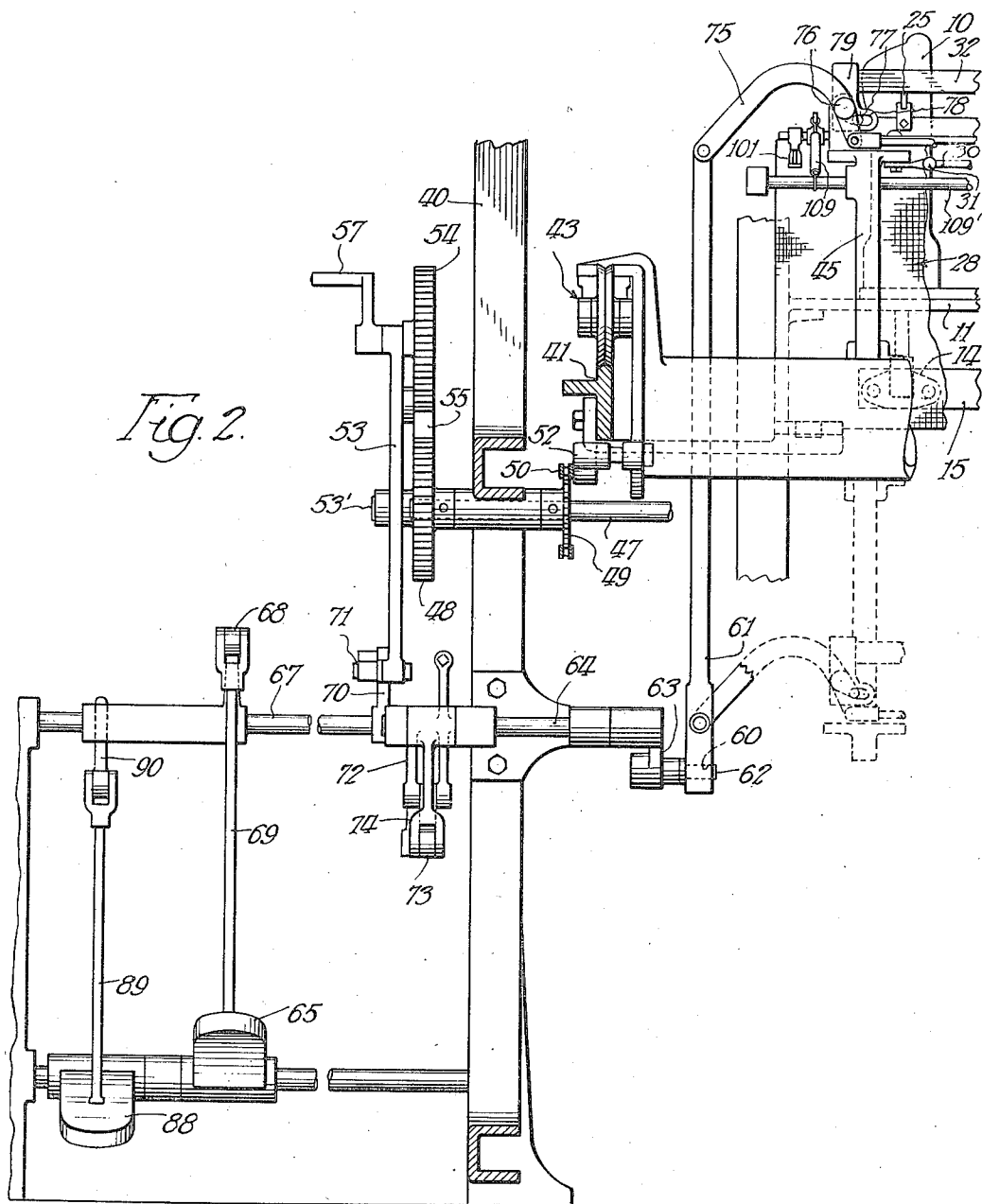
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Original Filed Sept. 5, 1934 6 Sheets-Sheet 2



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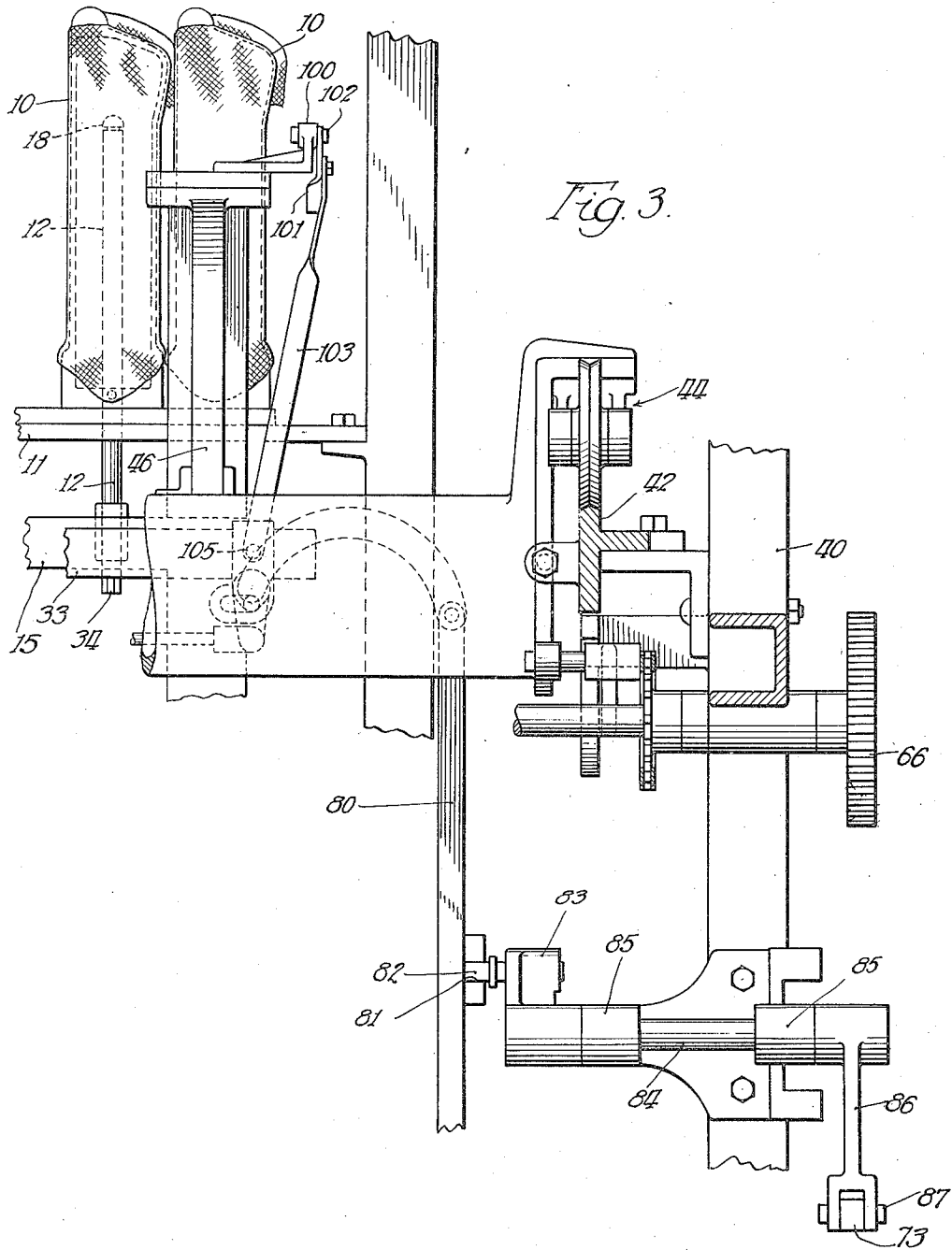
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HAND EMBROIDERY MACHINE FOR SEAMLESS HOSE

