

A. A. MERRITT.  
SEWING MACHINE.  
APPLICATION FILED NOV. 5, 1910.

1,041,653.

Patented Oct. 15, 1912.

4 SHEETS—SHEET 1

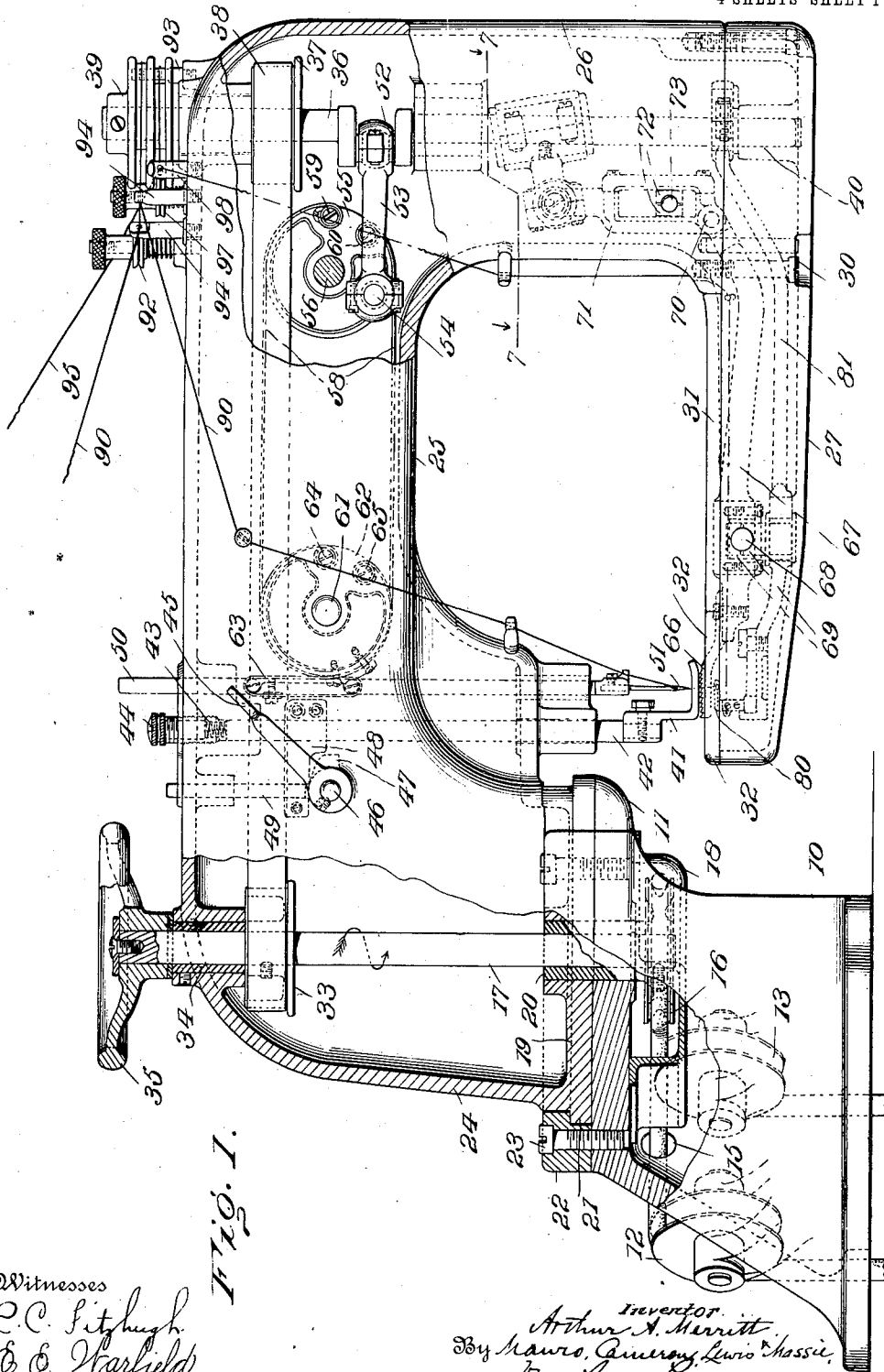


Fig. 1.

