Sept. 19, 1939. H. H. HOLMES 2,173,783

YARN FEEDER FOR CIRCULAR KNITTING MACHINES

Filed Sept. 29, 1938

Fig 1.

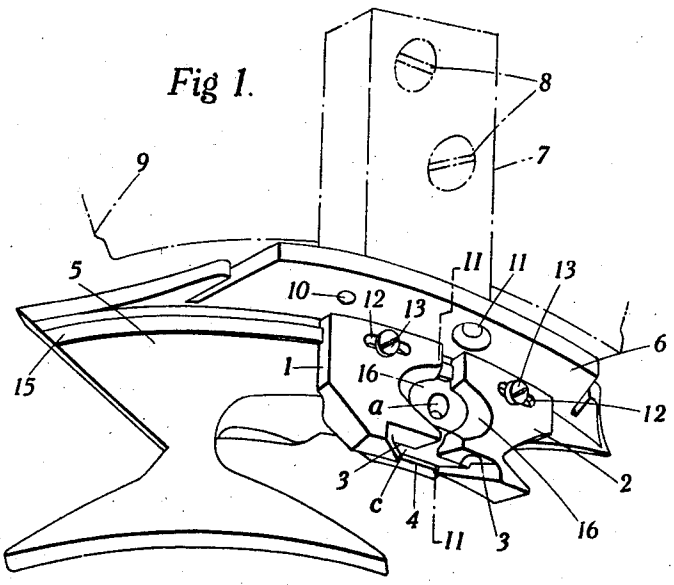


Fig. 2.

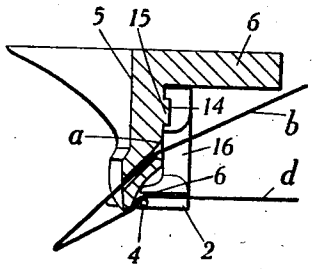
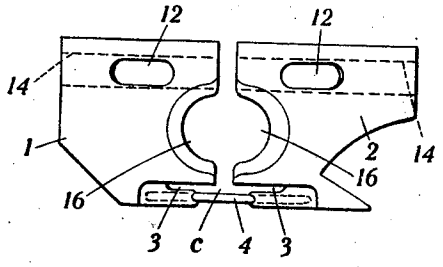


Fig. 3.



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Patented Sept. 19, 1939 2,173,783

UNITED STATES PATENT OFFICE

2,173,783

YARN FEEDER FOR CIRCULAR KNITTING MACHINES

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Application September 29, 1938, Serial No. 232,445
In Great Britain October 18, 1937

13 Claims. (Cl. 66—136)

This invention relates to yarn feeders for circular knitting machines and concerns those of the kind having two yarn feeding openings one of which is of elongated form horizontally for feeding yarn first from one end and then the other during reciprocating knitting.

In one conventional form such a feeder consists of a plate or like part with a hole therein for one yarn and a horizontal slot below the hole for another yarn, and during reciprocating knitting the yarn fed through the slot moves back and forth therein as the result of the reciprocatory motion of the machine so that on forward strokes of reciprocation the yarn is fed from one end of the slot and on reverse strokes the yarn is fed from the opposite end of the slot.

Such a feeder is customarily used for feeding yarns in plating relation, one through the hole and one through the slot as aforesaid so that during reciprocating knitting the yarn fed through the slot changes its position in relation to the other yarn.

The setting of the yarns is usually critical but the disadvantage with a feeder having a slot of a given length is that difficulty is often experienced in obtaining the desired critical setting. The yarns must be held in correct plating relation and the length of the slot must be such as to enable the yarn to be fed to all the needles taking part in reciprocating knitting. It is possible to lengthen the slot by filing or otherwise cutting away the metal at one or each end, but different yarns often require different settings and therefore it is necessary to change the plate, especially if one with a shorter slot is required. Moreover, the feeder is subjected to wear as the result of continual use and this is liable to upset the yarn setting so that unsatisfactory knitting ensues.

The present invention has for its object an improvement designed to obviate these disadvantages and to provide a feeder of the kind described adapted to serve for different settings, as will be hereinafter set forth.

In the accompanying drawing,

Figure 1 is a yarn feeder constituting an example of the invention suitable for application to a circular seamless hosiery machine of the superimposed needle cylinder type.

Figure 2 is a transverse sectional view of the same taken on the line II—II of Figure 1.

Figure 3 is an elevational view drawn to a larger scale of two separate parts of the feeder hereinafter to be described.

Like parts are designated by similar reference characters throughout the drawing.

The feeder illustrated has two yarn feeding openings one, *a*, which is in the form of a hole through which a yarn *b* can be fed (see Figure 2), while the other, *c*, is disposed below the said hole and is of elongated form horizontally for feeding a yarn *d*, which latter during reciprocating knitting moves back and forth in the elongated opening or slot. The feeder includes separate parts 1 and 2, each of which has in one side a recess or notch 3 whereby when the two parts are juxtaposed side by side with the recesses or notches opposed, in the manner shown more clearly in Figure 3, the result is to provide the elongated opening or slot *c*. One or, as shown, each of these parts is adapted for adjustment laterally in relation to the other to enable the length of the slot to be varied according to requirements. In a feeder of this form a bar or like element such as 4 is applied to the parts 1 and 2 so as to constitute the lower side of the elongated opening or slot *c* between the opposed recesses or notches 3 thereby to constrain the yarn to remain in the opening or slot when the aforesaid parts are separated in the manner shown in Figures 1 and 3.

The said bar or like element may be constituted by a strip of metal or a length of wire and, in any event, is attached to or engaged with the associated parts 1 and 2 in such a manner as to permit of the requisite adjustment. In the preferred embodiment of the invention the bar 4 consists of a length of wire which, while being applied to the parts in such a manner as to be held in the required position, is freely connected to, e. g. slidably engaged with, one or each part so as to enable one or each to be moved laterally to vary the length of the opening or slot.

