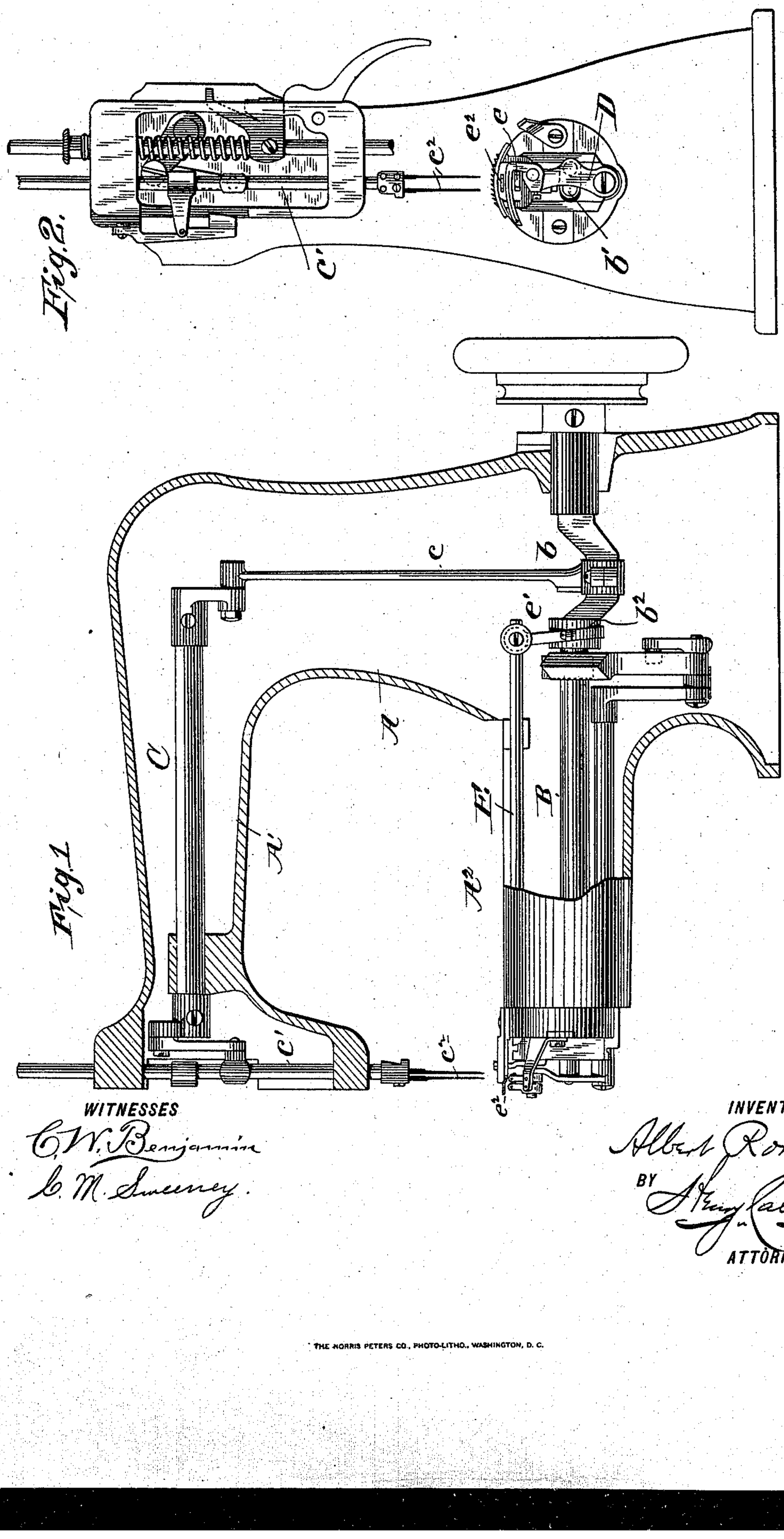
(No Model.) 2 Sheets—Sheet 1.

A. RONTKE.

DOUBLE CHAIN STITCH SEWING MACHINE.

No. 573,926. Patented Dec. 29, 1896.



WITNESSES

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C. M. Sweeney.