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6 Sheets-Sheet 3



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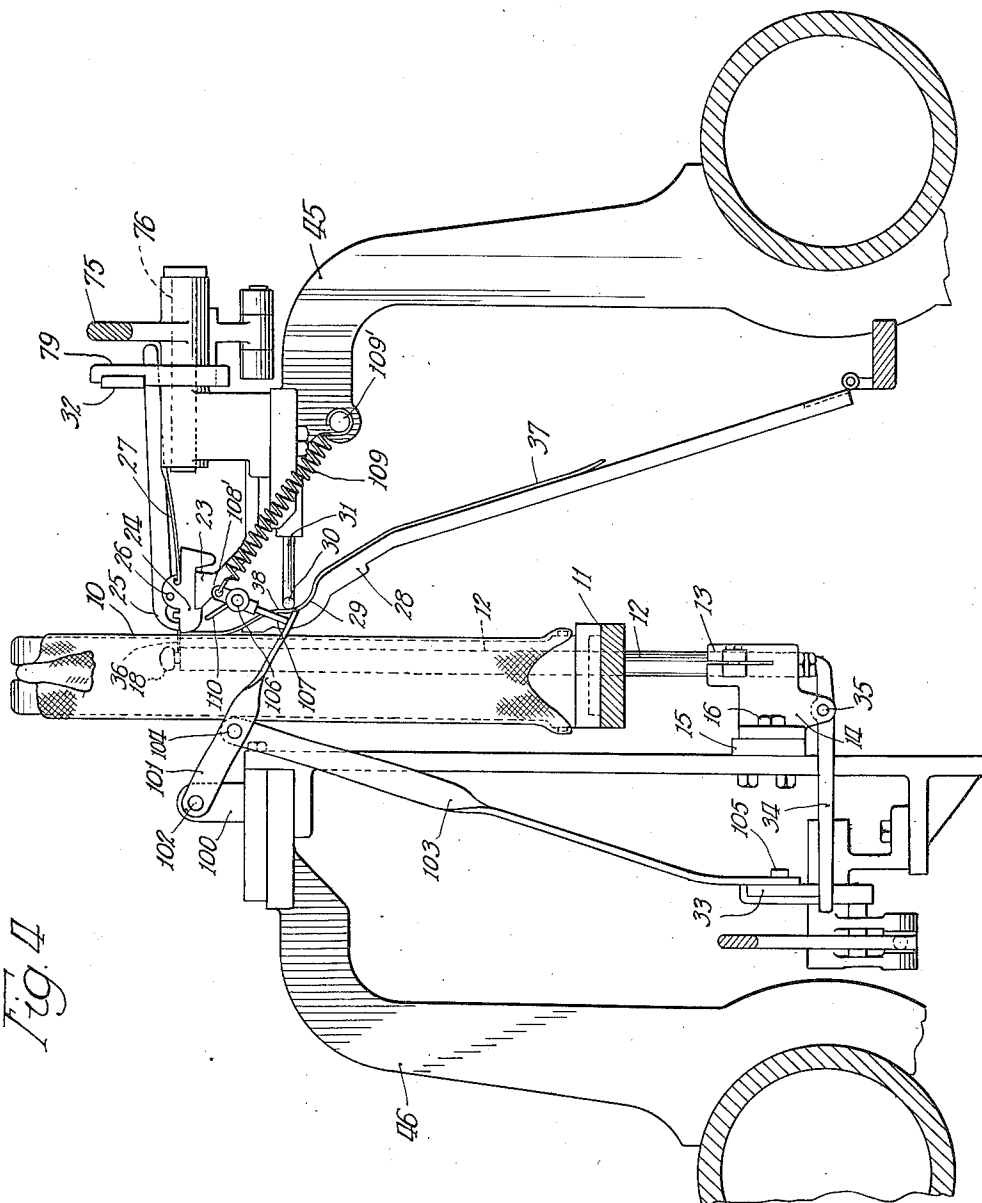
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HAND EMBROIDERY MACHINE FOR SEAMLESS HOSE

