No. 627,083. Patented June 13, 1899.

A. WEIMAR.

KNITTING MACHINE.

(Application filed Jan. 10, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

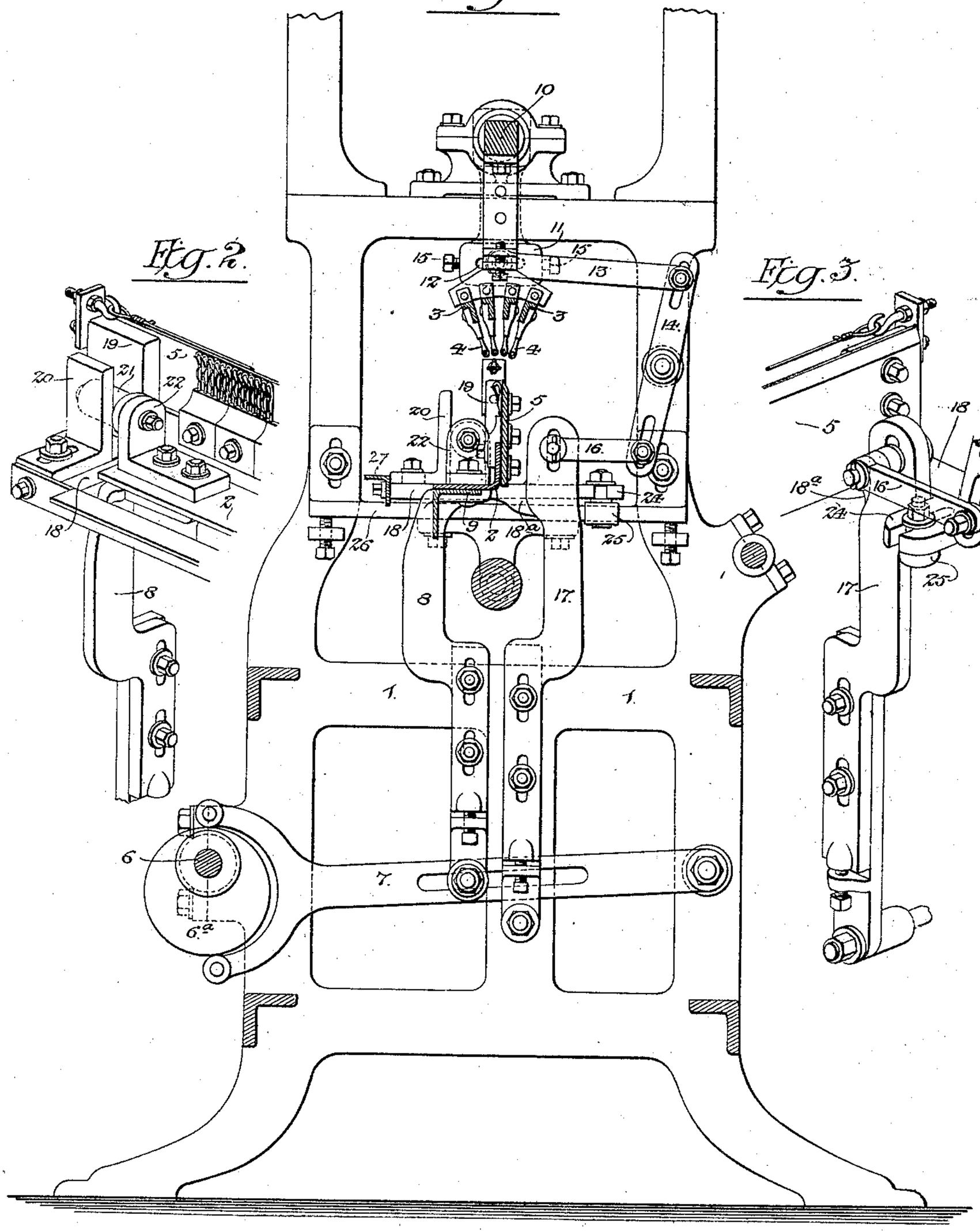

Fig. 2.

Fig. 3.

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Fig. 3.

