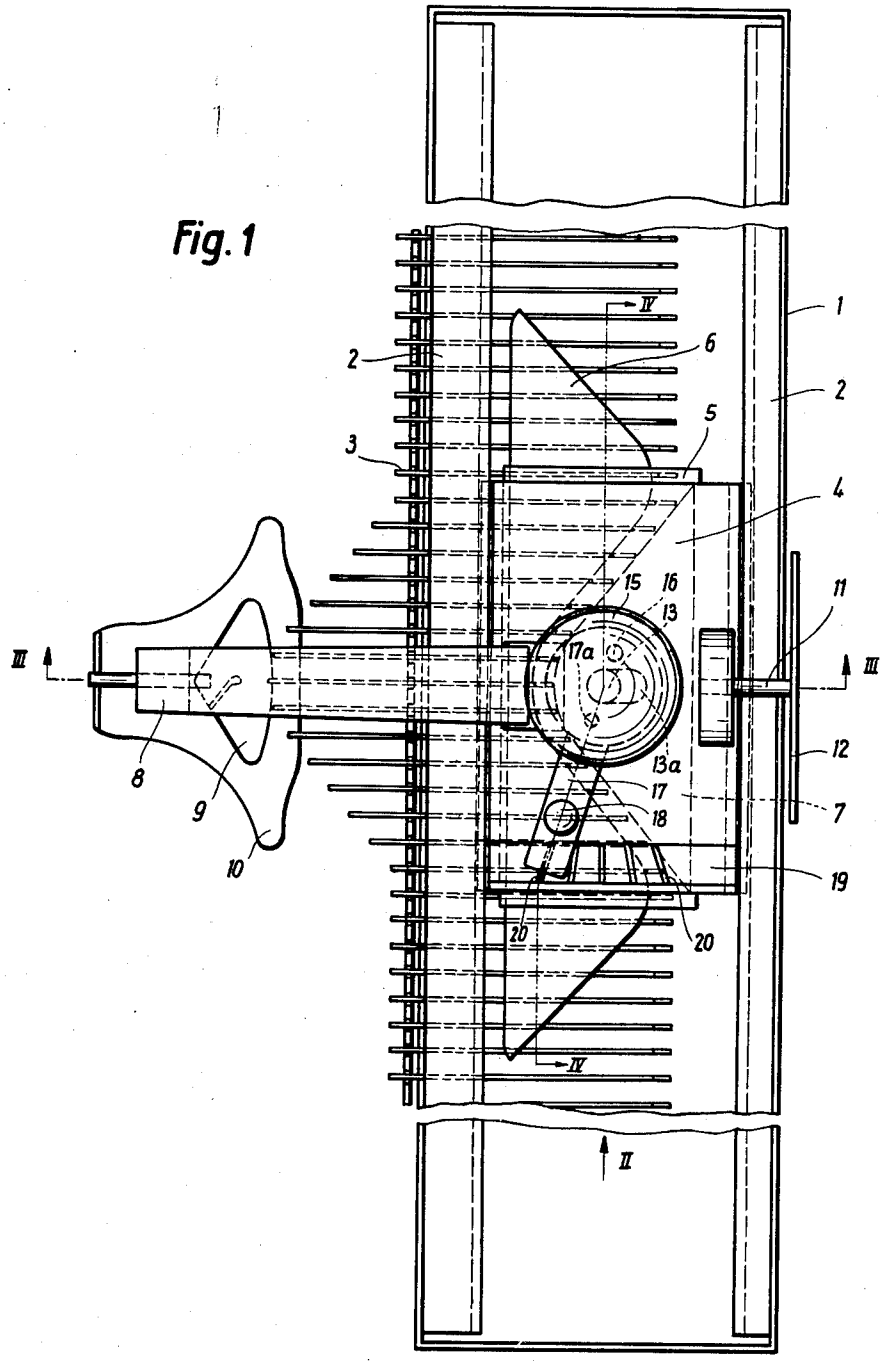
Jan. 3, 1956 W. W. LENKEIT ET AL 2,729,081