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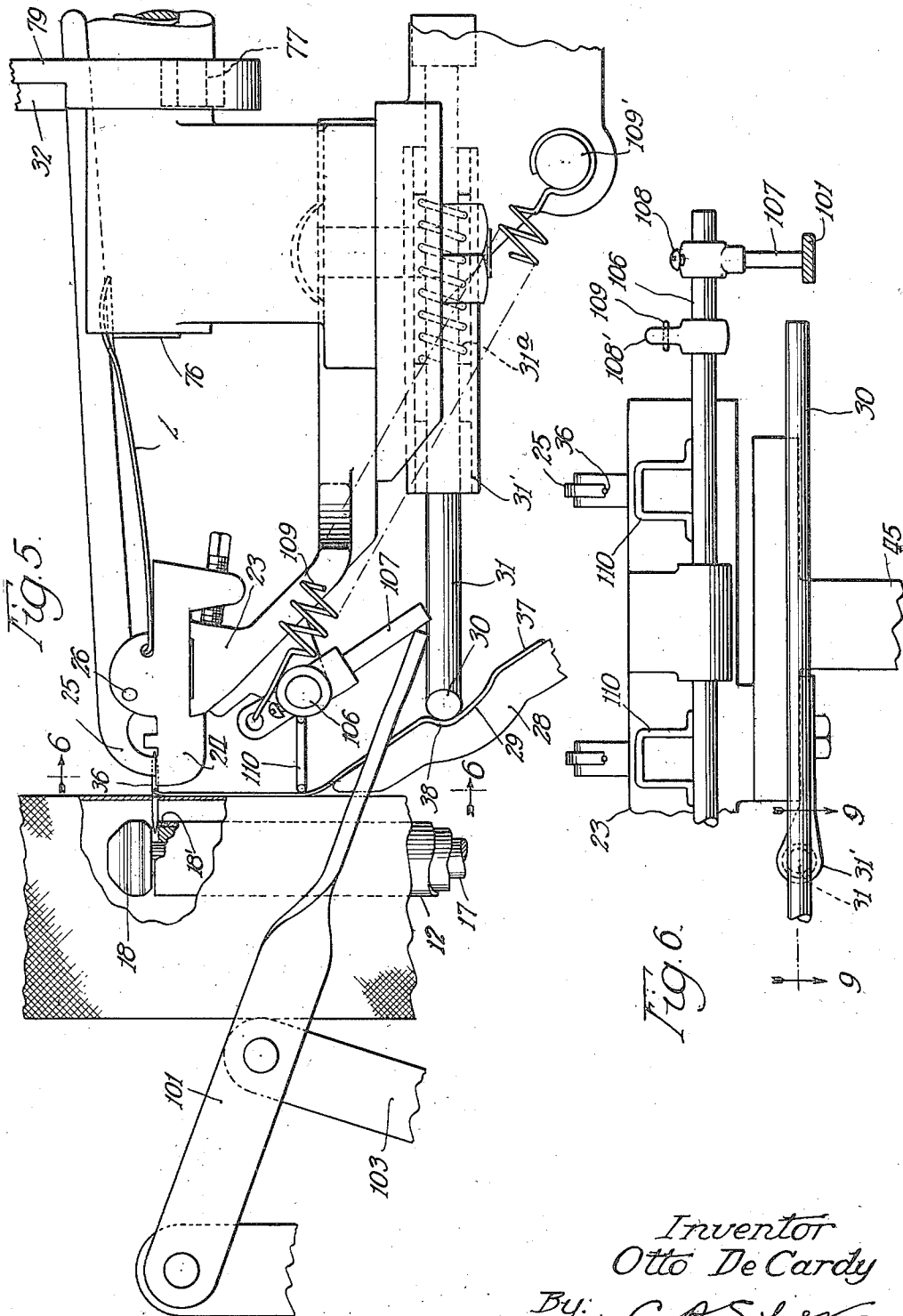
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HAND EMBROIDERY MACHINE FOR SEAMLESS HOSE

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HAND EMBROIDERY MACHINE FOR SEAMLESS HOSE

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6 Sheets-Sheet 6

Fig. 8.

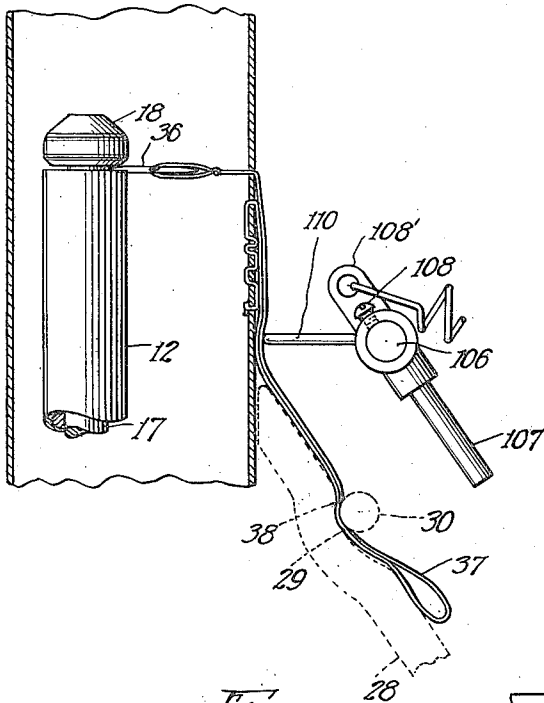


Fig. 7.

