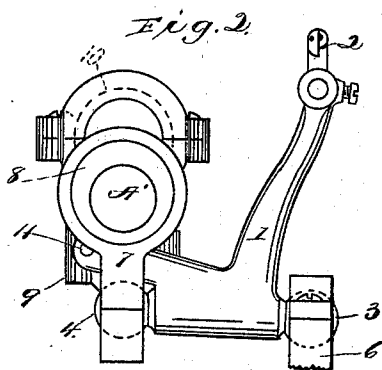
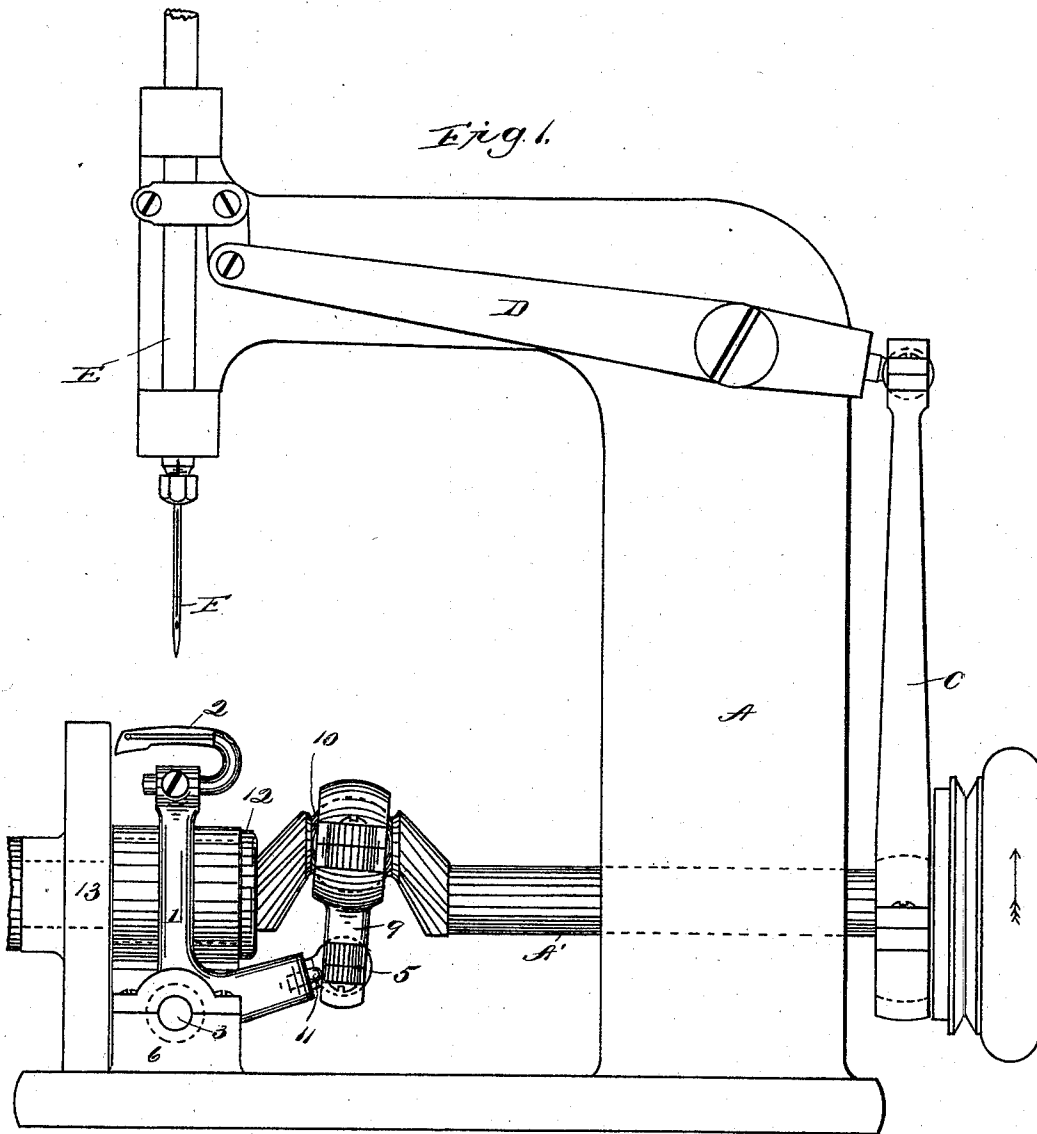


(No Model.)