NEEDLE-MOVING MECHANISM FOR KNITTING MACHINES

Filed June 30, 1953 2 Sheets-Sheet 1

Fig. 1



Willy Werner Lenkeit & Josef Beggel
by Dezsoe Steinberg
attorney

Jan. 3, 1956 W. W. LENKEIT ET AL 2,729,081

NEEDLE-MOVING MECHANISM FOR KNITTING MACHINES

Filed June 30, 1953 2 Sheets-Sheet 2

Fig. 2

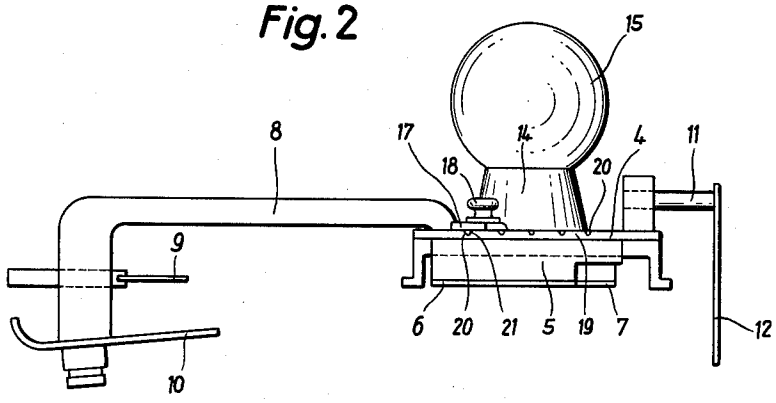


Fig. 3

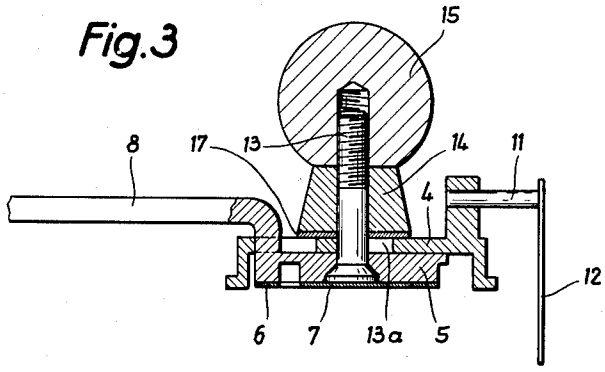
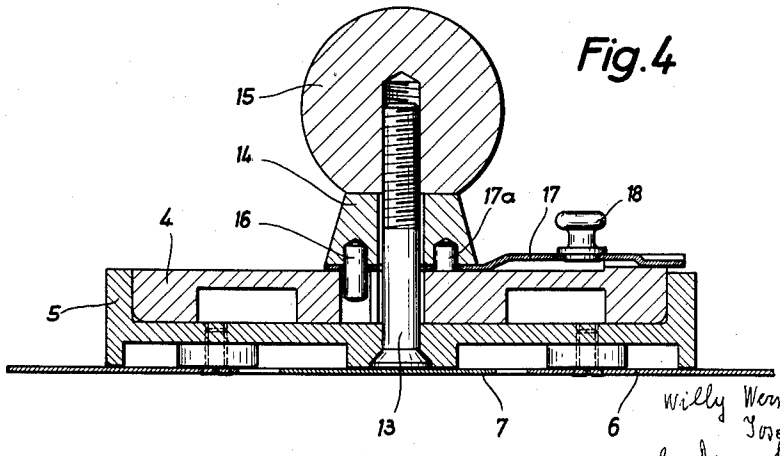


Fig. 4



Inventors
Willy Werner Lenkeit and
Josef Biggel
by Pierce Scheffler attorney

United States Patent Office

2,729,081

Patented Jan. 3, 1956

2,729,081

NEEDLE-MOVING MECHANISM FOR KNITTING MACHINES

Willy Werner Lenkeit and Josef Biggel, Markdorf, Baden, Germany

Application June 30, 1953, Serial No. 365,068

5 Claims. (Cl. 66—77)

The invention relates to knitting machines and, more particularly, to hand-operated knitting machines of that known type which has a number of needles positioned aside of each other, guided in their longitudinal direction and moved in this direction reciprocatingly by a mechanism shuttling across the longitudinal directions of the needles and carrying two guide plates which include a channel curved in the moving direction of the machanism and operatively engaging projections of the needles.

An object of the invention is to provide such a knitting machine with a needle-moving mechanism which is adjustable for various sizes of the knitted meshes. Such adjustment has been made by shifting one of the guide plates or a portion of the curved channel. It is found that this method does not result in a perfect adjustment, and that a perfect adjustment to different sizes of meshes requires shifting the entire curved channel without changing its width or shape.

Hence, further objects are to hold the guide plates including the curved channel in permanently fixed mutual position, and to shift both guide plates simultaneously and equally.

Other objects are to provide handy means for convenient, quick and accurate shift of the curved channel, to provide the mechanism with a lever for this purpose, to shift the curved channel with this lever stepwise or in any desired degree within the extreme limits of adjustment, and to secure the lever and the channel reliably in any set position.

