Nov. 12, 1940. F. VON HOLTZ 2,220,924

SHUTTLELESS WIRE MESH LOOM

Filed Aug. 11, 1938 3 Sheets-Sheet 1

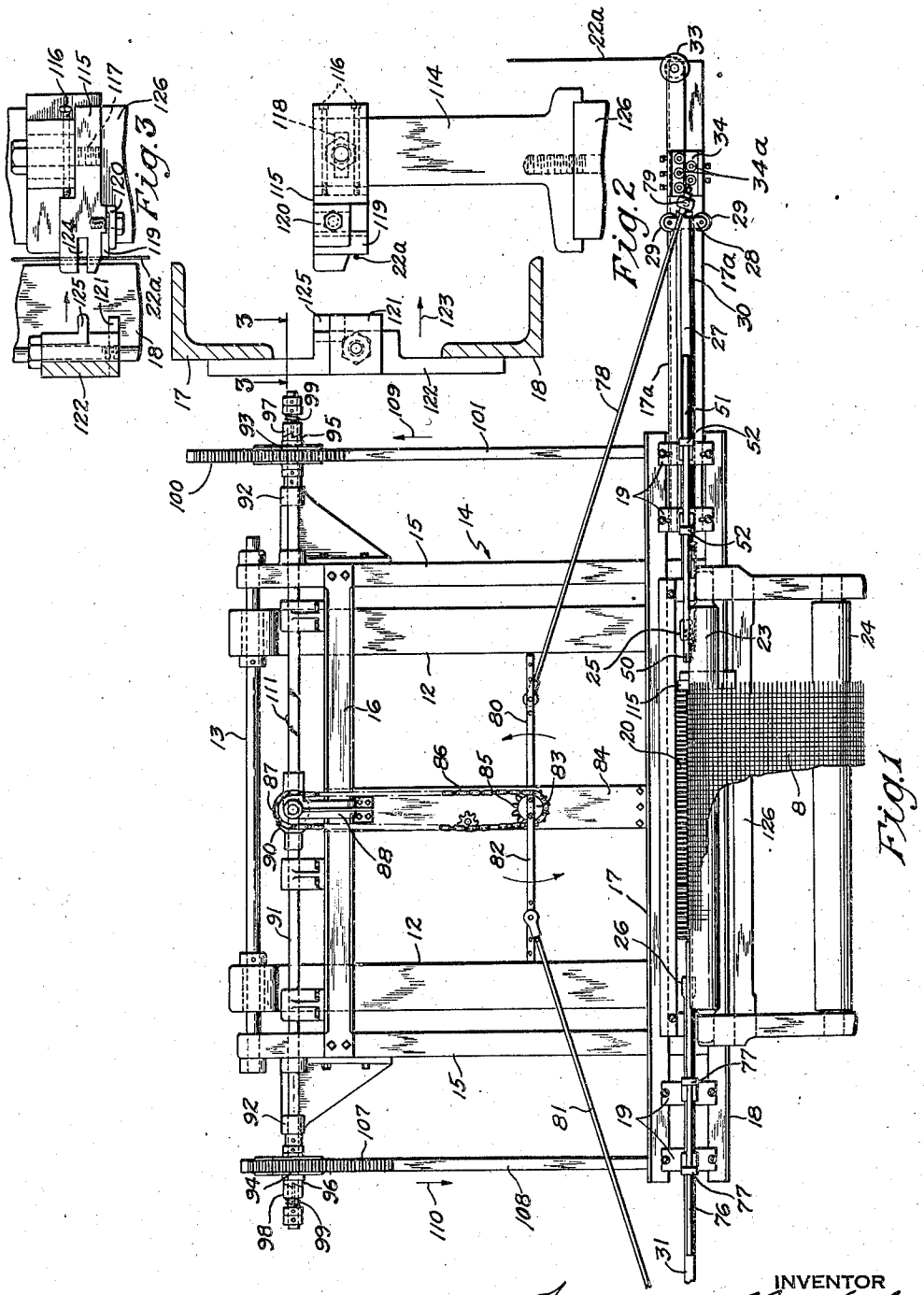


Fig. 1

Fig. 2

Fig. 3

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SHUTTLELESS WIRE MESH LOOM

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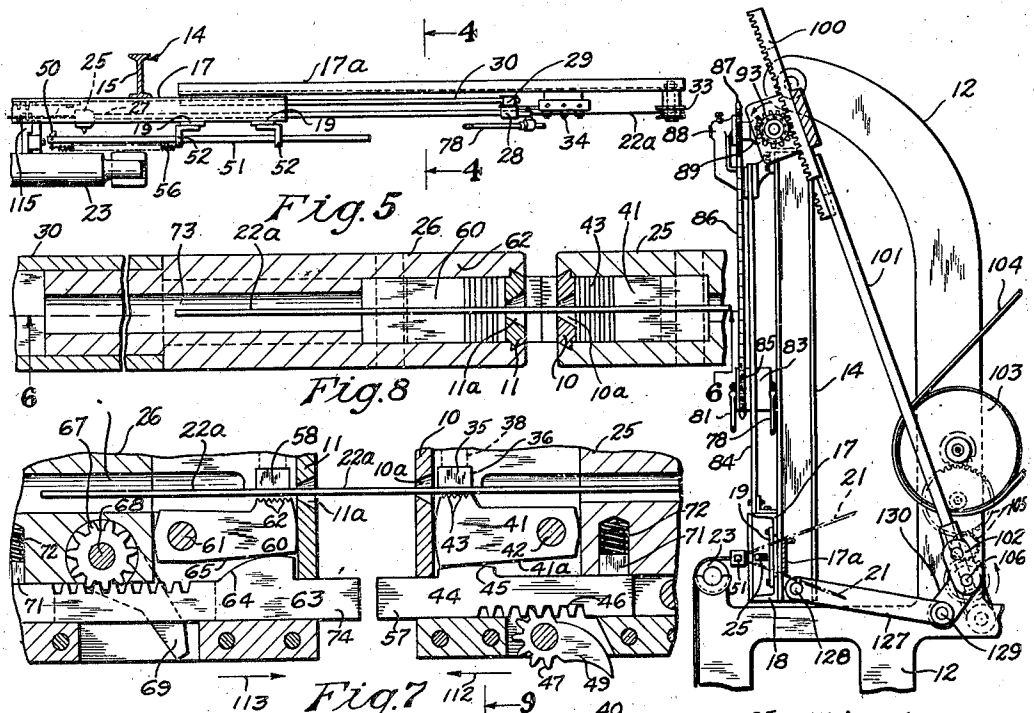


