No. 720,732. PATENTED FEB. 17, 1903.

L. ONDERDONK.

BLINDSTITCH SEWING MACHINE.

APPLICATION FILED NOV. 7, 1899.

NO MODEL. 3 SHEETS—SHEET 1.

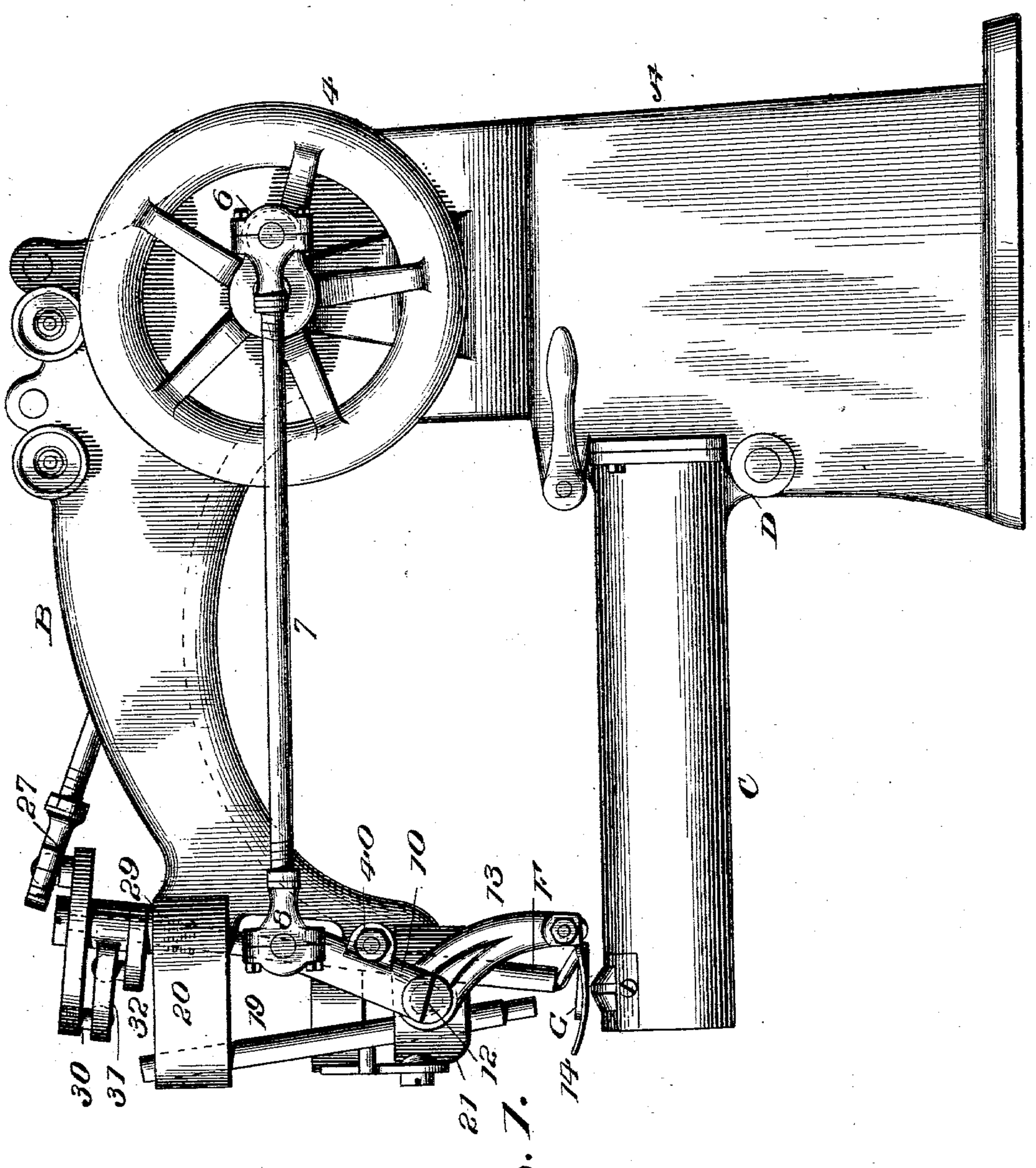

Fig. 1.

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.