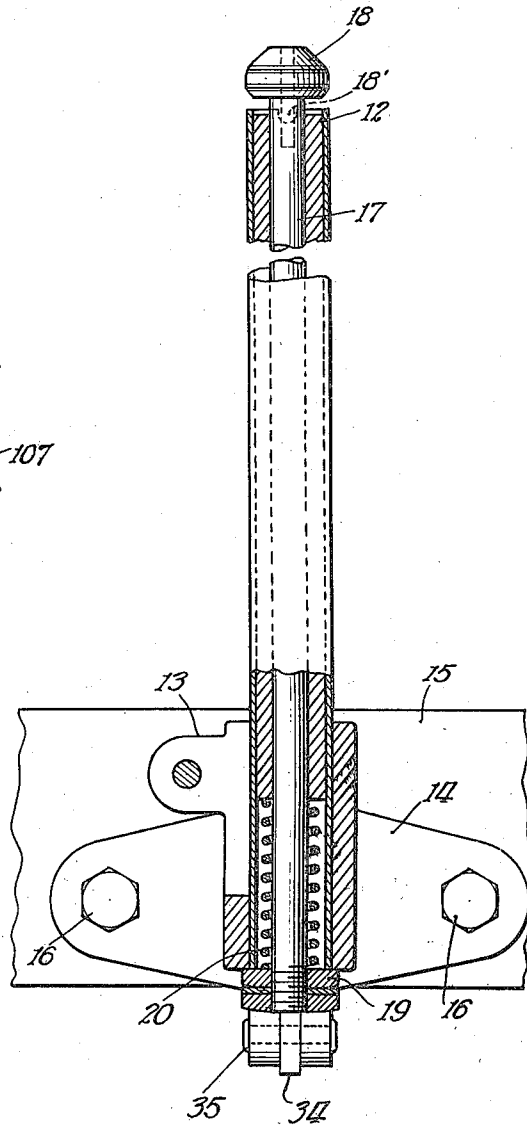
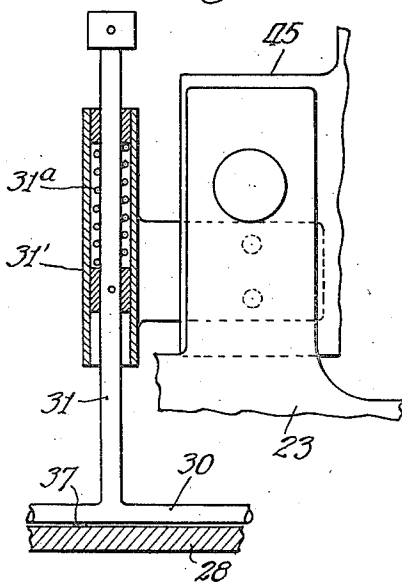


Fig. 9.



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UNITED STATES PATENT OFFICE

2,118,788

HAND EMBROIDERY MACHINE FOR SEAM-
LESS HOSEOtto De Cardy, Chicago, Ill., assignor to Chicago
Embroidery Company, Chicago, Ill.Continuation of application Serial No. 742,718,
September 5, 1934. This application Novem-
ber 13, 1935, Serial No. 49,450

18 Claims. (Cl. 112—94)

This invention relates to embroidery machines, particularly to improvements in hand embroidery machines for seamless hose and is a continuation of applicant's application Serial No. 742,718, filed September 5, 1934.

Prior to applicant's invention it was old to simulate hand embroidery by mechanical means. One well known embroidery machine for this purpose comprises two traveling carriages, one on each side of the work or article being embroidered. These carriages are usually of substantial length and provided with a large number of needle seizing devices often a hundred or more in number. A double pointed needle is employed and in the operation of the device one carriage is caused to approach the work and insert points of the several needles therethrough. Whereupon the needle seizing devices of the other carriage, respectively, grasp the needles and the carriage moves away from the work until the threads carried by the needles have been drawn through the work. The carriage carrying the needles now is caused to move in a reverse direction toward the work and insert the points at the opposite ends of the needles therethrough. The process is now reversed and the first mentioned carriage seizes the needles and draws the thread through the work. Thus the process progresses, the carriages alternately seizing the needles and moving away from the work to draw the thread therethrough until the threads are taut.

The embroidery produced by this machine has the appearance of hand embroidery and indeed the stitches are of substantially the same character as in hand embroidery.

The machine above described is of slow operation, however, due to the large size of the carriages and the fact that each of them must alternately move away from the work the length of the threads carried by the needles. Also this machine is incapable of use with tubular objects such for instance as in embroidering the clocks in seamless hose.

One object of the present invention is the provision of a machine in which the hand embroidering process will be substantially speeded up.

Another object is the provision of a hand embroidering machine which may be employed with tubular objects as seamless hose as well as in embroidering flat work.

A feature of the invention is the provision of a series of arms or spindles arranged on a carriage, each being provided with a needle seizing or gripping device together with means for oper-

ating the gripping devices to grasp the needles when inserted through the work, then move the spindle carriage away from the work surface a distance merely sufficient to clear the work of the opposite points of the needles, move the pattern bar in accordance with the pattern and then return the needle spindles to their original or normal position, whereupon the needle seizing devices at the opposite side of the work grasp the needles and draw the thread through the work. The arrangement employed for this purpose may be a traveling carriage such as above described or any other satisfactory device for drawing the thread through the work.

This device differs from the known device above described in that with the old device the thread is drawn out its entire length until taut after each insertion of the needle through the work while with the present invention the thread is drawn taut on one side only of the work. On the opposite side of the work the needle gripping devices are moved laterally a distance merely sufficient to cause the needles to clear the work and then, after the pattern bar has been operated, are returned to their original positions. It is this expedient which permits the hand embroidery process on tubular articles such as seamless hose. The present process is of advantage also in that by its use the embroidery process may be carried out more rapidly.

Another feature of the invention resides in the needle seizing rod or bar which is adapted to project into a tubular article as a seamless hose and has a needle seizing arrangement adjacent to the free end thereof.

A still further feature of the invention resides in the means provided for drawing the thread out of the path of the needle at the time the needle is inserted into the work.

Other features and advantages will appear from time to time as the description of the invention progresses.

It is believed the further disclosure of the invention will be understood most readily from a detailed description thereof taken in connection with the accompanying drawings in which

Fig. 1 is an end view of a hand embroidery machine embodying the present invention;

Fig. 2 is a view of a part of the device as seen from the line 2—2 in Fig. 1;

Fig. 3 is a view of a portion of the device as seen from the line 3—3 in Fig. 1;

Fig. 4 is an enlarged view of the hollow work holder and the needle grippers as seen in Fig. 1

and shows the grippers in position to pass the needle from one gripper to the other;

Fig. 5 is a still greater enlarged view, partly in section, of the needle actuating members and grippers, and more particularly shows the means for drawing the thread out of the path of the needle at the time it is passed through the work;

Fig. 6 is a section substantially on the line 6—6 of Fig. 5 looking in the direction of the arrows;

Fig. 7 is a view, partly in section, of the needle gripping device which is positioned within the hollow work holder;

Fig. 8 is a cross-section, substantially full size, of a portion of the work and its associated needle gripper and more particularly illustrates the device, which is actuated just prior to the needle being inserted through the work from within the hollow work holder, in order to remove any slack in the thread so as to prevent the needle passing through the thread; and

Fig. 9 is a section substantially on the line 9—9 of Fig. 6.