INVENTOR:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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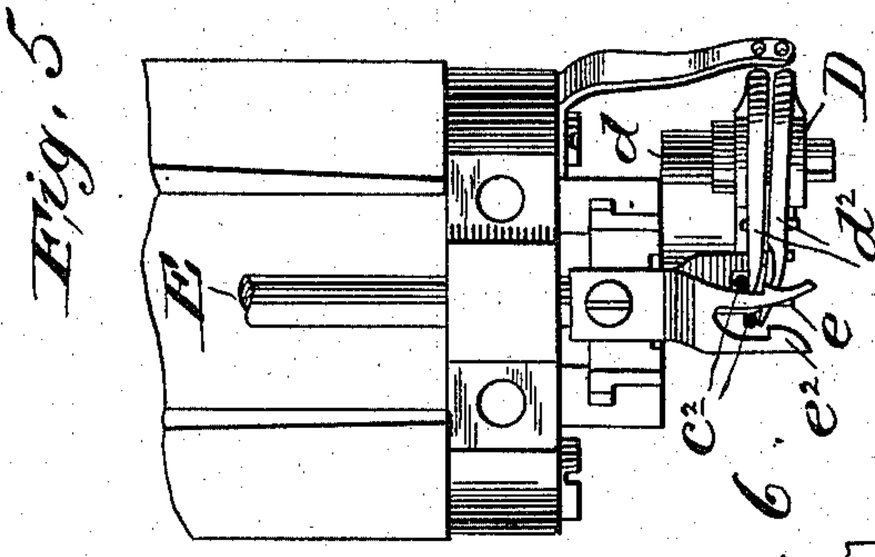

Fig. 5.

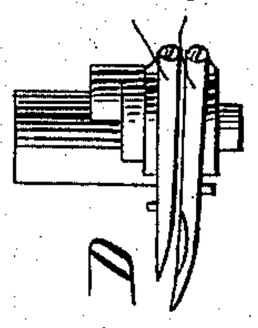

Fig. 7.

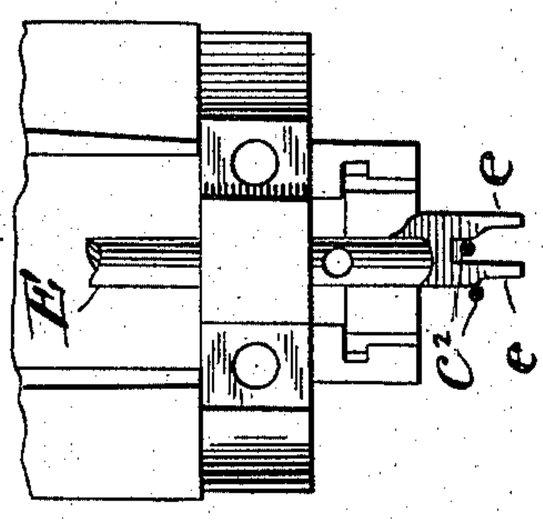

Fig. 6.