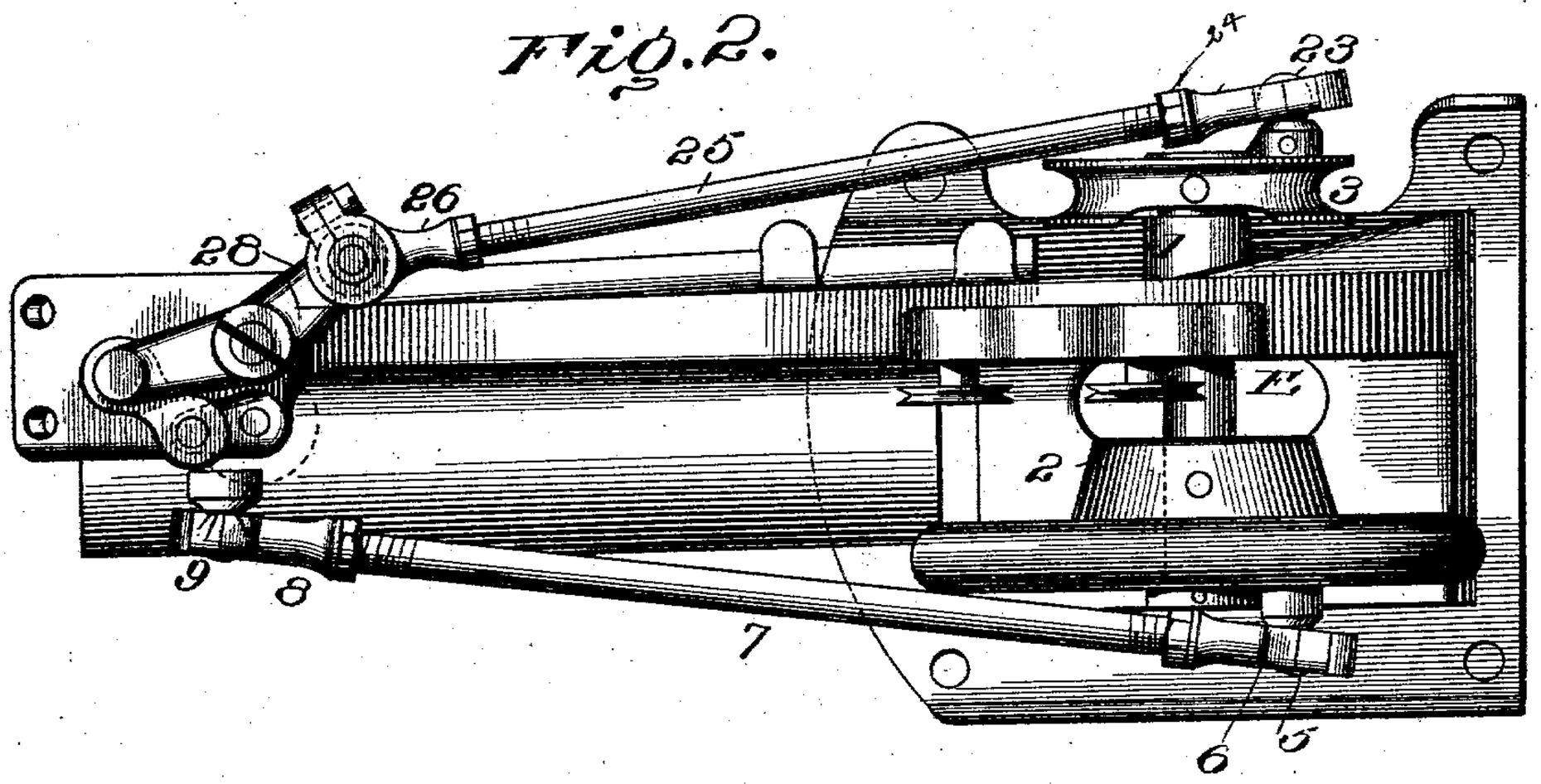

Fig. 4.

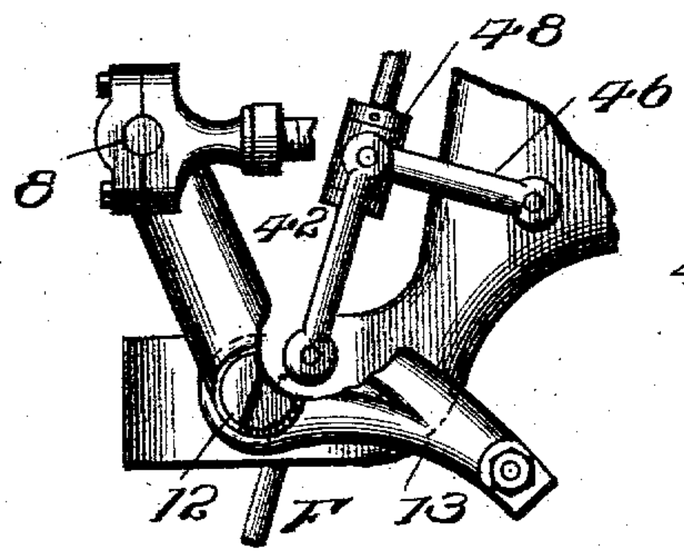

Fig. 5.