Referring now to the drawings in which like reference characters indicate the same parts in the several views, 10 indicates one of the hollow work holders, a series of which will be mounted in a row on a work support 11 in a well known manner. The work holder 10 is preferably of the same character as that shown and described in applicant's application, Serial No. 708,815, filed January 29, 1934, but differs therefrom merely in that it is more nearly square in cross section in order to provide therein more room for lateral movement of the needle actuating member 12.

As the work holder 10 so nearly resembles the one disclosed in applicant's prior application a detailed description thereof is thought to be unnecessary. It may be noted, however, that this holder has in general the contour of a hose and when a hose is positioned thereon the opposite faces on which the clocks are to be embroidered are spaced a substantial distance apart for reasons which will subsequently appear.

Into each of the work supports 10 will project a needle actuating member or rod 12 as indicated in Fig. 4. The lower end of each actuating member 12 is secured within a split ring 13 carried by a bracket member 14 secured to the needle supporting bar 15 in any desired manner as for example by screws 16.

Slidable longitudinally within the member 12 is a bar or rod 17 (see Fig. 7) provided at the upper end thereof with a needle gripping head 18 adapted, when in normal position to overlie the upper end of the hollow member 12. The member 17 is provided at its lower end with a bearing member 19. A spring 20 bears with one end against the bearing member 19 and with its other against the lower end of the hollow member 12. It thus tends to retain the needle gripping head 18 in operative engagement with the upper end of the hollow member 12. From an inspection of Fig. 7 it will be seen that the upper end of member 12 is provided with a needle receiving groove 18' at one side thereof into which the needle is inserted in a position to be held by the head 18 when in its operative position.

Referring to Fig. 4, at the right is shown a second needle carrying member 23 having thereon a needle gripper comprising the lower jaw 24, fixed to the member 23 in any desired manner and an upper movable jaw 25 pivotally supported on jaw 24 at 26. A spring 27 tends to

move the right end of the member 25 upwardly so as to urge the jaw 25 toward operative position in engagement with jaw 24.

Supported adjacent to the hollow work holders 10, in any desired manner, is an apron 28 which it will be understood extends transversely of the embroidering machine and in the same relative position to each of the work holders. The apron 28 is provided in its face remote from the work holders 10 with a longitudinally extending groove or recess 29. A bar 30 extends longitudinally of the carriage comprising the needle supporting member 23 and is supported from member 23 by arms or plungers as 31 of Fig. 4. The arms 31 are preferably slidable within the cylinders 31' and urged to the left, as seen in Fig. 5 by springs 31^a.

Before describing the invention in connection with the apparatus shown on Figs. 1, 2 and 3, a general description of its operation will be given by reference to Fig. 4.

It will be recalled that the needle grippers are normally held in operative position by means of the springs associated therewith as above described. The needle gripper 24—25 at the right in Fig. 4 is caused to release the needle by moving the gripper bar 32 downwardly thus rocking the jaw 25 about the pivot 26. The needle gripper 18 is operated by means of the gripper bar 33 which when moved downwardly engages the end of lever 34 pivotally supported at 35. Thus it will be seen that when the left end of lever 34 is moved downwardly the right end will move upwardly and will cause plunger 17 to raise the gripper head 18 away from the end of the needle actuating member 12.

We will assume that the gripper at the right in Fig. 4 is released by the gripper bar 32 and is in operative contact with the needle 36. The needle 36, as is common in devices of this kind is pointed at each end and has a single eye in the middle in which the thread is received. The gripper bar 33 is in its downward operative position and it will be noted that the gripper head 18 has been moved upwardly away from the member 12. As the needle carriage at the right moves toward the work and inserts the points of the needles therethrough the ends of the needles will enter the grooves 18' in the upper edges of the members 12. Through mechanism subsequently to be described the gripper bar 32 will now be moved downwardly and the bar 33 upwardly thus rendering the gripper 18 operative and the gripper 25 inoperative. The needle carrying bar 15 will now be moved to the left in Fig. 4 a distance merely sufficient to clear the needles from the work carried on the frames 10. The pattern bar 11 will now be operated in accordance with the pattern in the usual manner and the needle bar 15 will move again to the right to reinsert the pointed right ends of the needles 36 through the work.

The gripper bar 32 will now be moved upwardly and bar 33 downwardly so that the needles will now be seized by the grippers 24—25. The carriage carrying the gripper bar 32 will now be moved in the opposite direction away from the work a distance depending on the length of the thread carried by the needles. This movement of grippers 24—25 will be to the right as seen in Fig. 4.

Thus it will be seen that the thread is drawn taut and the slack of the stitches taken up entirely by the movement of the needle carriage to the right. The carriage at the left operates

entirely within the hollow work supports 10 merely sufficiently to clear the needles from the work so as to permit the operation of the pattern bar 11.

5 As the needle approaches the work from the right the thread 37 will hang down in a loop over the apron 28. It has been found that unless some means are provided to prevent, the thread will sometimes lie in the path of the needle thus resulting in imperfect work. To obviate this trouble the apron 28 is provided with the groove 29 having the slanting or inclined surface 38 and the spring held bar 30. As the needle approaches the work from the right the bar 30 engages the thread and forces it against the inclined surface 38 and the slack in the loop of the thread is taken up thus moving it out of the path of the needles.

Carried by the left carriage, as seen in Fig. 4, is a lug 100 to which is secured the arm 101 by means of the pivot 102. A link 103 has one end pivotally connected to the arm 101 at 104 and its other end joined to bar 33 at 105. Pivotally or rotatably mounted on the right carriage, as seen in Fig. 4, is a rod or bar 106. Rod 106 may extend the whole length of the machine, that is, past the entire series of work holders 10. Fixed to the rod 106 is an arm 107 held in non-rotatable relation to rod 106 by means of set screw 108. A spring 109 having one end secured to a lug 108' and its other end to a fixed part of the right carriage as at 109' tends to rotate the rod 106 in a clockwise direction, as seen in Fig. 4 and normally retain the rod 106 and arm 107 in a position as seen in Fig. 4. Fixed to the rod 106 is a series of U-shaped wire members 110 (see Figs. 4, 5, 6 and 8). One of the U-shaped members 110 is placed below each of the needle grippers 24. The purpose of the apparatus just described, i. e. the U-shaped members 110 and the operating mechanism therefor, is to remove all slack from the threads on the right side of the work, as seen in Fig. 4, just prior to the insertion of the needles through the work by the needle grippers 12 inside of the work holders 10. The operation of this part of the device is as follows:

At the time the carriage at the right in Fig. 4 approaches the work to insert the needles there-through the bar 33 of the carriage at left is in its lower position so as to raise the gripper head 18 into needle receiving position. The arms 101 and 107 will now be in approximately the position shown in Fig. 4. When the needles have been inserted through the work from the right the bar 33 is raised a small fraction of an inch to permit the heads 18 to seize the needles. Following this the carriage at the left moves to the left a distance of an inch or slightly less to draw the needles through the work. During this movement the free end of arm 101 moves to the left of the arm 107 and also slightly upwardly. After the pattern bar has been shifted the left carriage in Fig. 4 moves to the right to again insert the needles through the work. During this movement the free end of arm 101 engages the side of the arm 107 and rocks the rod 106 in a counter-clockwise direction to cause the several U-shaped thread tensioning members to move downwardly with a wiping action over the several threads, respectively, to remove any slack therefrom preparatory to the needles being inserted through the work from the left. The parts will now be in approximately the position shown in Fig. 5. The combined action of the rod 30 followed by the wiping action of the devices 110 acts to entirely remove the slack from the threads so that the

needles do not pierce the thread which otherwise might occasionally happen and thus cause imperfect work.

The needle carriage, gripper, and in fact the entire structure of the reciprocating device at the right in Fig. 4, may be of any well known structure. The invention herein rests entirely in the hollow work support 10 and the needle gripper which extends upwardly into and operates entirely within the confines of the frame 10 and also in the means above described for removing the slack from the depending threads so they will not be pierced by the needles.

Referring now to Figs. 1, 2 and 3, a brief description will be given of the means for operating the apparatus shown in Fig. 4, although the parts now to be described may be substantially like old and well known apparatus heretofore employed.

On the frame 40 are mounted tracks 41 and 42 on which may travel the carriages 43 and 44, respectively, in a well known manner. The gripper support 23 is supported from carriage 43 through the medium of arm 45 and the needle gripper supporting bar 15 is supported from carriage 44 by arm 46. Mounted on a shaft 47 is a spur gear 48. Fixed to the gear 48 is a sprocket wheel 49. A chain 50 passes over the sprocket wheel 49 and an idler sprocket 51 mounted on the frame 40 in any desired manner. A link 52 has one end secured to the chain 50 and the other end to carriage 43. It will thus be obvious that as gear 48 is rotated in a counter-clockwise direction as seen in Fig. 1, carriage 43 will be drawn to the left and when the gear 48 is rotated in a clockwise direction the carriage 43 will move to the right. As the operating means for carriage 44 is almost identical with that for carriage 43 it is thought to be unnecessary to repeat the description thereof.

Rotatably mounted on the bar 53 in any desired manner is a gear wheel 54 which is in constant mesh with a gear 55, the pivot 56 of which is carried by the bar 53. In fixed relation to gear 54 is a crank 57 by means of which the gear may be rotated. With the parts in the relative positions indicated in Fig. 1 the rotation of gear 54 will be transmitted through idler gear 55 to gear 48 and sprocket 49 to move the carriage 43 toward or from the work as the case may be.

Assuming now that the crank 57 is rotated in a counter-clockwise direction, thus drawing carriage 43 to the work support 10, as the needles carried by carriage 43 pierce the work on the work holders 10, the bifurcated portion 60 of rod 61 will engage the pin 62 extending laterally from the lever 63 pivotally supported at 64.

The operator will now press the pedal or lever 65 downwardly. This will do three things. The gripper bar 32 (Fig. 4) will be moved downwardly to move the grippers actuated thereby to its operative position, that is, to release the several needles. At the same time the gripper bar 33 will be moved upwardly to permit the gripper heads 18 to engage the needles. Thus the needles will be transferred from the grippers at the right in Fig. 4 to those at the left. The depression of lever 65 will also move idler gear 55 from engagement with gear 48 and into engagement with gear 66, it being maintained in mesh with operating gear 54 as both are pivotally mounted on the bar 53. The means for effecting these results will now be explained. Fixed to shaft 67 and extending laterally therefrom is an arm 68. A link or strap 69 joins the end of arm 68 to the lever 65. Thus when the lever 65 is depressed

the shaft 67 is rotated in a clockwise direction as seen in Fig. 1. Fixed to the shaft 67 is an eccentric or offset 70. A link 71 joins the offset 70 to the lower end of the bar 53. As the bar 53 is pivotally supported at 53' it is obvious that gear 55 will move from mesh with gear 48 and into mesh with gear 66 when the pedal 65 is depressed. Extending laterally from the shaft 67 and fixed thereto is an arm 72 the end of which is joined to the end of arm 74 of bellcrank lever 63 by the link 73. Thus when pedal 65 is depressed bar 61 will be moved up. Bar 61 is pivotally connected at its upper end to a lever 75 pivotally supported at 76.

The lever 75 is provided at the end thereof with a laterally projecting pin 77 (see Fig. 2) arranged to move in a cam slot 78 in the bracket 79 associated with bar 32. Thus it will be evident that as the rod 61 is moved upwardly the gripper bar 32 will move downwardly to move the gripper jaws 25 to inoperative position. Just the reverse action takes place in connection with the gripper operating bar 33 which is actuated by the rod or bar 80 in a manner similar to the operation of gripper bar 32 by rod 61.

Rod 80 (see Fig. 3) is provided with a notch 81 adapted to receive the pin 82 at the end of a laterally extending arm 83 fixed to shaft 84 which is pivotally mounted in the bearings 85. Fixed to the shaft 84 is a second arm 86 the free end of which is pivotally joined at 87 (see Fig. 1) to one end of link 73. Thus it will be seen that when lever 65 is depressed rod 80 will be lowered and gripper bar 33 will be raised to render the gripper heads 18 operative.

Pedal 88 is joined by link 89 to an arm 90 fixed on shaft 67. Thus when pedal 65 is depressed to rotate shaft 67 in a clockwise direction pedal 88 will be raised.