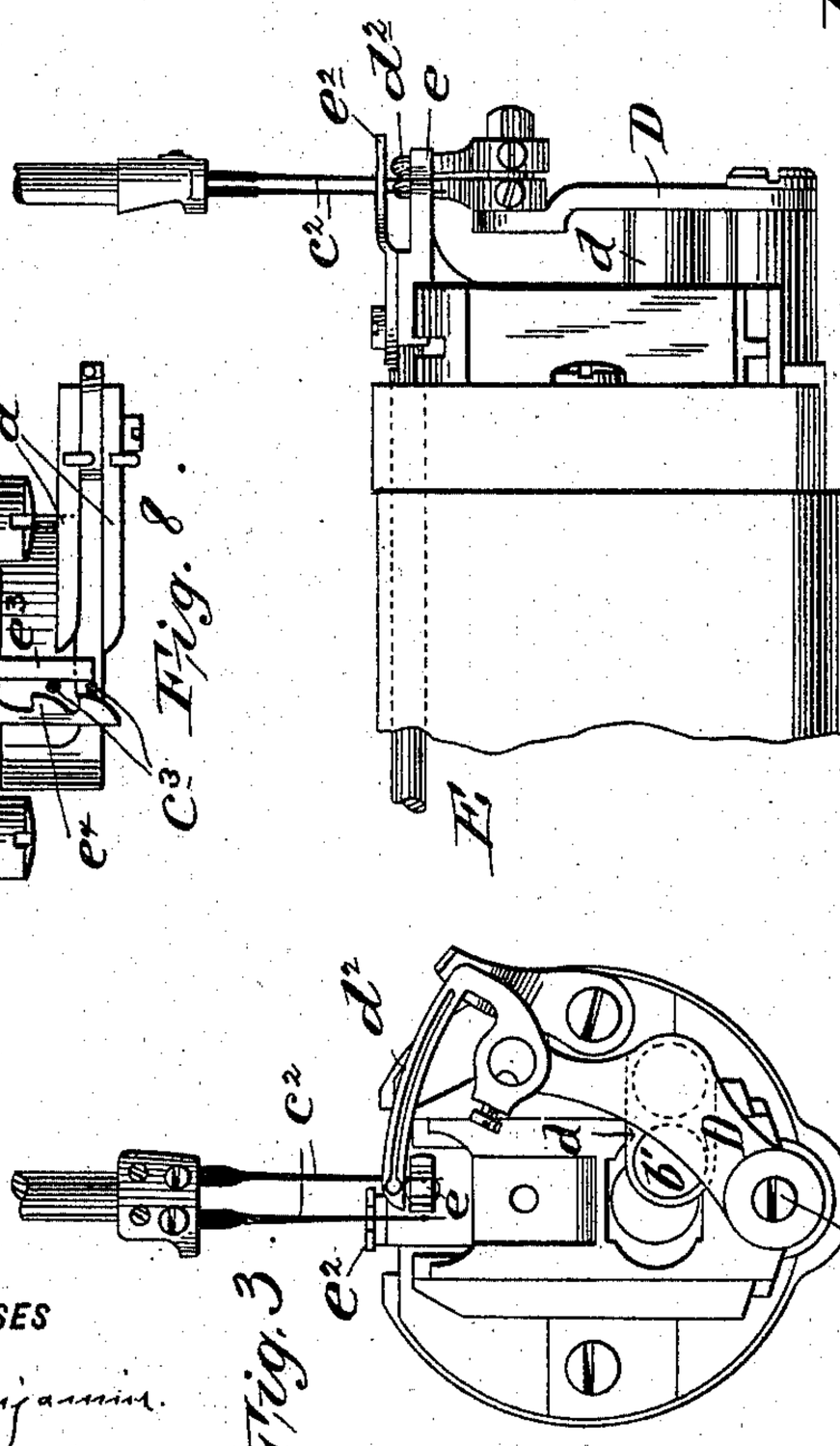

Fig. 3.

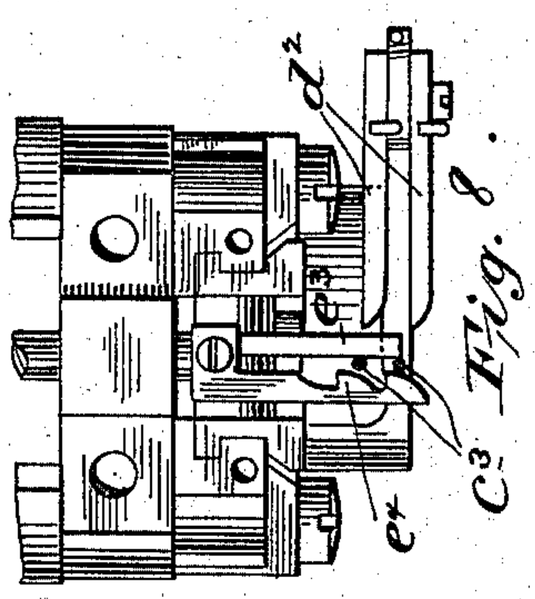

Fig. 8.

Fig. 4.

Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT RONTKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

DOUBLE-CHAIN-STITCH SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 573,926, dated December 29, 1896.

Application filed May 25, 1896. Serial No. 592,924. (No model.)

To all whom it may concern:

Be it known that I, ALBERT RONTKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to double-chain-stitch sewing-machines, and has for its object to provide an improved looping mechanism for this class of machines, and which, while well suited for single-needle machines, is also adapted for double-chain-stitch machines employing two or more needles and loopers for producing two or more parallel rows of stitches at one operation.

In carrying my invention into effect the thread-carrying looper or loopers are arranged to vibrate back and forth lengthwise in one plane transversely of the machine, or in the direction of the feed of the work, and in cooperation with said looper or loopers I employ a spreader or spreaders for the loops of the needle thread or threads and a spreader or spreaders for the loops of the looper thread or threads, said spreaders reciprocating longitudinally of the machine, or transversely to the plane of movement of the looper or loopers.

In the accompanying drawings, Figure 1 is a sectional view of a sewing-machine embodying my invention. Fig. 2 is a front end view thereof with the face-plate of the head and the cap of the work-supporting arm or cylinder removed. Fig. 3 is a front end view of the lower part of the machine. Fig. 4 is a side view, and Fig. 5 a plan view, of the same. Fig. 6 is a plan view similar to Fig. 5, but with some parts omitted for clearness. Fig. 7 is a detail top view of the loopers and looper-carrier, and Fig. 8 a detail plan view illustrating a modified form of my invention.

In the drawings I have shown my invention applied to a two-needle "left-hand cylinder" machine, the framework of which comprises the standard A, the overhanging arm A′, and the work-supporting arm or cylinder A^2. The driving-shaft B, journaled in the lower part of the framework, is provided near its rear end with a crank *b*, connected by a pitman *c* to an arm at the rear end of the needle-operating rock-shaft C, having at its forward end an arm connected in a well-known manner by a pitman to the needle-bar *c*′, herein shown as provided with two diagonally-arranged needles a^2 for making two closely-arranged rows of stitches. The shaft B has at its forward end a crank *b*′, connected by a link *d* to a vibrating looper-carrier D, pivoted at its lower end at *d*′ and provided with the thread-carrying loopers d^2, the latter being thus reciprocated back and forth longitudinally (or in the direction of their length) in the same plane or without lateral movements.