J. M. MERROW.
SEWING MACHINE.

No. 540,266.

Patented June 4, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH M. MERROW, OF MERROW, CONNECTICUT.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 540,266, dated June 4, 1895.

Application filed February 21, 1894. Serial No. 500,947. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. MERROW, of Merrow, township of Mansfield, county of Tolland, and State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My present invention relates principally to sewing machines of the double chain type employing a looper traversing an orbit about the needle, and it consists in an improved form and construction of the looper-carrier and its actuating mechanism as hereinafter described and claimed.

The principal objects sought are simplicity, durability and capacity for operating at high speeds.

In the drawings, Figure 1 is a front elevation of a portion of a sewing-machine with the improved looper mechanism applied thereto. Fig. 2 is a side elevation of the looper-mechanism detached from the frame.

Similar letters and numerals of reference in both figures indicate the same parts.

The parts common to most sewing machines of this class which are represented in the drawings are the frame A, shaft A', hand-wheel and eccentric B, eccentric connection C, needle lever D, needle bar E and needle F, all of which are or may be of known construction and are here shown merely by way of illustration. In connection with these may be used any or all of the usual accessories of a complete sewing machine, such as a work-plate, presser-foot, feed mechanism, tensions and take-ups, &c.

The looper-carrier 1 is formed or provided with a stem or vertical portion for the reception of the looper 2, and with three balls or spherical wrists 3, 4 and 5.

The ball 3, preferably located beneath the looper, is operatively supported in a fixed bearing 6, formed upon or attached to the frame, in such manner as to permit the looper-carrier to swing or oscillate freely, within limits, in all directions around the center of the ball 3, forming in effect a universal joint at this point.

The ball 4 is operatively held in the socket at the lower end of an eccentric connection 7, the upper or opposite end of which surrounds an eccentric 8 on the main shaft A'.

The ball 5 is operatively held in a socket at the lower end of a pitman 9, the upper end of the latter being provided with a socket or strap encircling a spherical crank pin 10 on the main shaft A'.

The lateral swinging motion of the eccentric connection 9 is restrained or limited by plugs 11 of wood, rawhide or other suitable material secured to the looper carrier and projecting in proximity to the eccentric connection on opposite sides of the ball 5.

The eccentric connection 7 is guided to reciprocate in a fixed plane, as by being confined between a collar 12 on the one side and the wall 13 on the other, so that the ball 4 will be at all times maintained in proper relation to the ball 3.

The parts being constructed and arranged as indicated, whenever the main shaft is turned, as for example in the direction indicated by the arrow in Fig. 1, the eccentric 8 will operate through its connection 7 to reciprocate the looper-carrier in a direction transverse to the axis of the main shaft, at the same time the crank 10 operates through the pitman 9 to reciprocate the looper-carrier longitudinally of the main shaft. As a resultant of these two motions the upper end of the looper carrier to which the looper is attached will be caused to traverse an orbit approximating an ellipse developed upon a sphere of which the ball 3 is the center.

It will be seen that the looper-carrier is provided with four principal portions, to wit: the three balls, bearing a triangular relation, and the main stem or upright carrying the looper; that the ball 3 is the pivotal center of the system; that the two motions which control the form of the path traversed by the looper are derived from the main shaft the one from the crank and its pitman and the other from the eccentric and its connection; and that the actuating devices are applied directly to the looper carrier.