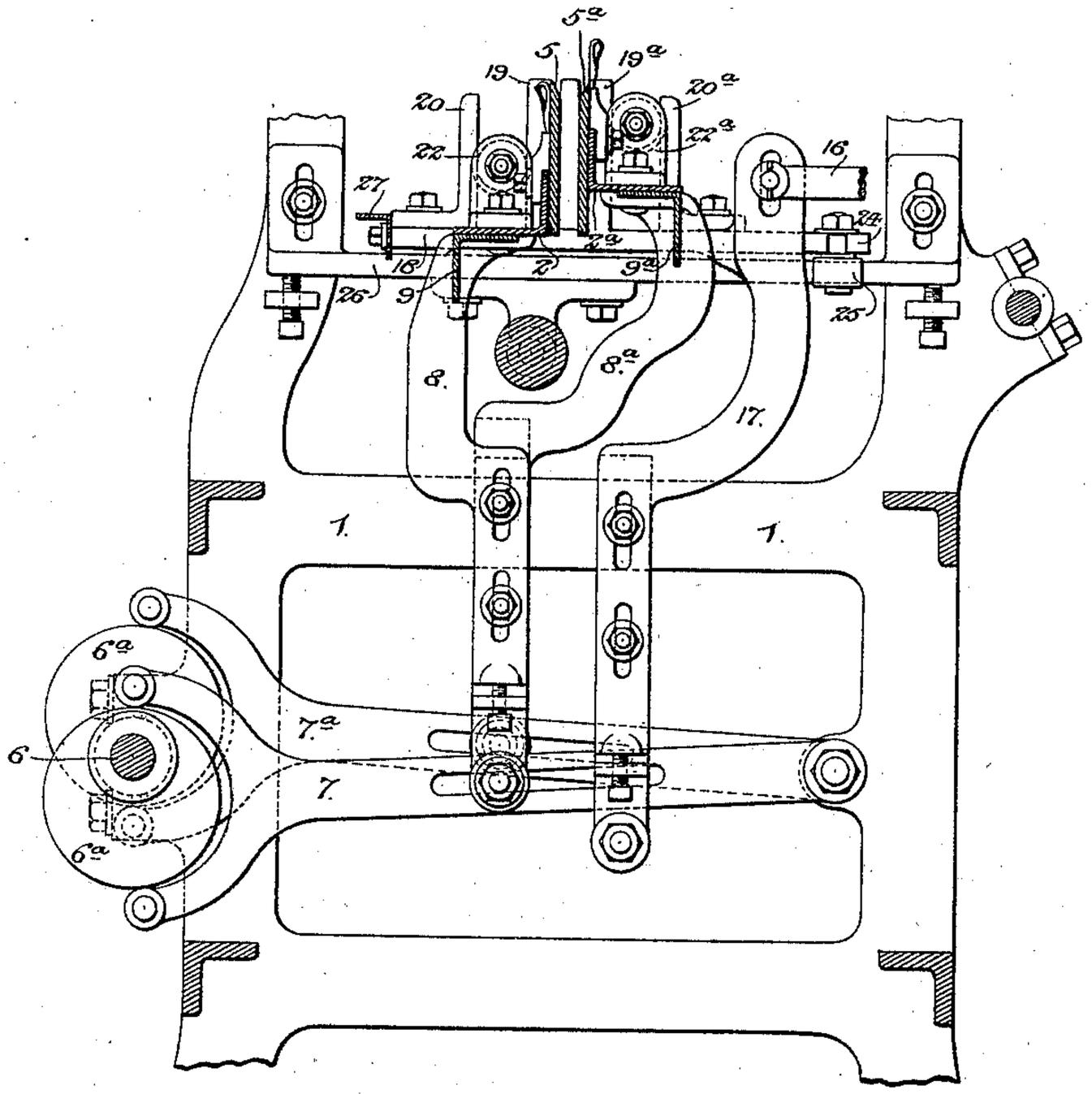
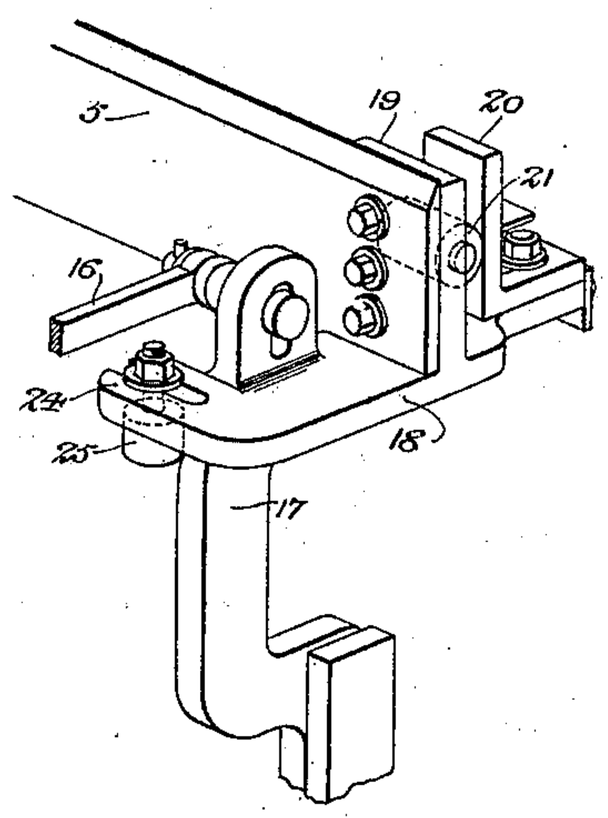