Still other objects are to attain these results with few parts and with simple means, to use the handle of the shuttle mechanism for securing both the lever and the channel in adjusted position, and to release the channel for adjusting shift by a turning movement of this handle.

Still other objects and advantages will appear from the following description of an exemplifying embodiment of my invention, from the appended claims and from the accompanying drawing in which:

Fig. 1 shows a top view of a mechanism which is an illustrative embodiment of my invention, and of adjoining parts of a knitting machine.

Fig. 2 shows a side view of the same embodiment seen in the direction of the arrow II in Fig. 1.

Fig. 3 shows a partially sectional side view of the same embodiment seen in the same direction as Fig. 2, the sectionally represented parts being cut along the line III—III in Fig. 1.

Fig. 4 shows a partially sectional view of the same embodiment seen in the direction of the arrows IV in Fig. 1, the sectionally represented parts being cut along the line IV—IV in Fig. 1.

Referring to the drawings, numeral 1 indicates a stationary part or bed of a hand-operated knitting machine. Two parallel rails 2 are affixed to the part 1. A number of knitting needles 3 are positioned parallel to and aside of each other and are guided in their longitudinal direction in well known manner.

A sled 4 is guided along the rails 2. A body 5 underlies and contacts this sled. Two guide plates 6 and 7 which may be made of metal sheets are affixed to the lower side of the body 5, for example by screws 22 surrounded by washers 23. These guide plates extend alongside of each other in the direction of the rails 2 or in the moving direction of the sled 4 and are spaced from each other in the direction of the needles 3. Each guide plate has a surface curved along its mentioned extension and facing the curved surface of the other guide plate so as to have one curved contour in the one guide plate facing the curved contour in the other guide plate whereby the plates 6 and 7 form the rims of a curved channel included by these plates. Upward projections of the needles 3 reach into this channel in well known manner whereby movement of the body 5 with the curved plates 6 and 7 in the direction crossing the needles moves the latter in their longitudinal direction.

An arm 8 may form an extension of the body 5, reach through an opening of the sled 4 and serve as a holder for a thread-guide 9 and for a mesh-stripper 10. An arm 11 may be connected to the sled 4 and carry an element 12 of known curved shape which operates a device counting the rows (not shown).

A bolt 13 has a threaded upper end and a headed lower end which is countersunk in and engages the body 5. The bolt passes fittingly through a bore of the body 5 and through a slot 13*a* of the sled 4. A spacing member 14 preferably has the shape of a frustrum of a cone and has a bore for the passage of the bolt 13. A handle 15 is positioned over the member 14 and has a nut-like thread engaging the threaded end of the bolt 13. The handle 15 is preferably shaped like a ball of which the lowermost segment is cut off to form a flat surface contacting the member 14.

A pivot pin or axle 16 is inserted in a bore of a lever 17 and extends down into a bore of the sled 4 and up into a bore of the member 14. Another pin 17*a* is inserted in bores of the lever 17 and of the member 14. The lever 17 has another bore for the passage of the bolt 13 and is provided with a handle 18 for turning the lever about the pivot axis defined by the pin 16. This pivot axis is eccentric with respect to the axis of the bolt 13.

The lever 17 overlies the sled 4 and has a portion positioned between the sled 4 and the member 14. A plate 19 affixed to the sled 4 has an upper surface provided with a series of notches 20. A projection or tooth 21 of the lever 17 engages one of the notches 20.

In the shown condition of the mechanism, the tooth 22 enters the notch 20 which is farthest to the left side in Figs. 1 and 2. The nut constituted by the handle 15 is tightened whereby the spacing member 14, the lever 17, the sled 4 and the body 5 are clamped together, and the body 5 is connected to the sled 4 in its most left position relatively to this sled.

In order to shift the body 5 with the guide plates 6 and 7 affixed thereto, the body is released from the sled 4 by loosening the handle 15. This is done by a slight turn of this handle in unscrewing direction. Thereby, the clamping pressure is also taken off the lever 17. This lever is then turned by its handle 18 about the pin 16 in the direction which is counterclockwise in Fig. 1. The lever shifts the bolt 13 to the right side, this bolt sliding in the slot 13*a*, and the body 5 with the plates 6 and 7 participating in the movement of the bolt.