Fig. 5

Fig. 8

Fig. 7

Fig. 4

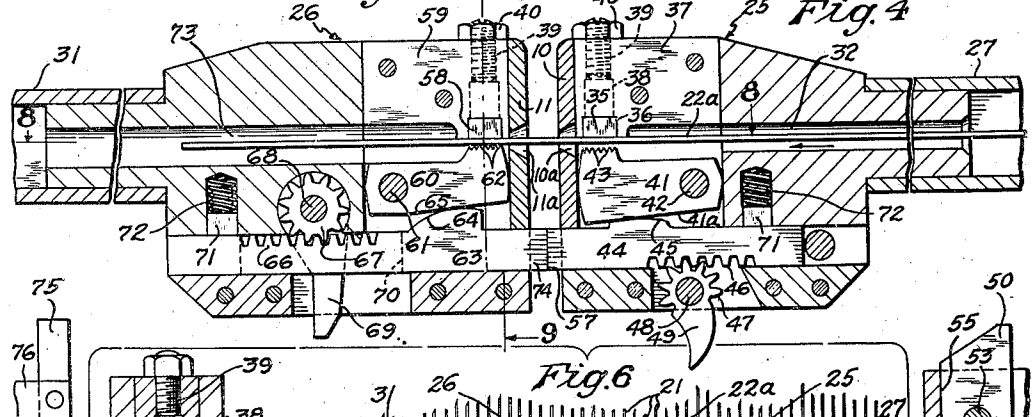


Fig. 6

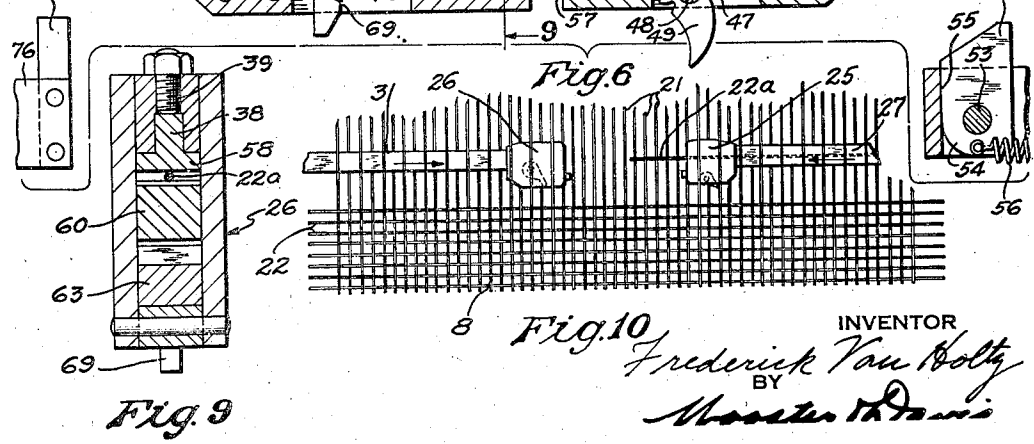


Fig. 10

Fig. 9

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SHUTTLELESS WIRE MESH LOOM

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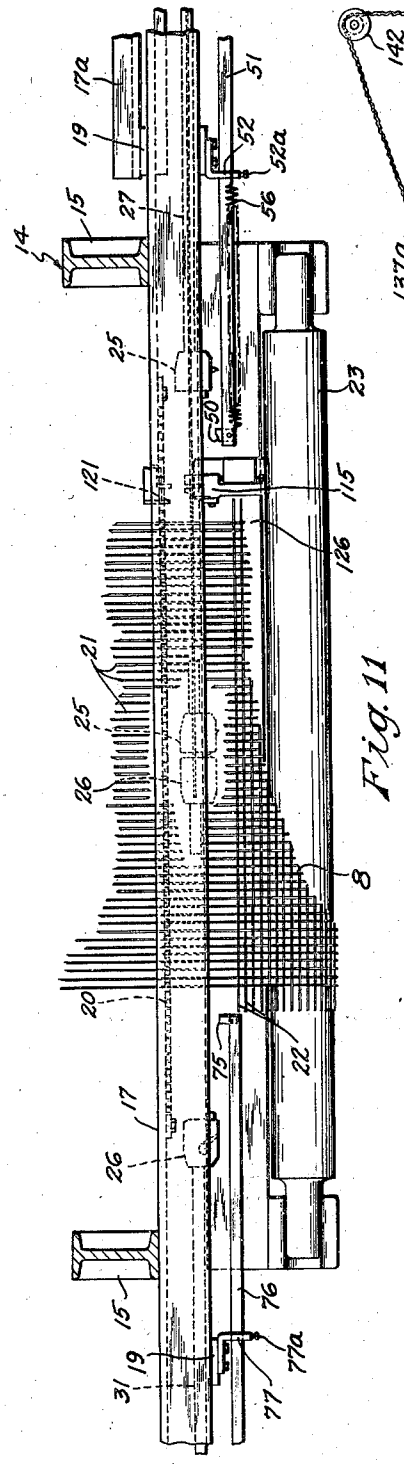


Fig. 11

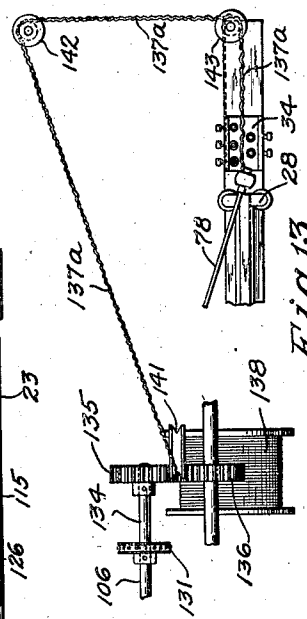


Fig. 13

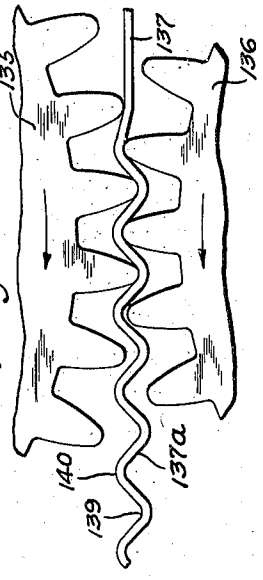


Fig. 14

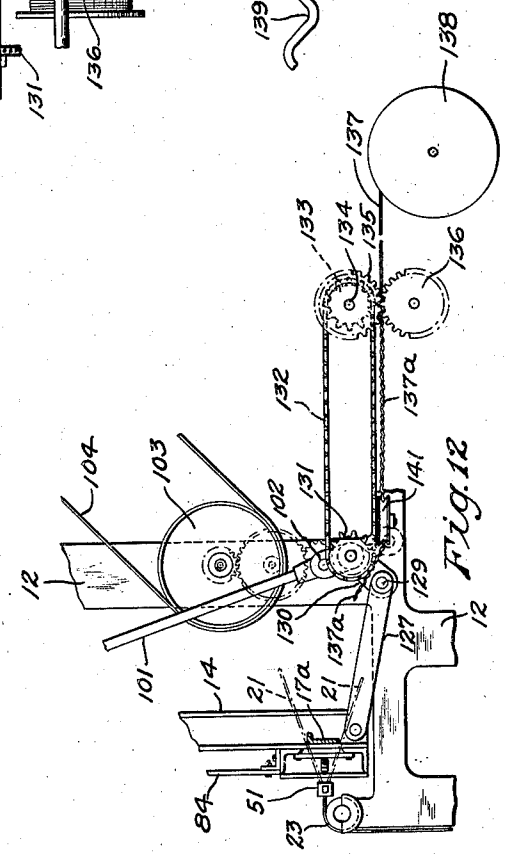


Fig. 12

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UNITED STATES PATENT OFFICE

2,220,924

SHUTTLELESS WIRE MESH LOOM

Frederick Von Holtz, Fairfield, Conn., assignor to C. O. Jelliff Manufacturing Corporation, Southport, Conn., a corporation of Connecticut

Application August 11, 1938, Serial No. 224,246

11 Claims. (Cl. 139—127)

This invention relates to looms, particularly to looms for weaving wire mesh or cloth, including relatively large mesh using relatively heavy wire, and it is a principal object of the invention to provide a loom in which the filler or cross wires are inserted in the open shed without the use of a shuttle or bobbin thus doing away with the necessity of renewing the bobbins in the shuttle, with consequent holding up or stopping of the loom, and so that the weaving operation may be continued indefinitely, thus doing away with the large loss of time required for renewing the bobbins in the old type of machine.