Witnesses  
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E. C. Warfield

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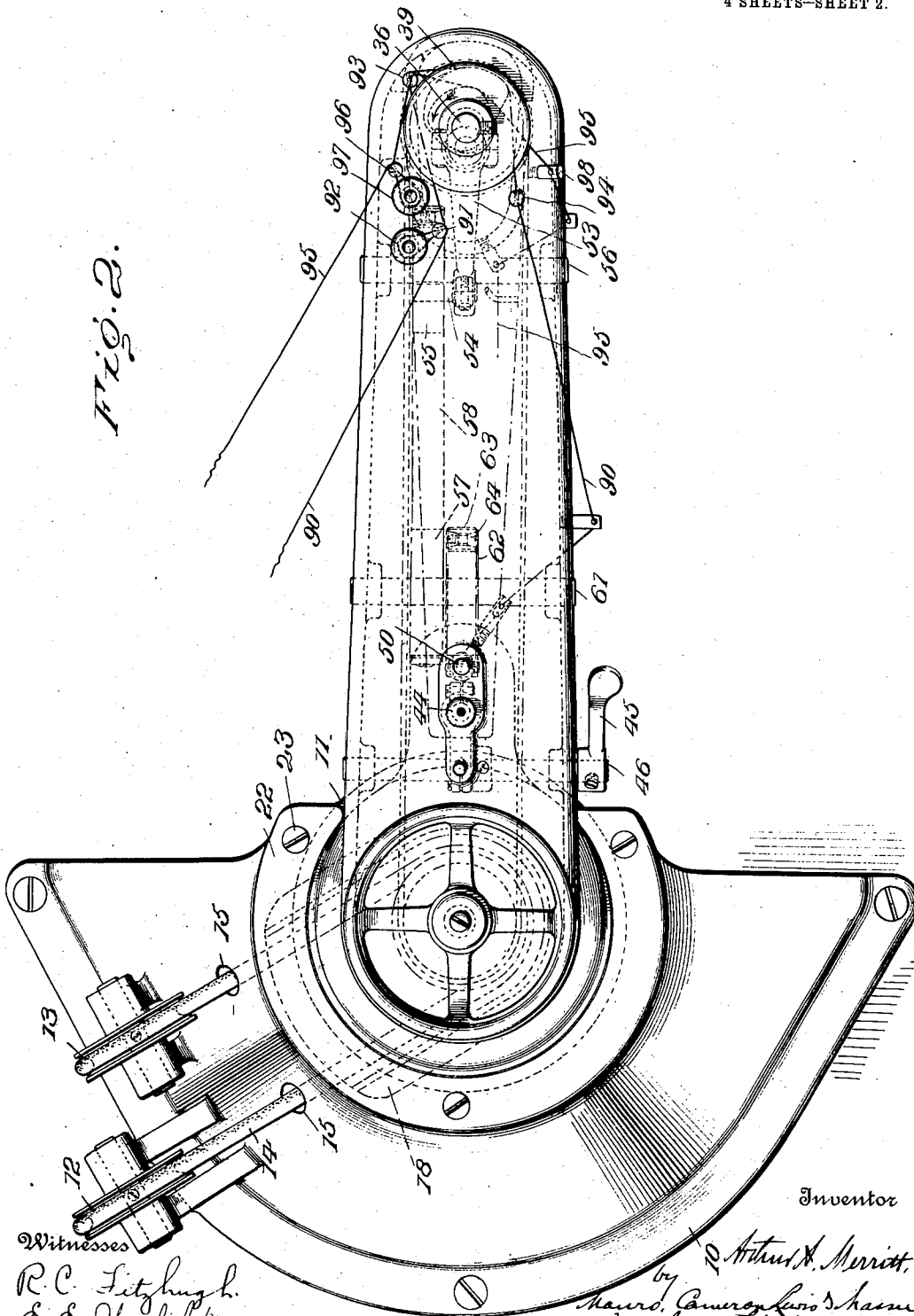
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4 SHEETS-SHEET 2.