It has been described how gear 55 was moved from engagement with gear 48 and into engagement with gear 66 when pedal 65 was depressed. The crank 57 will now be turned in an anti-clockwise direction to move the needles carried by rods 12 to the left in Fig. 1 away from the work. A stop may be provided to limit this movement. The pattern bar 11 carrying the hollow work frames 10 will now be shifted. The reverse of the operations above described will now take place. This will be instituted by depressing pedal 88. It is believed the operations following will be readily understood from the above description.

Thus it will be seen that applicant has provided a hand embroidery machine which can be used in connection with tubular work such as seamless hose just as well as on plane surface work. Not only does the present invention permit of embroidering seamless hose but it operates more rapidly as only one of the carriages need be moved to the length of the thread to tighten the stitches.

It is obvious that applicant's invention may be embodied in embroidery machines having various kinds of needle grippers and gripper operating devices as well as different structures of carriages. Applicant also contemplates modifications in the form of the hollow work holder and in the details of the needle gripper for use therewith. The invention, therefore, should be limited only by the scope of the appended claims.

Having thus described my invention, what I claim is new and desire to secure by United States Letters Patent, is:

1. In an embroidery machine, a work support,

a series of hollow frames each having generally the contour of a hose carried thereby, a needle supporting bar, a series of needle actuating members carried by said bar, said members extending into said hollow frames, respectively, a needle gripper carried by each of said actuating members, a rod extending generally longitudinally of each of said actuating members for operating its said gripper to operative and inoperative positions, respectively, a lever external to each of said hollow frames for actuating said rod, a bar extending transversely of a plurality of said levers and acting directly thereon for actuating said levers simultaneously, and means for moving said needle supporting bar laterally to cause the needles to be removed from the work into said hollow frames and in a reverse direction to cause the needles to pierce the work.

2. In an embroidery machine, a work support, a series of hollow frames each having generally the contour of a hose adapted to hold a tubular member while being embroidered, carried thereby, a needle supporting bar, a series of needle actuating members carried by said bar, said members extending into said tubular members respectively, a needle gripper carried by each of said actuating members adjacent to the free end thereof, a rod extending generally longitudinally of each of said actuating members for operating its said gripper to operative and inoperative positions, respectively, a lever externally of each hollow frame for actuating each rod, an operating bar extending transversely of a plurality of said levers and acting directly thereon for actuating said rods in unison, and means for moving said needle supporting bar laterally to cause the needles to be removed from the work and in a reverse direction to cause the needles to pierce the work.

3. In an embroidery machine, a work support, a series of hollow frames each having generally the contour of a hose adapted to hold a tubular member while being embroidered, carried thereby, a needle supporting bar, a series of needle actuating members carried by said bar, said members extending into and substantially longitudinally of said tubular members respectively, a needle gripper carried by each of said actuating members adjacent to the free end thereof, a rod extending generally longitudinally of each of said actuating members for operating its said gripper to operative and inoperative positions respectively, a lever external to each tubular member for actuating each rod, an operating bar extending transversely of a plurality of said levers and acting directly thereon for actuating said rods in unison, and means for moving said needle supporting bar laterally to cause the needles to be removed from the work into said hollow frame and in a reverse direction to cause the needles to pierce the work, a needle carrying frame on the opposite side of the work from the needle actuating members, needle grippers carried by said needle carrying frame, and means for actuating the operating bar to cause opening movement of the first-mentioned needle grippers approximately simultaneously with closing of the second-mentioned needle grippers on the needles.

4. In an embroidery machine, a work support, a hollow frame having generally the contour of a hose carried thereby, a needle supporting bar, a needle actuating member carried by said bar, said member extending into and substantially longitudinally of said hollow frame, a needle

gripper carried by said actuating member, means for actuating said gripper to operative and inoperative positions, respectively, means for moving the said needle supporting bar to reciprocate said actuating member laterally within the confines of said hollow frame to cause a needle carried thereby to clear the work, and in the reverse direction to again pierce the work, a second needle carrying frame on the opposite side of the work, a needle gripper carried thereby, means for causing opening movement of the first-mentioned needle gripper approximately simultaneously with closing of the second-mentioned needle gripper on the needle, and means for moving said second needle carrying frame from the hollow frame to draw up the loop of the stitch formed by the operation of the first mentioned needle actuating member.

5. In an embroidery machine, a work support, a hollow frame adapted to hold a tubular member while being embroidered carried thereby, a needle supporting bar, a needle actuating member carried by said bar, said member extending into said tubular member, a needle gripper carried by said actuating member, means for actuating said gripper to operative and inoperative positions, respectively, means for operating said needle supporting bar to move said actuating member laterally within the confines of said hollow frame to cause a needle carried thereby to clear the work, and in the reverse direction to again pierce the work, a second needle carrying frame, a needle gripper carried thereby, means for causing opening movement of the first-mentioned needle gripper approximately simultaneously with closing of the second-mentioned needle gripper on the needle, and means for moving said second needle carrying frame from the hollow frame to draw up the loops of the stitches formed by the operation of the first-mentioned needle actuating member and toward the work to cause the needle to again pierce the work.

6. In an embroidery machine, a work support, a series of hollow frames having generally the contour of a hose and adapted to hold a tubular member while being embroidered, carried thereby, a needle supporting bar, a series of needle actuating members carried by said bar, said members extending into said tubular members respectively, a needle gripper carried by each of said actuating members, means for actuating said grippers to operative and inoperative positions, respectively, means for operating said needle supporting bar to move said actuating members laterally within the confines of said hollow frames, respectively, to cause the needles carried thereby to clear the work, and in the reverse direction to again pierce the work, a second needle carrying frame, needle grippers carried thereby, means for causing opening movement of the first-mentioned needle gripper approximately simultaneously with closing of the second-mentioned needle gripper on the needle, and means for moving said second needle carrying frame from the hollow frames to draw up the loops of the stitches formed by the operation of the first mentioned needle actuating members.

7. In an embroidery machine, a work supporting frame, an apron adjacent to the embroidering point, a recess in said apron, a reciprocating needle carrying frame, a rod extending longitudinally of said frame in a position to engage said recess as the needle frame approaches the work and resilient means supporting said bar

so it will engage said apron slightly before the needle engages the work.