With the foregoing and other objects in view, I have devised a construction, one form of which is illustrated in the accompanying drawings forming a part of this specification. It will, however, be understood that various changes and modifications may be employed within the scope of the invention and the claims.

In these drawings:

Fig. 1 is a front elevational view of the main portion of the loom with my improvement applied thereto;

Fig. 2 is a detailed vertical sectional view through a portion of the lay and a cut-off mechanism associated therewith;

Fig. 3 is a partial top plan and sectional elevation of the device of Fig. 2, the section being substantially on line 3—3 of Fig. 2;

Fig. 4 is an end view of the main portion of the loom with a portion of the lay in section, the view being taken substantially on line 4—4 of Fig. 5;

Fig. 5 is a top plan view of the guide and trip mechanism at one side of the lay;

Fig. 6 is a horizontal longitudinal section through the heads for laying the wire in the open shed showing the position of the elements after they have come together within the shed, the section being substantially on line 6—6 of Fig. 8;

Fig. 7 is a similar view of parts of these elements showing their position just before they come together within the shed;

Fig. 8 is a longitudinal section substantially on line 8—8 of Fig. 6;

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

Fig. 10 is a plan view of a portion of the wire mesh and shed showing the cross wire inserting means within the shed;

Fig. 11 is a top plan view of a portion of the warp and mesh, and the lay associated therewith;

Fig. 12 is an elevational view looking toward the right hand end of the machine showing an alternative arrangement showing mechanism for supplying a crimped cross or filler wire instead of a straight wire to be laid in the shed;

Fig. 13 is a view thereof from the front of the machine; and

Fig. 14 is a detailed enlarged view showing the means for crimping the wire.

In ordinary looms the cross or filler wires are laid in the shed by a reciprocating shuttle carrying a spool or bobbin on which the filler or cross wire is wound. Due to the restricted space available the amount of wire which may be carried on the spool or bobbin is limited so that a continuous weaving operation can be carried on for a short time only, when the loom must be stopped to permit removal of the empty spool or bobbin from the shuttle and the insertion of a filled or wound spool or bobbin. It will be obvious that the changing of the bobbins requires considerable time during which the loom is stopped or not operated. In fact with the coarser wires considerably more time may be required for changing the spool or bobbins than is available for the actual weaving operation. Furthermore, this type of device requires winding devices for filling the spools or bobbins.

In the present machine the use of a shuttle with the consequent spool or bobbin is done away with, the cross or filler wires being inserted in the open shed from one side thereof and drawn through to the proper position by reciprocating devices moving into and out of the open shed at the opposite sides thereof, the wires being fed from a continuous coil or supply of any desired size or length so that the machine may operate practically continuously for weaving a mesh of a length corresponding to the length of the warp wires or for the length of time required to exhaust the coil or filler wire of any desired size. It will be evident that this mechanism therefore greatly reduces the time the loom is shut down and not operating. It therefore greatly increases production and the efficiency of the machine and the operator.

The drawings do not show the entire loom mechanism as a great deal of it may be of standard construction, and therefore only sufficient is illustrated for a clear understanding of the invention. The upper part of the upright main frame is indicated at 12, there being two of these frame members toward the opposite ends of the machine, and extending between them at their upper ends is a shaft 13 on which the swinging lay frame 14 is mounted so that the lower end

of the lay may be swung forwardly and backwardly in the usual manner in proper timed relation with the operation of the shed mechanism (not shown) to lay and position the filler or cross wires. This lay frame includes two upright members 15 shown in the present case as I-beams hung at their upper ends on the shaft 13 outside the frame members 12, and they are connected adjacent their upper ends by the transverse beam 16. At their lower ends these members 15 carry horizontally connecting angle members 17 and 18 connected by any suitable number of straps 19, and carry between them the reed 20 passing vertically between the warp wires indicated at 21 in the usual manner, and as the lower end of the lay is swung back and forth to position the cross wires in conjunction with proper feed of the warps to set the cross wires at the proper spacing for the desired mesh in the well known and usual manner. As indicated above the shed mechanism for alternately raising and lowering the warp wires 21 to form the shed is not shown, but it will be understood that the alternate warp wires are raised and lowered alternately in the usual manner to cross over the last laid cross wire in preparation for the laying of the next cross wire. The filler or cross wires are indicated at 22. The woven mesh or cloth 8 may be run over a guide bar or roller 23 and wound on a cloth beam 24 in the usual manner, the feed mechanism for rotating this beam for the step by step feed being of any usual type and is not shown as it forms no part of the present invention.

As suggested above, in this device, instead of having a shuttle and picker mechanism for throwing the shuttle through the shed, means are provided for inserting the free end of a cross wire through a portion of the shed from one side thereof and other means operated from the other side of the shed for gripping this free end of the wire and drawing it through the shed to the proper location. Then the wire is cut off and positioned by the reed, and after the warp wires are reversed this mechanism again operates to insert another cross wire in the shed and so on indefinitely.