Fig. 2.



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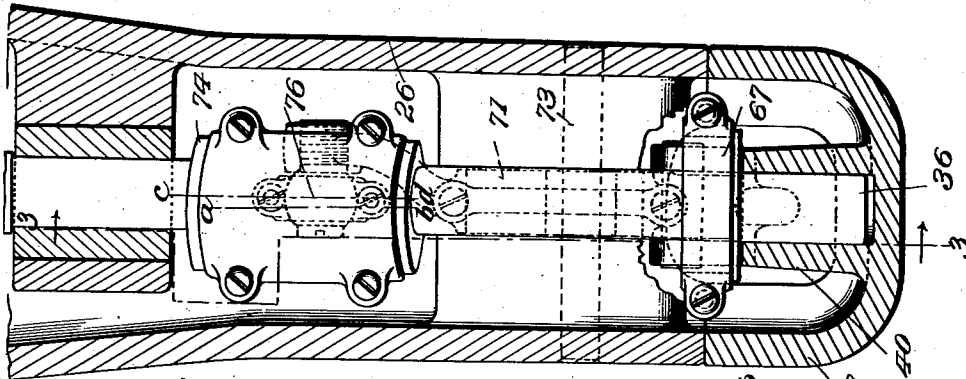


Fig. 4.

Fig. 5.

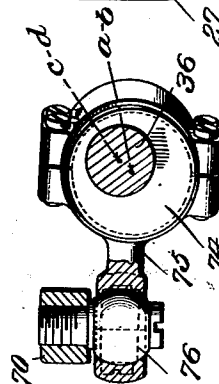
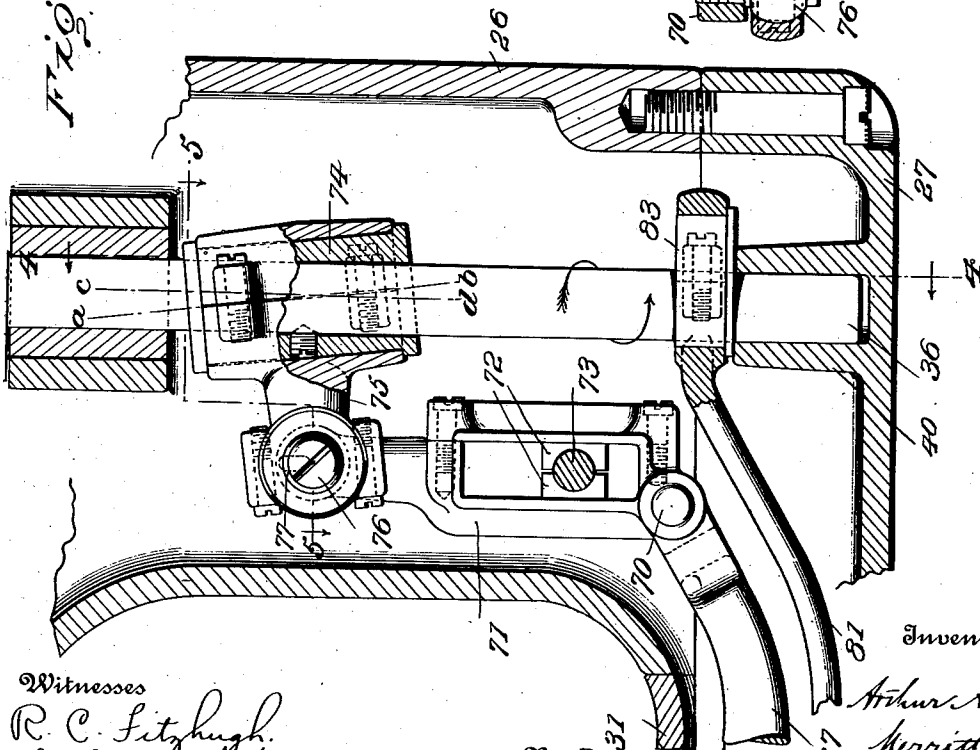


Fig. 3.