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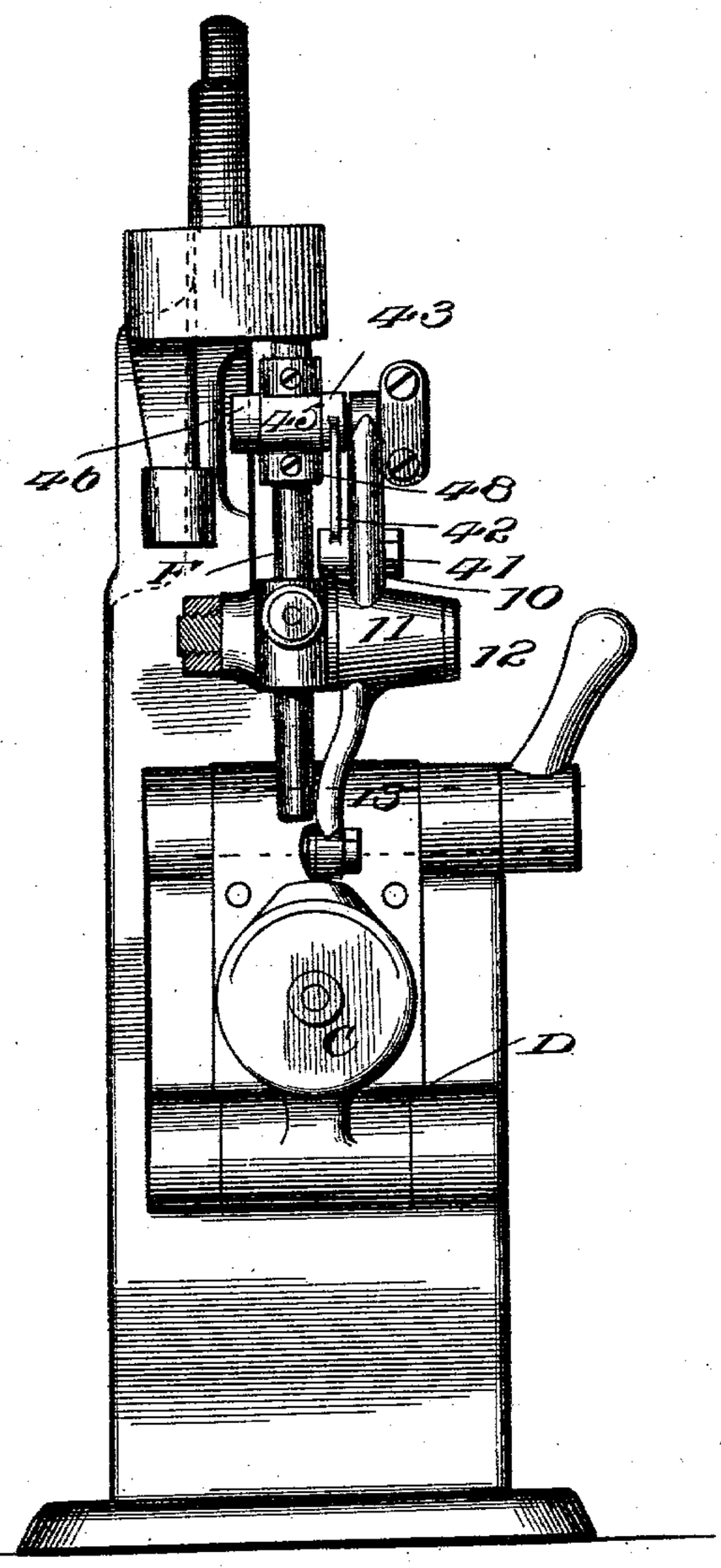
NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF NEW YORK, N. Y., ASSIGNOR TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BLINDSTITCH SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 720,732, dated February 17, 1903.

Original application filed March 29, 1899, Serial No. 711,025. Divided and this application filed November 7, 1899. Serial No. 736,132. (No model.)