This mechanism comprises two reciprocating head members 25 and 26 reciprocated into and from the shed at the opposite sides thereof. The head 25 is mounted on a tubular bar 27 slidable in suitable guides carried between the lay beams 17 and 18 and carried at its free end on a cross head 28 having rollers 29 running on the opposite edges of a guide bar 30 carried by the lay beams 17 and 18 and projecting outwardly beyond the free end thereof as shown. The other reciprocable head 26 is mounted in a similar manner at the opposite side of the warp wires and at the other end of the lay beams, this head being carried by the tubular bar 31 running through suitable guides and connected to a cross head similar to the cross head 28 and guided in a similar manner.

The body of the head 25 (as shown more clearly in Figs. 6 to 9) is provided with a longitudinal opening 32 for the passage of the cross or filler wire 22*a*. This wire is fed from any suitable supply, as from any desired size of coil (not shown), running over a guide roller 33 to a straightener device 34, both carried by an extension 17*a* of the lay members 17 and 18 and mounted on the straps 19 extending between them. This straightener may be of any suitable type, such for example as a series of alternately arranged grooved rollers between which the wire passes and is bent alternately in opposite directions a suitable amount in the well known manner to straighten the wire before it passes into the tubular bar 27 and the head 25. Within this head is a stationary adjustable gripping jaw 35 seated in a recess 36 in a block 37 mounted in the head, and having a stem 38 against which the adjusting screw 39 threaded into the block 37 engages and by which the jaw may be adjustable for different size wire and to locate it in the proper location, and then the adjusting screw secured by a lock nut 40. Cooperating with this jaw is a movable jaw 41 pivoted in the head at 42 and having a roughened gripping surface 43 opposite the jaw 35 with the wire 22*a* between them. Mounted to slide in the head is a cam or slide 44 having a cam surface 45 engaging the inclined underside 41*a* of the jaw 41. This jaw has a rack 46 meshing with a pinion 47 mounted on a short transverse shaft 48 and having an extension finger 49 projecting from one side of the head to engage a tripping pawl or stop 50 at certain times during the movement of the head 25 to operate the cam 44 and the jaw 41 as will later be described. The pawl or stop 50 is mounted on a bar 51 mounted on the lay, in the present case by brackets 52 on two of the cross straps 19, and this bar is adjustable in these brackets so as to properly position the pawl or stop 50, and the bar is held in adjusted position by any suitable means such for example as set screws 52*a*. The stop 50 is pivoted at 53 and is rounded at 54 so that the upper end may swing to the right as viewed in Fig. 6 but cannot swing to the left beyond the upright position shown as it rests against a stop wall 55. A spring 56 is connected to this pawl or stop as shown and holds it in the upright position against the stop wall 55, but permits the upper end to swing toward the right at certain times as will later be described. The cam or slide 44 is extended so as to project from the head as shown at 57.

Mounted in the other head 26 is a stationary jaw 58 similar to the jaw 35 and mounted in the same manner in the block 59 in the head. Opposite this jaw is a movable jaw 60 pivoted at 61 and having a roughened gripping surface 62 opposite the jaw 58. This jaw is operated by a sliding cam or slide 63 having a cam surface 64 to engage the inclined back surface 65 of the jaw. This cam is mounted to slide in the head and has a rack 66 meshing with the pinion 67 mounted on a short transverse shaft 68, and having an operating finger 69 projecting through an elongated slot 70 in the cam 63 and also projecting beyond the surface of the head 26 under certain conditions as shown in Fig. 6. To prevent casual movement of the cams or slides 44 and 63 there is provided for each a friction block 71 engaging the side wall of the cam and pressed against the same by spring 72. This block will hold the cams in a given position until they are positively shifted. The head 26 has a longitudinal opening 73 in alignment with the jaws 58 and 60 to receive the free end of the wire as shown in Fig. 6. The cam 63 also has a projecting end 74 projecting beyond the forward surface of the head 26 in alignment with the projecting end 57 of the cam 44 in the other head 25 for a purpose presently to be described. The projecting finger 69 carried by the head 26 may engage the stationary stop 75 under certain conditions, this stop being mounted on an ad-

justable bar 76 similar to the bar 51 for the stop 50, and adjustably mounted in similar brackets 77 mounted on the connecting straps 19 at the opposite end of the members 17 of the lay, and may be secured in adjusted positions by a set screw 77a.