To open the loops of the needle thread or threads or to spread them laterally, so that they will be entered by the points of the loopers, I provide spreaders or loop-pushers *e*, carried at the forward end of the reciprocating rod E, the rear end of which is jointed to a connection *e*′, having a strap portion surrounding and entered into a diagonal groove of a screw-cam b^3 on the shaft B, and which moves the upper end of the said connection back and forth to reciprocate the rod E, the joint between said connection and rod being a universal one to avoid binding. Any other suitable operating device for the reciprocating rod E may, however, be employed. The loop spreaders or pushers *e* move forward or outward in close proximity to the needles c^2 as the latter are rising, and thus push or spread the needle-loops laterally to insure the entrance of the points of the advancing loopers *d* into the same.

To insure the entrance of the needles into the loops of looper-threads, I provide spreaders or spreading-hooks e^2, which are also carried by the reciprocating rod E, said spreaders or hooks on the inward or return movements of said rod catching the looper-threads running from the loopers up to the work and drawing the same out sidewise to form loops for the entrance of the needles as the latter descend. I thus provide, in connection with a thread-carrying looper reciprocating transversely of the machine, or in the direction of the feed of the work and performing both it forward and backward movements in the same path, two reversely or alternately act-

ing loop-spreaders, one spreader spreading a needle-loop on its outward movement when the looper is advancing and the other spreader spreading a looper-loop on its inward movement when the looper is retreating. The movements of the looper or loopers are thus simplified and a part of the work usually performed by the thread-carrying loopers is transferred to the reversely-operating spreaders, and as only very short movements are required for the latter and as they may be made small and light very little friction results.

In the form of my invention shown in Fig. 8 and in which the needles c^3 (which are arranged for wider-gaged seams than are the diagonally-placed needles of the machine shown in the other figures) are placed abreast of each other a single needle-loop spreader e^3, formed as a straight bar to rub against the needle-loops as it moves forward or outward, will serve, simply by frictional contact with the needle-threads, to spread the loops of two or more needles arranged abreast of each other or in the same plane as that in which said spreader moves; also, in this form of my invention the looper-loop spreaders or spreading-hooks e^4 are formed on one and the same bar or plate, one behind the other, instead of being made as separate hooks, as shown more clearly in Figs. 3 and 5, for coöperation with the diagonally-arranged needles employed for making two closely-arranged seams or rows of stitches.

The loopers coöperating with the diagonally-arranged needles are preferably of different lengths, as shown, so that they will both take the loops of the two needle-threads at the same instant.

In the use of my improved machine, with the loopers reciprocating in the plane of the feed of the work and with the loop-spreaders reciprocating transverse to the plane of the feed of the work, the needles are arranged so that their eyes extend or open through the needles in the direction of the feed of the work, as is usual with double-chain-stitch machines, the needle-loop spreaders or pushers *e* of my improved machine acting on the needle-loops to open them for the entrance of the points of the loopers on the short groove sides of the needles.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a double-chain-stitch sewing-machine, the combination with a needle and its operating mechanism, of a thread-carrying looper arranged to reciprocate longitudinally in the plane of the feed of the work, the forward and backward movements of said looper being both in the same path, two alternately-acting loop-spreaders, one for the needle-loops and the other for the looper-loops, and both arranged to reciprocate in a plane transverse to the plane of movement of said looper, a looper-carrier, and operating mechanism for said looper-carrier and loop-spreaders.

2. In a double-chain-stitch sewing-machine, the combination with a needle and its operating mechanism, of a thread-carrying looper arranged to reciprocate longitudinally in the plane of the feed of the work, the forward and backward movements of said looper being both in the same path, a needle-loop spreader and a looper-loop spreader reciprocating together transversely to the plane of movement of said looper, and acting alternately on the needle and looper threads, a looper-carrier, and operating mechanism for said carrier and spreaders.

3. In a double-chain-stitch sewing-machine, the combination with a plurality of needles and their operating mechanism, of a work-supporting arm or cylinder, a driving-shaft extending through the latter and provided at its forward end with a crank or looper operating device, a looper-carrier pivoted at the forward end of said arm or cylinder and provided with a plurality of thread-carrying loopers arranged to reciprocate longitudinally in the plane of the feed of the work, said looper-carrier being operatively connected with said crank or operating device, alternately-acting needle-loop and looper-loop spreaders reciprocating in a plane transverse to the plane of movement of said loopers, and a sliding rod, operatively connected with said driving-shaft, for operating said loop-spreaders.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT RONTKE.

Witnesses:
HENRY CALVER,
JOSEPH F. JAQUITH.