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Blindstitch Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

This application is a division of an application for patent for improvements in sewing-machines filed March 29, 1899, Serial No. 711,025, (Case A.)

The present invention relates, primarily, to a sewing-machine of the double or chain stitch type adapted for blindstitching; and it consists, first, of a sewing-machine comprising a reciprocating needle and a looper coöperating therewith, the parts being arranged above the work-support of the machine, said looper having a vibratory movement on an axis inclined from the vertical, whereby in its movement it crosses the plane of movement of the needle and is therefore at one extremity of its movement in a plane above the needle and at its other extremity in a plane below the needle, with mechanism for causing the looper to move bodily up and down to allow it as it moves from one extremity to the other to be elevated to pass over seams or other obstructions; secondly, it includes a reciprocating needle and looper coöperating therewith to form stitches, of connections between the needle-support and the looper-support, whereby in the reciprocation of the needle the looper is moved bodily in a plane substantially perpendicular to the needle, this being accomplished by raising and lowering the looper-support, and it will be understood that so far as the mechanism for raising and lowering the looper bodily is concerned it may be applied, as above stated, in connection with an inclined looper-supporting shaft, the purpose of the which is as above set forth, or it may be applied in connection with a looper-support arranged otherwise than in the manner shown, so that the connection between the looper-support and the needle-support may supply all the up-and-down movement that is necessary to be given the looper to enable it to lie at one extremity of its oscillatory movement in a plane above the needle and at its other extremity below the needle; and, finally, it consists in the matters hereinafter described, and referred to in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the sewing-machine embodying the invention. Fig. 2 is a top plan view of the same. Fig. 3 is a front end view. Fig. 4 is a front detail view of the link connections for guiding and bodily moving the looper-bar, and Fig. 5 is a top detail view of the same.

In the drawings, A represents the main standard or base of the machine, upon which is formed the upwardly and forwardly projecting arm or gooseneck B.

C represents the work-plate of the machine, which, as herein indicated, is hinged at D to the standard A, in order to swing down to allow of the work being put in place. This work-plate is herein shown as a cylindrical casing carrying the throat-plate, and within it is arranged the feeding mechanism, of which no detail description is herein given.

Referring now to the needle-operating mechanism and calling attention particularly to Figs. 1, 2, and 3, E represents the main or driving shaft of the machine, which is transversely arranged with respect to the axis of the work-plate and is supported in suitable bearings in the lugs 1 2. Said shaft has at its inner end the belt-wheel or pulley 3, and at its opposite end the balance-wheel 4. This balance-wheel 4 has projecting from it a lug into which is screwed a ball-stud 5. A two-part split head 6, formed with a socket into which the ball of the stud extends, has a screw-threaded opening in its end, into which is screwed the end of the pitman-rod 7, which at its opposite end is screwed into a socket in the two-part split head 8, this having a socket in which fits the ball on the stud

9, screwed in the upper end 10 of the needle-arm, which is sleeved, as at 11, to the stud 12, screwed into the head of the machine. This needle-arm, as shown, is an angle-arm, and the lower part 13 is formed at its lower end to receive the shank of a needle 14. The bar which supports the presser-foot is illustrated at 19, and, as shown, it passes at an inclination through its bearings in lugs 20 and 21. The presser-foot itself is not herein shown, for the sake of clearness. Screwed into a lug on the belt-wheel 3 is a stud having a ball 23 on its outer end, fitted within the socket in the head 24, which has a universal movement by reason of said ball-and-socket connection. Attached at one end to this head is a pitman 25, which at its opposite end is secured to another head 26, the socket of which fits over a ball on the end of a stud 27, screwed into one end of a horizontal arm or lever 28, pivoted on a bolt or stud 29, screwed into the lug 20 on the head of the machine. At the other end arm or lever 28 is provided with a downwardly-projecting stud 30, having a ball on its lower end jointed in a socket in one end of the link 31, the other end of said link being jointed to a ball-stud on the end of the arm-plate 32 to which the upper end of the looper-supporting rod or bar F is attached. Said rod or bar F passes through the lugs 20 and 21, having bearings therein, in which it rocks and slides up and down by means hereinafter referred to. This rod or bar F at its lower end is fitted to receive the shank of a curved looper G. The rod or bar F is herein shown as inclined from the vertical, and therefore as it oscillates on its axis through the connections above referred to the front of the looper G is at its highest point at one extremity of its movement and at its lowest point at the other extremity of its movement.