The heads 25 and 26 are reciprocated into and out of the shed in certain timed relation with the operation of the warp wires and of the swinging of the lay to cause the reed 20 to set the cross wire. For this purpose there is a connecting rod 78 pivotally connected to the cross head 28 at 79 and at its opposite end to a rotatable lever arm 80. Similarly the head 26 is operated by a connecting rod 81 connected to a pivotal lever 82 and at its opposite end connected to a cross head on the tubular bar 31 similar to the cross head 28. The levers 80 and 82 are mounted on opposite ends of the rotatable block 83 mounted in an upright 84 extending between the upper member 17 and the member 16 of the lay. This block carries a sprocket 85 operated by a chain drive 86 from an upper sprocket 87 mounted on a shaft in the bearing bracket 88. On this sprocket shaft is a beveled gear 89 meshing with another beveled gear 90 on the cross shaft 91 which runs in suitable bearings 92 mounted on the uprights 15. Mounted to turn on this shaft at the opposite end thereof are spur gears 93 and 94 having clutch teeth 95 and 96 respectively on their hubs adapted to engage similar clutch teeth on collars 97 and 98 splined on the shaft so as to be slidable thereon but which cause the shaft to turn with them, and a spring 99 for each clutch collar tends to shift it to engagement with the clutch teeth on the hubs of the gears. The gear 93 meshes with a reciprocating rack 100 operated by a connecting rod 101 from a crank 102 rotated from suitable driving mechanism, as by a pulley 103 and belt 104 operated from any suitable source of power (not shown), with a suitable gear train 105 running to the shaft 106 on which the crank 102 is mounted.

The gear 94 meshes with a similar reciprocating rack 107 operated by a connecting rod 108 from another crank on the shaft 106 similar to the crank 102 but set at about 180° from the first crank so that as the shaft 106 rotates the rack 100 is being moved upwardly as indicated by the arrow 109 while the rack 107 is being moved downwardly as indicated by the arrow 110, and vice versa. It will be seen that the clutch 95, 97 is so arranged that when the rack 100 is moving upwardly the gear 93 is driving the shaft 91 in the direction indicated by the arrow 111, and during this movement as the rack 107 is moving downwardly the clutch 97 is merely rotating backwardly without driving the shaft. However, on the upward movement of the shaft 107 the gear 94 will drive the shaft 91 in the same direction by the action of the clutch 96, 98 while during this movement the rack 100 is moving downwardly and the clutch 95 is rotating backwardly without affecting the shaft. The shaft 91 is therefore driven a full revolution at a time with pauses between these revolutions to permit operation of the shed and swinging of the lay to set the cross wire.

On each revolution of this shaft 91 there is a complete revolution of the crank arms 80 and 82, and it will be seen that a complete revolution of these arms reciprocates the rods 27 and 31 toward and from each other and therefore reciprocate the two heads 25 and 26 toward and from each other. It will be seen that in the normal position shown in full lines Figs. 1 and 11 the heads 25 and 26 are on opposite sides of the warp wire set up 21, and therefore are on opposite sides of the shed. During the first half revolution of the crank arms 80, 82 which occurs after the shed has been formed or opened by raising one half of the warp wires and depressing the other half, the heads are shifted into the shed from the opposite sides thereof to the dotted line position of Fig. 11 which is also the position of Fig. 6.

Before this movement starts the free end of the wire 22a has been threaded through the head 25 and projects therefrom a suitable distance. As the head 25 moves forwardly toward the shed the finger 49 hits the stop 50 causing this finger 49 to be thrown to the right and upwardly to the position of Fig. 7. This movement turns the gear 47 and through the rack 46 slides the cam or slide 44 to the left or toward the forward end of the head. This movement causes the cam surface 45 to slide on the inclined surface 41a of the pawl 41 and swing its gripping surface 43 against the wire 22a and firmly grip this wire between the jaws 43 and 35. It will therefore be seen that as the head 25 moves forward into the shed it carries the wire 22a with it. During this movement of the head 25 into the shed the head 26 is also moving into the shed from the opposite side thereof, and the jaw 60 and cam 63 are during this movement in the released position as shown in Fig. 7.

As the two heads approach each other at substantially the center of the shed which is the position of Fig. 7, their movements being indicated by the arrows 112 and 113, the free end of the wire 22a which projects from the head 25 is inserted in the head 26 between the jaws 58 and 60. The front walls of the heads may be formed by inserted plates 10 and 11 having guide openings 10a and 11a for guiding the end of the wire. As the two heads come substantially together the two projecting ends 57 and 74 of the cams 44 and 63 engage, pushing the cam 44 to the right and the cam 63 to the left to the position of Fig. 6. This movement of the cam 44 to the right permits the jaw 41 to release the wire 22a while the movement of the cam 63 to the left by sliding of the cam surface 64 on the inclined surface 65 clamps the jaw 60 against the wire so that it is clamped between the jaws 60 and 58. The other half revolution of the crank arms 80 and 82 now begins, moving the head 25 to the right and head 26 to the left. It will be apparent that now the jaw 41 is released the movement of the head 25 will have no effect on the wire, but as the jaws 60 and 58 are gripping the wire movement of the head 26 to the left will draw the wire with it and finish placing this cross wire in the shed.

After the head 26 passes out of the shed the projecting finger 69 (Fig. 6) engages the stationary stop 75 throwing this finger to the position of Fig. 7 which movement through the gear 68 and rack 66 shifts the cam 63 to the right and releases the jaw 60. This, of course, releases the grip on the wire 22a and this retracting movement of the head 26 is carried far enough so that the head slides completely off the free end of the wire permitting the wire which is now laid in the shed to be shifted forwardly to the proper position by the reed 20. As the lay swings forwardly to thus operate the reed 20 the wire is automatically cut off to proper length.