Fig. 4.



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UNITED STATES PATENT OFFICE.

ANDREW WEIMAR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO THE KROUT & FITE MANUFACTURING COMPANY, OF SAME PLACE AND CAMDEN, NEW JERSEY.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 627,083, dated June 13, 1899.

Application filed January 10, 1899. Serial No. 701,747. (No model.)

To all whom it may concern:

Be it known that I, ANDREW WEIMAR, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Knitting-Machines, of which the following is a specification.

My invention consists of certain improvements in that class of knitting-machines known as "straight" machines or "double-rib-knitting" machines, in which a longitudinal needle-bar having vertical reciprocation is combined with longitudinal guide-bars having lateral vibration and longitudinal reciprocation, so that the guide-eyes of any one of the bars may be caused to wrap their threads around the needles, the object of my invention being to quicken the operation of machines of this class, an object which I attain by imparting lateral movement to the needle bar or bars as well as to the guide-bars, so that the movement of the latter necessary to bring the guide-eyes of any particular guide-bar into operative position in respect to the needles is lessened to the extent of the lateral movement imparted to the needle bar or bars, and hence does not require as long a time for its accomplishment as when the entire lateral vibration is effected by the guide-bars alone.

In the accompanying drawings, Figure 1 is a transverse section of sufficient of a double-rib-knitting machine to illustrate the application of my invention thereto. Figs. 2 and 3 are respectively a front perspective view and a rear perspective view of the structure at each end of the needle-bar whereby the desired lateral movements are imparted to the latter. Fig. 4 is a perspective view of said structure, looking toward the outer side of the same; and Fig. 5 is a view, partly in section and partly in elevation, showing the application of my invention to a duplex machine.

1 represents part of the fixed frame of the machine, 2 the usual needle-bar, and 3 a series of guide-bars, each carrying the usual row of guide-eyes 4, supplied with knitting-threads for application to the needles of the needle-bar 2.

The needles reciprocate vertically in contact with a longitudinal plate 5, which I term a "slide-plate" and which serves not only to separate the knitted web from the needles, but also to hold the web so that the stitches will be "knocked over" the tops of the needles as the latter descend and draw down the new stitches.

The needle-bar has vertical reciprocation imparted to it at each end in the ordinary manner by means of a cam 6^a on the driving-shaft 6, said cam acting upon antifriction-rollers carried by the forked end of a lever 7, which is connected by a vertical bar 8 to the flanged plate 9, carrying the needle-bar.

The guide-bars 3 are suspended from the usual longitudinal rock-shaft 10, to which rocking movement is imparted by any of the devices common in this class of machinery. Said rock-shaft has in addition to the depending arms carrying the guide-bars another depending arm 11 at each end, this depending arm being widened at the lower end and having in said widened portion a slot 12 for the reception of a pin or bolt projecting from a link 13, whereby said arm 11 is connected to a lever 14, hung to the fixed end frame of the machine, at the rear of the same, adjustment of said pin or bolt in the slot 12 being effected by means of set-screws 15.

The lever 14 is connected by a link 16 to the upper end of a lever 17, pivoted at its lower end to the fixed frame of the machine and having a projecting arm 18^a, whereby it is connected to a bar 18, said bar having an upwardly-projecting standard 19, between which and the vertical portion of an angle-block 20, adjustable on the bar 18, plays an antifriction-roller 21, carried by a bracket 22 at the end of the needle-bar 2, so that while the vertical reciprocation of the latter is not interfered with it has upon each lateral vibration of the guide-bars 3 lateral movement in the reverse direction imparted to it through the medium of the described connections, so that the lateral movement necessary to bring any row of guide-eyes 4 into operative relation with the needles is divided between the guide-bars and the needle-bar, and hence can be effected in correspondingly less time than if the entire movement was made by the guide-bars.