Witnesses

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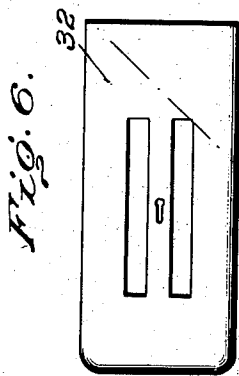
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4 SHEETS—SHEET 4.



Witnesses  
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Fig. 7.

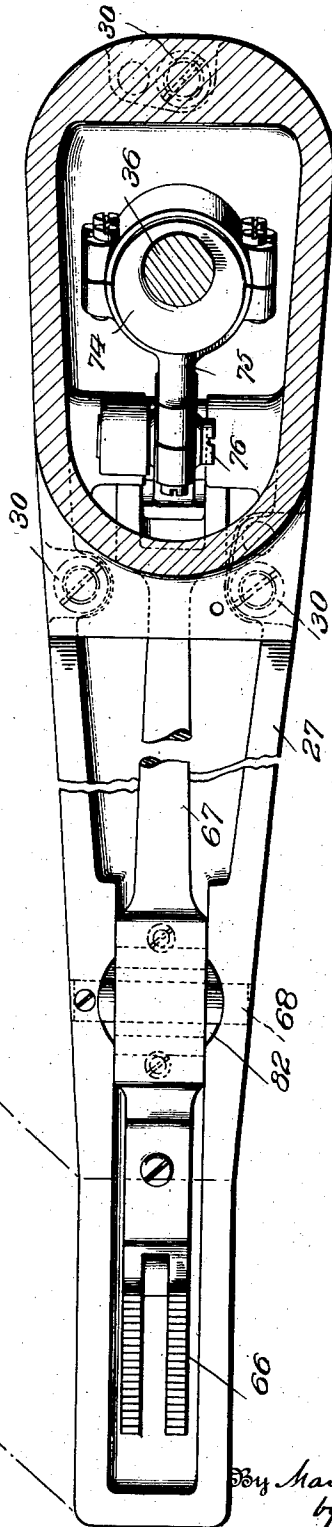
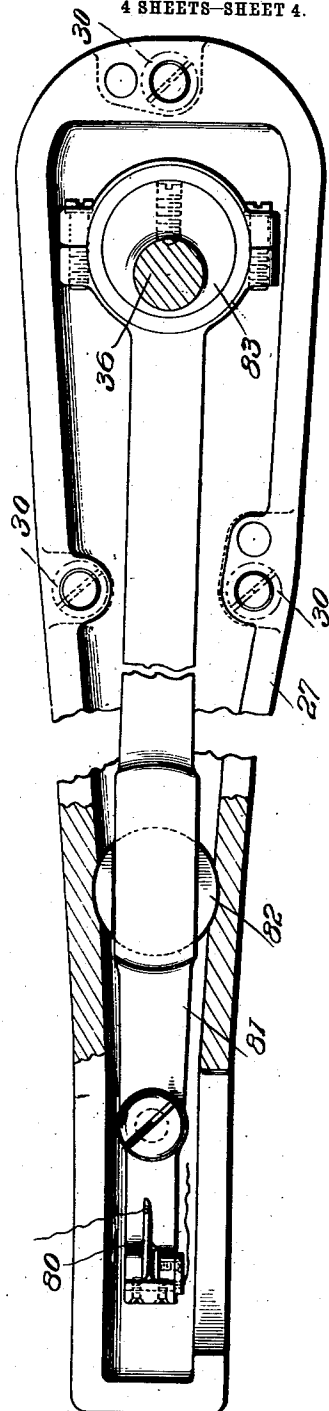


Fig. 8.