It may be desirable in some instances to give the looper a positive bodily vertical movement substantially perpendicular to the needle in order to lift the same over seams or other obstructions, and I have devised a means for giving said movement to the looper which may be used either in conjunction with the looper supported upon an axis inclined from the vertical or it may be used in connection with a looper which is supported on a vertical axis, and in this latter connection it will be obvious that the bodily up-and-down movement may be utilized to cause the looper to coöperate with the needle in the desired manner without rendering it necessary to use an inclined looper-supporting shaft, although for the purpose of getting over heavy seams or obstructions it may sometimes be found desirable to use the same in combination with the inclined looper-supporting shaft.

Referring to Figs. 3, 4, and 5, there is illustrated a construction in which the swinging movement of the needle-supporting lever automatically imparts to the looper-bar such vertical bodily movement to raise and lower it during its forward-and-backward movement to cause it to pass over seams or other obstructions. The upper part of the needle-lever 10 has an offset lug 40, through which passes a stud 41, upon the inner end of which is pivotally sleeved the end of the link 42, while the opposite end 43 of the link 42 is similarly formed and pivoted upon the short fulcrum-block, having a squared portion 45, in which the looper-bar F is mounted to rotate, while the end 46 of a link transverse to link 42 and pivoted to the machine-frame embraces the opposite end of said short block 44. The squared portion 45 of the fulcrum-block 44 is confined between the collars 48, fixed to the looper-bar, so that as the needle-lever 10 swings the looper-bar by means of the link connections rises and falls without bind, and at the same time perfect freedom of movement on its axis is allowed.

The looper-operating mechanism is not herein claimed, as it forms the subject-matter of the application above referred to, of which this is a division.

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

1. In a sewing-machine, having a work-support and feeding mechanism, a stitch-forming mechanism, comprising a reciprocating needle, and a looper coöperating therewith to form stitches, said parts being arranged and operating entirely above the work-support on the machine, and the looper having oscillatory movement on an axis inclined to the line of reciprocation of the needle, to carry a loop of thread from a point above to a point below said needle, and mechanism for causing the looper to rise and fall bodily in the direction of its axis of oscillation, during its oscillatory movement; substantially as described.

2. In a sewing-machine, a stitch-forming mechanism including a reciprocating needle and a curved looper, coöperating therewith to form stitches, with means for oscillating said looper on its longitudinal axis from a point on one side the line of the seam above the needle to a point upon the opposite side the line of seam upon the under side of the needle, and means for raising and lowering the looper bodily in the direction of its axis of oscillation during its movement; substantially as described.

3. In a sewing-machine, in combination with a reciprocating needle, and means for operating it, a looper coöperating with said needle, and connections between the needle-support and the looper-support, whereby in the reciprocation of the needle the looper is moved bodily at an angle to the path of reciprocatory movement of the needle; substantially as described.

4. In a sewing-machine, in combination with a reciprocating needle, and means for operating it, a looper-supporting bar or rod carrying a looper coöperating with said needle, means for oscillating said looper-sup-

porting bar or rod on its longitudinal axis, and connections between the needle-support and the looper-support, whereby in the reciprocation of the needle, the looper is moved bodily in the direction of its axis of oscillation; substantially as described.

5. In a sewing-machine, a pivoted lever, a needle supported thereon, and means for swinging said lever, an oscillating looper-support, and connections between the needle-lever and the looper-support for moving the latter bodily during the reciprocation of the needle in a plane substantially perpendicular to the path of reciprocatory movement of the needle; substantially as described.

6. In a sewing-machine, a lever pivoted to the frame of the machine, and carrying on its lower end means for the attachment of a needle, means for oscillating said lever, a looper-support and link connections between the swinging lever and the looper-support, whereby as said needle-lever is swung on its pivot the looper-support is reciprocated bodily in a plane substantially perpendicular to the path of reciprocatory movement of the needle; substantially as described.

7. In a sewing-machine, a lever pivoted to the machine-frame, and provided at its lower end with means for the attachment of a needle, means for swinging said needle-lever, a looper-support, and connections between said looper-support and the swinging lever, comprising a link pivoted at one end to the needle-lever and at the other end pivoted to a bearing-block through which the looper-support passes, and a second link pivotally connected at one end to said bearing-block, and at the other end to a stationary part of the machine-frame, and collars fixed on the looper-support between which the bearing-block is held; substantially as described.

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

LANSING ONDERDONK.

Witnesses:
CHESTER MCNEIL,
ANNA S. KATZ.