When the channel between the plates 6 and 7 has reached the adjusted position, for example, when the projection 21 of the lever has reached one of the notches 20 which is farther to the right side than the originally engaged notch 20, the handle or nut 15 is tightened again whereby the body, sled and lever are firmly secured in the adjusted position. The projection 21 engages a notch

20. The curved channel between the plates 6 and 7 has a position shifted relatively to the sled 4 and to the rails 2 in the longitudinal direction of the needles 3 and, hence, this channel is adjusted for a different size of meshes to be knitted.

The turning or setting of the lever 17 is facilitated by the pin 17*a* which, together with the pin 16, keeps the spacing member 14 in permanent alignment with the lever 17 while this member contributes to the shifting urge exerted on the bolt 13.

Any different adjustment within the limits defined by the extreme notches 20 can be made in corresponding manner whenever desired. Each adjustment shifts the arm 8 which holds the thread-guide 9 and the mesh-stripper 10 in exactly the same manner as the curved channel whereby the elements 9 and 10 are simultaneously and accurately adjusted in advantageous manner. The thread-guide 9 may be permanently affixed to the arm 8. The mesh-stripper 10 may be adjustably affixed to this arm in any known and suitable manner.

We desire it understood that our invention is not confined to the particular embodiment shown and described, the same being merely illustrative, and that our invention may be carried out in other ways within the scope of the appended claims without departing from the spirit of our invention as it is obvious that the particular embodiment shown and described is only one of the many that may be employed to attain the objects of our invention.

Having described the nature of our invention, what we claim and desire to protect by Letters Patent is:

1. In a knitting machine, a needle-moving mechanism comprising a sled, a body releasably affixed to said sled, two guide plates affixed to said body and extending alongside of each other, each of said plates having a curved contour facing the curved contour of the other plate whereby said plates include a curved channel, and a lever pivoted to said sled and to said body at axes eccentric to each other whereby said lever, when turned while said body is released, shifts said plates simultaneously and equally relatively to said sled.

2. In a knitting machine, a needle-moving mechanism comprising a sled having a slot, a lever having a bore, a bolt passing through said bore and through said slot, a handle secured to one end of said bolt, a body releasably affixed to said sled and secured to the other end of said bolt, and two guide plates affixed to said body and extending alongside of each other, each of said plates having a curved contour facing the curved contour of the other plate whereby said plates include a curved channel, said lever being pivoted to said sled at an axis eccentric to said bolt whereby said lever, when turned while said body is released, shifts said plates simultaneously and equally relatively to said sled.

3. In a knitting machine, a needle-moving mechanism comprising a sled having a slot, a lever having a bore, a bolt passing through said bore and through said slot, having a threaded end and having a headed end, a handle screwed to said threaded end, a body engaged by said headed end and pressed toward said sled when said handle is tightened whereby said body is releasably affixed to said sled, and two guide plates affixed to said body and extending alongside of each other, each of said plates having a curved contour facing the curved contour of the other plate whereby said plates include a curved channel, said lever being pivoted to said sled at an axis eccentric to said bolt whereby said lever, when turned while said body is released, shifts said plates simultaneously and equally relatively to said sled.

4. In a knitting machine, a needel-moving mechanism comprising a sled having a slot, a lever overlying said sled and having a bore, a spacing member overlying said lever and having a bore, a body underlying said sled, a bolt having a lower end engaging said body, passing through said slot and said bores and having a threaded upper end, a handle screwed to said upper end whereby tightening of said handle clamps said spacing body, lever, sled and body together and releasably affixes said body to said sled, a pin passing through an opening of said lever and reaching into said spacing member and into a bore of said sled whereby said lever is pivoted to said sled, another pin reaching into said lever and said spacing element, and two guide plates affixed to said body and extending alongside of each other, each of said plates having a curved contour facing the curved contour of the other plate whereby said plates include a curved channel, said lever being pivoted to said sled at an axis eccentric to said bolt whereby said lever, when turned while said body is released, shifts said plates simultaneously and equally relatively to said sled.

5. In a knitting machine, a needle-moving mechanism comprising a sled, a body releasably affixed to said sled, two guide plates affixed to said body and extending alongside of each other, each of said plates having a curved contour facing the curved contour of the other plate whereby said plates include a curved channel, and a lever pivoted to said sled and to said body at axes eccentric to each other whereby said lever, when turned while said body is released, shifts said plates simultaneously and equally relatively to said sled, said lever overlying said sled and having a projection extending toward said sled, said sled having a plurality of notches for selective engagement with said projection.

References Cited in the file of this patent

UNITED STATES PATENTS

123,545	Appleton	Feb. 13, 1872
405,637	Wilcomb	June 18, 1889
2,150,730	Schuessler	Mar. 14, 1939
2,670,618	Skene et al.	Mar. 2, 1954