8. In an embroidery machine, a work supporting frame, an apron extending longitudinally of said frame adjacent to the embroidering point, a recess in said apron, a reciprocating needle carrying frame, a rod extending longitudinally of said frame in a position to engage said recess as the needle frame approaches the work and laterally extending spring actuated arms supporting said bar so it will engage said apron before the needles engage the work.

9. In an embroidery machine, a work supporting frame, an apron adjacent to but slightly below the embroidering point, a recess in said apron having a downwardly and inwardly inclined surface, a reciprocating needle carrying frame, a rod extending longitudinally of said frame in a position to engage said inclined surface adjacent to the upper edge thereof as the needle frame approaches the work, and resilient means carried by said frame for supporting said bar.

10. In an embroidery machine, a work supporting frame, an apron extending longitudinally of said frame adjacent to but slightly below the embroidering point, a recess in said apron having a downwardly and inwardly inclined surface, a reciprocating needle carrying frame, a rod extending longitudinally of said frame in a position to engage said inclined surface adjacent to the upper edge thereof as the needle frame approaches the work and laterally extending spring arms carried by said frame supporting said bar.

11. In an embroidery machine, a work supporting frame, an apron extending longitudinally of said frame adjacent to but slightly below the embroidering point, a recess in said apron having a downwardly and inwardly inclined surface, a reciprocating needle carrying frame, a rod extending longitudinally of said frame in a position to engage said inclined surface adjacent to the upper edge thereof as the needle frame approaches the work and spring pressed telescoping arms supporting said bar so as to engage said apron before a needle on the needle carrying frame engages the work.

12. In an embroidery machine, a pair of reciprocating carriages, one on each side of the work, a rotatable member on one of said carriages positioned adjacent to the work point, a thread wiper carried by said rotatable member, resilient means normally retaining said wiper in inoperative position, an arm connected to said rotatable member for rotating said member and wiper, and an actuating arm carried by the other of said carriages in a position to engage the first-mentioned arm as the said other carriage approaches the work, whereby said wiper is brought into wiping engagement with the work prior to the insertion of the needle therethrough by the movement of the other said carriage.

13. In an embroidery machine, a pair of horizontally reciprocating carriages, one on each side of the work, a member rotatable on an horizontal axis on one of said carriages positioned slightly below the work point, a thread wiper carried by said rotatable member, resilient means normally retaining said wiper in elevated inoperative position, an arm connected to said rotatable member for rotating said member and wiper, and an actuating arm carried by the other of said carriages in a position to engage the first-mentioned arm as the said other carriage approaches the work, whereby said wiper is brought into wiping en-

gagement with the work prior to the insertion of the needle therethrough by the movement of the other said carriage.

14. In an embroidery machine, a pair of reciprocating carriages, one on each side of the work, a rotatable member on one of said carriages positioned adjacent to the work point, a thread wiper carried by said rotatable member, resilient means normally retaining said wiper in inoperative position, an arm connected to said rotatable member for rotating said member and wiper, an actuating arm carried by the other of said carriages in a position to engage the first-mentioned arm as the said other carriage approaches the work, whereby said wiper is brought into wiping engagement with the work prior to the insertion of the needle therethrough by the movement of the other said carriage, a needle gripper on the other said carriage, means for holding said needle gripper in inoperative position and means for holding said actuating arm in inoperative position while said needle gripper is in inoperative position and for moving said actuating arm to operative position when said needle gripper is moved to operative position.

15. In an embroidery machine, a reciprocating carriage on one side of the work, a second reciprocating carriage on the other side of the work, a rotatable member on the first-mentioned carriage positioned adjacent to the work point, a thread wiper carried by said rotatable member, resilient means normally retaining said wiper in inoperative position, an arm connected to said rotatable member for rotating said member and wiper, an actuating arm carried by the second mentioned carriage in a position to engage the first-mentioned arm as the said other carriage approaches the work, whereby said wiper is brought into wiping engagement with the work prior to the insertion of the needle therethrough by the movement of the other said carriage, and means for retaining said arms in inoperative relation when said first-mentioned carriage approaches the work.

16. In an embroidery machine, a pair of reciprocating carriages, one on each side of the work, a member rotatable on a horizontal axis on one of said carriages positioned adjacent to the work point, a thread wiper carried by said rotatable member, resilient means normally retaining said wiper in elevated inoperative position, an arm connected to said rotatable member for

rotating said member and wiper, an actuating arm carried by the other of said carriages in a position to engage the first-mentioned arm as the said other carriage approaches the work, whereby said wiper is brought into wiping engagement with the work prior to the insertion of the needle therethrough by the movement of the other said carriage, and means on the other of said carriages for maintaining said actuating arm in inoperative position while said one of said carriages approaches the work.

17. In an embroidery machine, a work support, a frame adapted to hold the work while being embroidered, carried thereby, a needle supporting bar, a needle actuating member carried by said bar and extending therefrom in a direction substantially parallel to the surface of the frame, a needle gripper carried by said actuating member, means for operating said gripper to operative and inoperative positions, respectively, means for moving said needle supporting bar laterally to cause the needle to be removed from the work and in a reverse direction to cause the needle to pierce the work, a second needle carrying frame on the opposite side of the work, a needle gripper carried thereby, and means for causing opening movement of the first-mentioned needle gripper approximately simultaneously with closing of the second-mentioned needle gripper on the needle.

18. In an embroidery machine, a work support, a series of frames adapted to hold the work while being embroidered, carried thereby, a needle supporting bar, a series of needle actuating members carried by said bar and extending therefrom generally parallel to the surface of the frame, a needle gripper carried by each of said actuating members adjacent to the free end thereof, rods, one associated with each of said actuating members for operating its gripper to operative and inoperative positions, respectively, means for actuating said rods in unison, means for moving said needle supporting bar laterally to cause the needles to be removed from the work and in a reverse direction to cause the needles to pierce the work, a second needle carrying frame on the opposite side of the work, a needle gripper carried thereby, and means for causing opening movement of the first-mentioned needle gripper approximately simultaneously with closing of the second-mentioned needle gripper on the needle.

OTTO DE CARDY.