In the preferred form shown, the looper carrier has its two bearing points or balls 4 and 5 so disposed and arranged with reference to the pivotal point of support 3 that they will

be in substantially the same plane beneath and in line with the main shaft, thus enabling me to use short eccentric and crank connections and reducing to a minimum the lateral play of the said connections.

When the needle descends, and as it approaches the limit of its motion, the looper is caused to traverse from right to left in rear of the needle, but in such close proximity thereto that the point of the looper can pass through the loop of thread carried by the vertical needle, and if the looper is also provided with a thread, the latter will be carried through the loop above mentioned at the side of the needle. After the needle is elevated nearly to its highest position, the looper is swung laterally by the eccentric and at the same time is moved from left to right by the crank so that it will travel slightly in front of the center of the needle, and as the latter descends it will pass in rear of the looper, and if the latter carries a thread it will pass between the looper and its thread. It is not essential that the looper should be supplied with thread, in which case a single chain stitch could be formed by a proper adjustment of the parts and the employment of a properly shaped looper, as is well understood.

In another application, Serial No. 487,384, I have described and claimed a looper operating mechanism upon which the present is an improvement, although involving many of the same features. In my said application the looper-carrier is supported and operated, as to its lateral motions, substantially as at present, but its longitudinal motion is imparted from the needle lever through a connecting rod. In that case the motion of the looper longitudinally of the driving shaft was derived from and dependent upon the movement of the needle lever which received its motion from the eccentric and pitman. In the present instance the looper operating mechanism is made entirely independent of the needle operating mechanism, thereby reducing the friction and wear of the parts and vastly increasing the speed at which the machine can be operated successfully.

In practically operating machines of this kind it is desirable that some provision should be made for adjusting the position of the looper, and to facilitate and make possible such adjustments, I have expressly designed the looper shown in the drawings. This looper is substantially U-shape, one limb serving as the looper proper, while the other limb forms the shank by which it is secured within a transverse hole or socket in the end of the looper-carrier, where it is held by a set screw or equivalent clamping means. As thus constructed and arranged the looper is capable of both lateral and longitudinal adjustment,

the first by turning its shank in the socket, and the second, by shifting the looper longitudinally. The adjustments thus effected are performed in planes parallel with the two motions of the looper-carrier.

Having thus described my invention, what I claim as new is—

1. In a sewing machine, such as described, and as a means for actuating the looper thereof, the combination of an integral looper carrier consisting of a looper supporting standard and three bearing points or wrists arranged in triangular relation, a fixed bearing receiving one of said bearing points or wrists and constituting the pivotal support for the carrier, and two reciprocating bearings deriving motion directly from the main shaft and each engaging one of the bearing points or wrists on the carrier; substantially as described.

2. In combination with an integral carrier mounted to oscillate freely in a fixed bearing on a universal or ball joint and provided with two spherical wrists at points remote from each other and from the fixed bearing, a movable bearing supporting one of said wrists arranged to reciprocate in a fixed plane and controlling the oscillations of the carrier in one direction, and a second movable bearing engaging the other wrist to control the motions of the carrier in a direction transverse to that of the first named movable bearing, both of said movable bearings deriving their motions directly from the main shaft; substantially as described.

3. The combination of the carrier provided with a vertical post or standard and three balls, or spherical wrists the one, 3, located beneath and in proximity to the standard, and the other two, 4 and 5, at remote points in substantially the same vertical plane and to one side of the standard; a fixed bearing for the wrist 3, forming the pivotal center about which the carrier oscillates, two vertically reciprocating bearings in substantially the same plane, each engaging one of the wrists 4, 5; and a main shaft to which said movable bearings are directly connected and from which they each derive their motions; substantially as described.

4. The combination of the looper-carrier provided with a standard and balls 3, 4 and 5; a fixed bearing for ball 3; a main shaft provided with an eccentric and a spherical wrist pin; an eccentric connection provided with a bearing for ball 4; and a pitman provided with a bearing for ball 5, substantially as described.

JOSEPH M. MERROW.

Witnesses:

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JOHN WARREN HARPER.