This cutting mechanism is shown more in de-

tail in Figs. 2 and 3. Mounted on the stationary frame of the machine, in the present case the connecting bar 126 connecting the end members 12 of the frame, is an upright bracket 114 carrying at its upper end a block 115 which may be adjusted forwardly or backwardly by any suitable means such as adjusting screws 116, the block being secured by a suitable bolt 117 threaded into the block and extending through an elongated slot 118. After adjustment it may be clamped in the adjusted position by the bolt 117. At its forward end this block carries a removable cutter 119 secured by any suitable clamp 120, it being located at the outer side of the wire 22a as indicated. Mounted to swing with the lay is a complementary cutter blade 121. This is mounted on a connecting bracket 122 carried by the member 17 of the lay and it is adjustable on this bracket so that it may be properly positioned with respect to the cutter 119. It will be seen that as the lay member 17 is swung forwardly as indicated by the arrow 123 the cutter 121 will be forced against the wire 22a and by cooperation with the cutter 119 will sever the wire. This cutter as shown in Figs. 1 and 11 is located at the desired position to the right of the warp shed. In order to insure proper operation of the cutter the block 115 may have therein above the wire 22a a guideway 124 with which cooperates a guide 125 on the bracket 122 so as to maintain the two cutters 119 and 121 in proper alignment during the cutting operation. As the lay swings back and the warp threads are part of them raised and part of them lowered to form the shed the heads 25 and 26 are again fed forwardly into the shed to lay the next cross wire in the same manner.

As the head 25 is moved backwardly out of the shed the trigger 49 which during this movement is extended as shown in Fig. 6 hits the pivoted stop 50, but as this stop is free to swing to the right the trigger merely slides over this stop. On reverse movement of the head 25 forforwardly the trigger 49 engages the right hand side of the stop 50, and as this stop connot swing to the left the trigger 49 is swung up to the position of Fig. 7, and as previously described this movement operates the cam 44 to the left causing the jaw 41 to grip the wire 22a, and as also previously described as this head 25 again moves into the shed it carries the next length of wire into the shed to be gripped and drawn completely into the shed and across the warp wires by the head 26 as previously described. The operation is then again repeated indefinitely and each time the two heads 25 and 26 are reciprocated into and out of the shed a cross or filler wire 22 is laid across the warp threads.

The lay is swung backwardly and forwardly by links 127 pivoted to the lay at 128 and at 129 to a crank arm 130 on the shaft 106.

In Figs. 12, 13 and 14 is shown means whereby the cross or filler wires may be crimped before they are laid in the shed, the crimping giving them substantially the shape they will have when laid in the mesh, thus giving a mesh in which the wires are preformed before being placed in the mesh to substantially their proper shape when in the completed mesh or screen and retaining the wires in their relative positions. In this arrangement there is a sprocket 131 mounting the shaft 106 connected by a drive chain 132 with a sprocket 133 on the shaft 134. On this shaft is a gear 135 loosely meshing with a similar gear 136 so that the two gears are driven by the chain 132. The filler wire 137 corresponding to the wire 22a is fed from a supply coil 138 and between these gears as shown in Figs. 12 and 14. The teeth of the gears are so shaped and arranged that as the wire passes between them it is crimped to the desired shape as indicated at 137a which is preferably substantially the shape it is desired the wire should have when made into finished mesh or screen, the distance between the opposite bends 139 and 140 being the distance between adjacent warp wires 21. The crimped wires run from these gears over a suitable guide pulley 141, over a second guide pulley 142 to a third guide pulley 143 on the lay beam extension 17a, and is fed from here to the reciprocating head member 25 for insertion in the shed as described above in connection with the straight wire. With this crimped wire the straightener 34 is either omitted or the rollers 34a thereof are separated so as to have no straightening effect on the wire. Otherwise the operation is the same as with the straight wire.

It will be seen that with this mechanism no shuttle is required, doing away with shuttle throwing mechanism and the use of wound spools or bobbins. It will also be seen that the operation of laying the cross or filler wires may be continued indefinitely depending on the amount of wire in the supply coil or the length of the warp wires, and that there is no necessity of stopping the loom for the changing of spools or bobbins in a shuttle, thus greatly increasing the efficiency of the machine and the output.

Having thus set forth the nature of my invention, what I claim is:

1. In a wire mesh loom, means for inserting the cross or filler wires in the open shed comprising a grip for the wire movable into the shed from one side thereof to insert the wire, a second grip movable into the shed from the opposite side thereof to receive the wire from the first grip and draw it through the shed, means for moving said grips into and from the shed in timed relation with the operation of the shed, and cooperating means associated with the grips and movable therewith arranged to engage as the grips approach each other and operable by relative movement of the grips toward each other to release the first grip and set the second grip.

2. In a wire mesh loom, means for inserting the cross or filler wires into the open shed comprising a grip for the wire movable into the shed from one side thereof to insert the wire, means for gripping the inserted wire and holding it while the first grip is being withdrawn from the shed, means for moving said first grip into and from the shed in timed relation with operation of the shed, and means associated with each grip for operating them, the means associated with the first grip being arranged to engage the means associated with the second grip and both operated by relative movement of the first grip toward the second to release the first grip and set the second grip.