The slide-plate 5 is rigidly secured at each

end to the respective standard 19, so that it also partakes of the lateral movement of the needle-bar, and is hence always in proper relation with the needles.

In order to preserve the bar 18 in its proper longitudinal position, said arm has a rearwardly-extending portion with slotted projection 24, to which is adapted a stud carrying an antifriction-roller 25, the latter bearing upon a guide-bar 26, secured to the end frame of the machine, whereby said roller 25 travels in contact with the guide-bar as the lever 17 is moved to and fro.

An angle-bar 27 serves to connect the bar 18 at one end of the machine to that at the opposite end of the machine, so as to impart the desired rigidity to the structure and insure the movement of the two bars in unison.

In applying my invention to duplex machines—that is to say, to machines having two needle-bars arranged back to back—I may, as shown in Fig. 5, use two slide-plates 5 and 5^a, likewise disposed back to back, with sufficient space between them for the passage of the knitted web or webs, both of these bars being secured to the standards 19 of the end plates 18, and a supplementary block 19^a being employed in conjunction with a supplementary angle-block 20^a to form a guide for the antifriction-roller 21^a of the second needle-bar 2^a.

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

1. A straight or double-rib knitting machine in which are combined a longitudinal needle-bar, provision for vertically reciprocating the same, laterally-swinging yarn guide-bars, guides for directing the needle-bar in its vertical reciprocation, and means for imparting lateral movement to said needle-bar guides, substantially as specified.

2. A straight or double-rib knitting machine in which are combined a longitudinal slide-plate, a needle-bar having needles operating in conjunction with said slide-plate, provision for vertically reciprocating said needle-bar, laterally-swinging yarn guide-bars, and means for imparting lateral movement to the slide-plate and needle-bar, substantially as specified.

3. The combination in a straight or double-rib knitting machine, of the longitudinal needle-bar, provision for imparting vertical reciprocation thereto, a laterally-vibrating guide-bar structure, guides for the vertical reciprocation of the needle-bar, and a connection between said guides and the laterally-vibrating guide-bar structure whereby lateral movement of said guide-bar structure in one direction is caused to impart lateral movement in the opposite direction to the needle-bar, substantially as specified.

4. The combination in a straight or double-rib knitting machine, of the longitudinal slide-plate, the needle-bar operating in conjunction therewith, provision for imparting vertical reciprocation to said needle-bar, a laterally-vibrating yarn-guide-bar structure, and connections between said yarn-guide-bar structure and the slide-plate and needle-bar, whereby lateral movement of said yarn-guide-bar structure in one direction imparts lateral movement in the opposite direction to the slide-plate and needle-bar, substantially as specified.

5. The combination in a straight or double-rib knitting machine, of the longitudinal needle-bar, provision for imparting vertical reciprocation thereto, vertical guides for said needle-bar, a lever, as 17 carrying said vertical guides, and provision for rocking said lever, substantially as specified.

6. The combination in a straight or double-rib knitting machine, of the longitudinal needle-bar, provision for imparting vertical reciprocation thereto, vertical guides for said needle-bar, a lever, as 17 carrying said guides, provision for vibrating said lever, a bearing-roller moving with said lever, and a transverse guide-rail upon which said roller bears, substantially as specified.

7. The combination in a straight or double-rib knitting machine, of the longitudinal slide-plate, the longitudinal needle-bar operating in conjunction therewith, provision for imparting vertical reciprocation to said needle-bar, a bar having a standard to which said slide-plate is attached and which serves as a guide for the needle-bar, means for maintaining the needle-bar in contact with said guide and provision for imparting lateral movement to said slide-plate-carrying bar, substantially as specified.

8. The combination in a straight or double-rib knitting machine, of the longitudinal needle-bar, provision for imparting vertical reciprocation thereto, a transverse bar having a vertical standard thereon, an angle-block secured to said transverse bar and having a vertical member parallel with said vertical standard, an antifriction-roller mounted on the needle-bar, and guided between said block and standard, and provision for laterally moving said transverse bar, substantially as specified.

9. The combination in a double-rib-knitting machine, of a pair of slide-plates disposed back to back, with a space between them, needle-bars having needles operating in conjunction with said slide-plates, provision for imparting vertical reciprocation to said needle-bars, transverse bars carrying said slide-plates, and guides for the vertical reciprocation of the needle-bars, and provision for laterally moving said transverse bars, substantially as specified.

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

ANDREW WEIMAR.

Witnesses:
F. E. BECHTOLD,
CHAS. H. BANNARD.