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# UNITED STATES PATENT OFFICE.

ARTHUR A. MERRITT, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO WILLCOX & GIBBS SEWING MACHINE CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## SEWING-MACHINE.

1,041,653.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed November 5, 1910. Serial No. 590,826.

*To all whom it may concern:*

Be it known that I, ARTHUR A. MERRITT, of Worcester, Massachusetts, have invented a new and useful Improvement in Sewing-Machines, which invention is fully set forth in the following specification.

The principal object of my invention is to provide a sewing-machine swiveled on an upright axis about which the machine may be swung in a circular arc to present the work-arm or horn of the machine in different radial positions with relation to the bench or table on which the machine is mounted. The machine may thereby be turned to enable the operator to sit at right-angles to the work-bench, or at an oblique angle thereto, according to her preference, or to space requirements. Although especially designed with reference to "feed off the arm" machines—that is to say, machines constructed to feed the work off the free end of the work-arm or horn in a completed state—it may be applied to other types of machines.

The invention will be more fully understood by reference to the embodiment thereof illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation, partly broken away and in section; Fig. 2 is a plan view; Fig. 3 is a vertical section through part of the machine-frame and its work-arm on line 3—3 of Fig. 4; Fig. 4 is a vertical section on line 4—4 of Fig. 3; Fig. 5 is a horizontal section on line 5—5 of Fig. 3; Fig. 6 is a detail view of the throat-plate; Fig. 7 is a horizontal section on line 7—7 of Fig. 1; and Fig. 8 is a view showing the loop-er-lev-er at the bottom of the horizontal trough-like portion of the work-arm or horn.

10 is the machine support or base adapted to be fastened to a suitable work-bench or table and having, as a part thereof, the circular plate 11.

12 and 13 are guide pulleys for belt 14 leading from a suitable power-transmitter (not shown) through openings 15, 15 in the base to a pulley 16 fixed to the lower end of the vertical shaft 17 of the machine, beneath the plate 11.

18 is a hood or cover fastened to the under side of plate 11 over the pulley 16.

The main frame of the machine is mounted on the base 10 to swivel or turn about the shaft 17 without disturbing the driving

connections extending from the latter. Said main frame consists of a hollow casing, within and upon which most of the parts of the mechanism are mounted. A horizontal plate 19 at one end of said casing bears upon the plate 11 of the base and has a central opening, in which the removable bearing 20 is held. The outer edge of plate 19 constitutes a circular flange 21, over which fits a crescent-shaped gib 22, fastened to the base 10 by screws 23. When the machine is turned about the shaft 17 to the desired angular position with relation to the work-bench, it is clamped rigidly in place by tightening the screws 23, causing gib 22 to bind upon and grip the flange 21.

From the plate 19, the hollow main frame or casing continues upward in a short upright part 24, then horizontally in part 25, and then downward in vertical part 26, to the lower end of which latter is fixed the hollow horizontal work-arm or horn 27. As shown, the work-arm 27 is approximately parallel to the horizontal part 25, but, obviously, it may lie in a different direction, with corresponding changes in the positioning of other parts. As shown, the work-arm or horn 27 is preferably in the form of a trough-like casting secured to the lower end of the part 26 by three screws 30. Removable cover 31 and throat-plate 32 close the upper open side of the trough-like casting to inclose the parts within the work-arm.

33 is a pulley fixed to shaft 17 within the casing. A removable bearing 34 extends along the shaft through a bearing opening in the top wall of said casing.

35 is a hand-wheel fixed to the upper end of shaft 17, outside of the casing.