3. In a wire mesh loom, means for inserting the free end of a cross or filler wire into the open shed and movable into the shed from one side thereof, means operable from the other side of the shed to grip said free end of the wire to retain it in the shed, means for operating the gripping means arranged to be engaged by the first mentioned means as the first and second mentioned means approach each other and op-

erable by relative movement of said two means toward each other to operate the gripping means to grip the wire, and means for operating said first and second mentioned means in timed relation with the operation of the shed.

4. In a wire mesh loom, means for carrying the free end of a cross wire into and part way across the open shed from one side thereof, means movable into the shed from the opposite side thereof to grip the wire and draw it into the shed, means associated with the gripping means arranged to be engaged by the first means as the first and second means approach each other and operable by relative movement of said means toward each other to release the first means, and means for operating the said first and second mentioned means in timed relation with the operation of the shed.

5. In a wire mesh loom, means for inserting the cross or filler wires in the open shed comprising reciprocable heads on opposite sides of the shed, jaws on the heads for gripping the wire, means for moving said heads into and from the open shed in timed relation with the operation of the shed, means outside the shed for causing the jaw on one of said heads to grip the wire and carry it into the shed, cooperating means on said heads arranged to engage as the heads approach each other and operable by relative movement of the heads toward each other to release the jaw on the first head and set the jaw on the second head to draw the wire through the shed, and means outside the shed to release the second jaw after it draws the wire into the shed.

6. In a wire mesh loom, means for inserting the cross or filler wires in the open shed comprising reciprocable heads on opposite sides of the shed, jaws on the heads for gripping the wire, means for moving said heads into and from the open shed in timed relation with the operation of the shed, means on one of said heads to set the jaws, a stop in position to be engaged by said means as the head moves forward toward the shed to operate the jaws to grip the wire to carry it into the shed, means on the heads operated as the heads meet within the shed to release the jaws on the first head and set the jaws on the second head to grip the wire and draw it into the shed as said head is moved outwardly, a stop to release the second jaws after the wire is set in the shed, and means to cut off the wire to length.

7. In a wire mesh loom, a head on each of the opposite sides of the shed, means for moving said heads into and from the open shed, jaws on one of said heads for gripping a cross wire and carrying it into the shed, jaws on the other head for gripping the wire carried by the first head and drawing it into the shed, slides on said heads arranged to operate the jaws and having portions projecting from the heads in alignment so that as the heads come together said projecting portions engage to shift the slides, and said slides being arranged so that such shifting thereof will release the jaws on the first head and set the jaws on the second head.

8. In a wire mesh loom including a swinging lay, means carried by the lay for inserting the cross or filler wires in the open shed comprising a grip for a wire movable into the shed from one side thereof to insert the wire, a second grip movable into the shed from the opposite side thereof to receive the free end of the wire from the first grip and draw it through the shed, means for moving said grips into and from the shed in timed relation with the operation of the shed and the lay, cooperating means associated and movable with each grip arranged to engage as the grips approach each other and operable by relative movement of the grips toward each other to release the first grip and set the second grip, and means operated by movement of the lay to cut off the wire to length.

9. In a wire mesh loom, a head on each of the opposite sides of the shed, means for moving said heads into and from the open shed, jaws on one of said heads for gripping a cross wire and carrying it into the shed, jaws on the other head for gripping the wire carried by the first head and drawing it into the shed, a cam on each head arranged to operate the jaws, stop means at one side of the lay to shift the cam in one head on movement of the head toward the lay to set the jaws to grip the wire and carry it into the shed, means for shifting the cams projecting from each head so that as the heads come together within the shed said projecting portions are operated to shift the cams, said cams being arranged so that such shifting thereof will release the jaws on the first head and set the jaws on the second head to grip the wire, and a stop means on the other side of the shed from the first stop means to shift the cam of the second head to release the jaws on that head after the wire has been drawn through the shed.

10. In a wire mesh loom including a swinging lay, means carried by the lay for inserting the free end of a cross or filler wire into the open shed from one side thereof, means carried by the lay and operable from the other side of the shed to grip said free end of the wire to retain it in the shed, means associated with each of the first mentioned means for operating the same, said operating means being arranged to engage as the first and second means approach each other and operable by relative movement of said means toward each other to cause the first means to release the wire and the second means to hold it, means for operating said mentioned means in timed relation with the operation of the shed, and means operated by movement of the lay to cut off the wire to length.

11. In a wire mesh loom, means for inserting the cross or filler wires in the open shed comprising a grip for the wire movable into the shed from one side thereof to insert the wire, a second grip movable into the shed from the opposite side thereof to receive the wire from the first grip and draw it through the shed, means for moving said grips into and from the shed in timed relation with the operation of the shed, cooperating means associated and movable with each grip arranged to engage as the grips approach each other and operable by relative movement of the grips toward each other to release the first grip and set the second, and means for crimping the wire before inserting it in the shed to substantially the shape it will have in the finished mesh.

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