36 is the vertical main-shaft of the machine, from which driving connections extend to most of the parts which operate upon the work. It is located in part 26 of the casing and driven by a belt 38 running from a pulley 37 thereon to the pulley 33. Shaft 36 extends upward through a bearing in the top wall of the casing and carries a double rotary take-up 39. At its lower end, the shaft 36 is seated in a bearing 40 on the bottom wall of the work-arm 27.

The drawings illustrate stitch-forming mechanism for producing a two-thread chain stitch seam, but mechanism for producing other forms of stitch may be used.

41 is a presser-foot at the lower end of

presser-foot bar 42 pressed downward by a spring 43 acting against a tension-regulating nut 44.

45 is a presser-foot lifting lever fastened to the outer end of a horizontal shaft 46, which latter carries within the casing a cam lug 47 adapted to cooperate with an arm 48 clamped to the presser-foot bar 42, to lift the presser-foot.

49 is a guide pin fixed to the outer end of arm 48 and working through an opening in the top wall of the casing.

50 is a needle-bar carrying at its lower end an eye-pointed needle 51. The needle-bar driving connections include a crank 52 of the shaft 36, a pitman 53 having universal connection to the crank by means of a ball-formation and to a wheel or disk 55 by means of a ball pin 54. Wheel or disk

55 is rotatable on a horizontal shaft 56. Rotary oscillatory movement is transmitted from the wheel 55 to a similar wheel or disk 57 by a flexible band 58, preferably of thin steel, extending about and fastened to the

wheel 57 and having its ends fastened to the wheel 55 by screws 59 and 60. The wheel 57 is carried by horizontal shaft 61 which also carries a second wheel or disk 62 connected to the needle-bar 50 by a flexible band 63, preferably of thin steel, which band crosses itself and has its ends fastened to the disk 62 by screws 64 and 65. This band connection for actuating the needle-bar 50 from the disk 62 is similar to that described in my pending application, Sr. No. 467,163, filed December 12, 1908, and illustrated particularly in Figs. 23 to 26 thereof, to which application reference may be had for a more detailed understanding of the construction.

A feed surface or member 66, fastened to a feed-lever 67, works through slots in the throat-plate 32 to feed the completed work off the free end of the work-arm beneath the presser-foot 41. The feed-lever has oscillatory and longitudinal movement on a horizontal fulcrum pin 68, which extends transversely through the work-arm, the longitudinal movement of the feed-lever is permitted by the bearing blocks 69 embracing the fulcrum pin 68 and working in a capped opening of the lever (see dotted lines, Fig. 1). The feed-lever 67 extends longitudinally within the work-arm to its pivotal connection 70 to the lower end of a pitman 71 in the vertical part 26 of the main casing. Bearing blocks 72, in a capped opening of the pitman, embrace a horizontal pivot stud 73 which passes through two guiding projections (Fig. 4) on the walls of the casing between which the pitman 71 works. The pitman 71 is driven from what may be termed an angular eccentric in the form of a cylinder or sleeve 74 having therethrough a longitudinal opening offset from the center

of the cylinder and oblique to the outer cy-

lindrical surface thereof, through which opening the shaft passes. In other words, the axis *a-b* of the cylinder 74 is tilted with relation to the axis *c-d* of the shaft, as shown in Fig. 3, and offset from the latter axis, as shown in Fig. 4. This eccentric is embraced by the capped end of an arm 75 connected at its outer end to the pitman 71 by means of a ball stud 76. The eccentric 74 has two effective motions; one is the usual plain eccentric motion obtained by mounting a cylinder on a driving shaft with its axis offset from that of the shaft, and the other is the motion obtained by boring the shaft hole through the eccentric cylinder or sleeve at an angle to its cylindrical outer surface. The sum of these two motions will produce an elliptic path at the outer end of the arm of approximately the outline indicated in dotted lines at 77 in Fig. 3; and the resulting movement imparted to the feed surface 66 through pitman 71 and the lever 67 will be in a similar pathway, but with shorter major and minor axes.

80, Figs. 1 and 8, is a thread-carrying looper adapted to cooperate with the needle to form a two-thread chain stitch. It is carried at the end of looper lever 81, which latter rests in a recess through a rotatable fulcrum block 82, and is driven by an eccentric 83 on the shaft 36. When actuated by the eccentric, the lever 81 is moved longitudinally in the block 82 and is at the same time oscillated about the axis of the latter as its fulcrum.

90 is the needle thread; in passing from its source of supply to the mechanism, it is led through the guide pin 91, between the tension disks 92, back through pin 91, through guide pin 93, across its portion of the double take-up 39, through guide pin 94, and thence through other thread guides to the needle. The looper thread 95 passes through the guide pin 96, between the disks of tension device 97, back through pin 96, through guide pin 93, across its portion of the rotary take-up 39, through guide pin 98, and thence through other thread guides to the interior of the work-arm, within which it extends to the looper 80.

What I claim is:

1. In a sewing machine, the combination with a base or supporting member, of a frame or casing swiveled at its supporting end to said base to turn on an upright axis to different radial positions with relation to the base, said frame having an approximately horizontal part extending outward from its supporting end and an approximately vertical part depending from said horizontal part; and an approximately horizontal work-arm or horn supported from the lower end of said vertical part of the frame.

2. In a sewing machine, the combination with a base or supporting member, of a frame or casing swiveled at its supporting end to said base to turn on an upright axis  
5 to different radial positions with relation to the base, said frame having an approximately horizontal part extending outward from its supporting end and an approximately vertical part depending from said  
10 horizontal part; an approximately horizontal work-arm or horn supported from the lower end of said vertical part of the frame; an upright shaft extending from the base to the frame and having its axis coincident  
15 with the axis on which said frame is swiveled; driving connections to said shaft; and driving connections from said shaft to parts of the machine on the frame.

3. In a sewing machine, the combination  
20 with a base or supporting member, of a frame or casing swiveled at its supporting end to said base to turn on an upright axis to different radial positions with relation to the base, said frame having an approximately  
25 horizontal part extending outward from its supporting end and an approximately vertical part depending from said horizontal part; an approximately horizontal work-arm or horn supported from the  
30 lower end of said vertical part of the frame; stitch-forming elements mounted upon the work-arm; and other stitch forming elements mounted upon the frame and depending into coöperative relationship to said elements  
35 on the work-arm.

4. In a sewing machine, the combination with a base or supporting member, of a frame or casing swiveled at its supporting  
40 end to said base to turn on an upright axis to different radial positions with relation to the base, said frame having an approxi-

mately horizontal part extending outward from its supporting end and an approximately horizontal work-arm or horn below  
45 said horizontal part.

5. In a sewing machine, the combination with a base or supporting member, of a frame or casing swiveled at its supporting  
50 end to said base to turn on an upright axis to different radial positions with relation to the base, said frame having an approximately horizontal part extending outward from its supporting end and an approximately horizontal work-arm or horn below  
55 said horizontal part; an upright shaft extending from the base to the frame and having its axis coincident with the axis on which said frame is swiveled; and driving connections from said shaft to parts of the  
60 machine on the frame.

6. In a sewing machine, the combination with a base or supporting member, of a frame or casing swiveled at its supporting  
65 end to said base to turn on an upright axis to different radial positions with relation to the base, said frame having an approximately horizontal part extending outward from its supporting end and an approximately horizontal work-arm or horn below  
70 said horizontal part; stitch-forming elements mounted upon the work-arm; and other stitch-forming elements mounted upon the horizontal part and depending into coöperative relationship to said elements on  
75 the work-arm.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ARTHUR A. MERRITT.

Witnesses:

FREDERICK A. HOLTON,  
W. B. KERKAM.