The feeder includes a bracket, plate or like carrier such as 5 upon which the recessed parts 1 and 2 are mounted, and which in turn is adapted to be mounted on the machine at the yarn feeding location. As hereinbefore alluded to, the specific form of feeder illustrated is suitable for application to a circular seamless hosiery knitting machine of the superposed needle cylinder type employing double-ended latch needles, and in this connection the bracket 5 or like carrier may, as shown in Figure 1, be constituted by the conventional latch guard of the machine which is axially mounted on the top cam box of the machine. In the specific example illustrated the bracket 5 or like carrier is formed with a right-angular extension 6 by means of which the feeder is secured to a block 7 in turn attached, for ex-

ample by screws 8, to the top cam box, a portion of which is indicated in dot-and-dash lines at 9 in Figure 1. The extension 6 is conveniently formed with holes 10 and 11 for the passage of a securing pin and a screw respectively.

Preferably both of the parts 1 and 2 are adjustably mounted on the bracket 5, plate or like carrier so as to enable the feed opening *a* to remain centrally disposed with respect to the elongated opening or slot *c*, irrespective of any variation in the length of the latter. Each part is provided with a horizontal slot 12 and is secured to the bracket 5, plate or like carrier by means of a screw 13 passed through the slot into the said bracket, plate or like carrier so that after slackening the screw one or each part can be adjusted laterally according to requirements and then fixed in adjusted position by tightening the screw. Provision may be made for locating the parts 1 and 2 on the bracket 5 or like carrier heightwise, and guiding the parts during adjustment. In this respect it is convenient to form at the back of each of said parts a horizontally disposed recess 14 adapted for engagement with a corresponding projecting rib 15 formed on the front of the bracket or like carrier.

The hole or opening *a* for the yarn *b* is formed in the bracket 5, plate or like carrier and free access to this hole or opening is provided by forming semi-circular or like recesses such as 16 in the opposing sides of the parts 1 and 2.

The opposing edges of the separate parts 1 and 2 may, as shown, be bevelled or rounded so as to provide a flared entrance for the yarn *d* into the elongated opening or slot *c*. In a similar way the semi-circular recesses 16 may be bevelled, thereby providing a flared entrance for the yarn *b* into the hole or opening *a*.

The invention is mainly intended for use in connection with circular seamless hosiery knitting machines for producing plated hosiery articles with plated heel and toe pouches, but is not limited in this respect as it may be applied to other circular knitting machines. In this respect it is convenient to mention that the yarns *b* and *d* in Figure 2 purport to represent plating and main yarns respectively disposed in plating relation. The invention is applicable to circular plain knitting machines as well as to circular rib knitting machines, and to machines of the rotary needle cylinder type, as well as to machines of the stationary cylinder type.

In the application of the invention to a multi-feed circular knitting machine an improved feeder may be provided at one or more or each of the yarn feeding locations.

The aforesaid separate parts may, if desired, be bevelled or chamfered at the back to provide for free passage of the yarns downwards to the needles.

What I claim then is:

1. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form horizontally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination two separate parts each having in one side a recess, said parts being juxtaposed side by side with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening, and at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of the said elongated opening, for the purpose herein specified, and means for maintaining the elongated opening closed at the bottom when the aforesaid parts are moved apart relatively to each other.

2. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder including, in combination, two separate parts each having in one side a recess, said parts being juxtaposed side by side with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening, at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of said elongated opening, and an element which is applied to the said parts so as to constitute the lower side of the elongated opening between the opposed recesses thereby to constrain yarn to remain in the said opening when the said parts are separated.

3. A yarn feeder according to claim 2, wherein the element is in the form of a bar constituted by a length of wire.

4. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder including, in combination, two separate parts each having in one side a recess, said parts being juxtaposed side by side with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening, at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of said elongated opening, and an element which is applied to the said parts and freely connected to at least one of the latter so as to constitute the lower side of the elongated opening between the opposed recesses thereby to constrain yarn to remain in the said opening when the said parts are separated.

5. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination, a bracket which is adapted to be mounted on the machine at a yarn feeding location, two separate parts each having in one side a recess, said parts being mounted side by side upon said bracket with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening, and at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of the said elongated opening, for the purpose herein specified, and means for maintaining the elongated opening closed at the bottom when the aforesaid parts are moved apart relatively to each other.

6. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination, a bracket which is adapted to be mounted on the machine at a yarn feeding location, and two separate parts each having in one side a recess, said parts being mounted side by side upon said bracket with the recesses opposed so that the latter together de-

fine the ends of the aforesaid elongated opening, at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of the said elongated opening, and an element which is applied to the said parts so as to constitute the lower side of the elongated opening between the opposed recesses thereby to constrain yarn to remain in the said opening when the said parts are separated.

7. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination, a bracket which is adapted to be mounted on the machine at a yarn feeding location, two separate parts each of which is provided with a slot and has in one side a recess, screws which are passed through the said slots into the bracket, the construction and arrangement being such that said parts are adjustable laterally in relation to each other, said parts being mounted on the bracket side by side with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening the extent of which can be varied for the purpose specified by adjustment of the aforesaid parts, and means for maintaining the elongated opening closed at the bottom when the aforesaid parts are moved part relatively to each other.

8. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination, a bracket which is adapted to be mounted on the machine at a yarn feeding location, two separate parts each of which is provided with a slot and has in one side a recess, screws which are passed through the said slots into the bracket, the construction and arrangement being such that said parts are adjustable laterally in relation to each other, said parts being mounted on the bracket side by side with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening the extent of which can be varied for the purpose specified by adjustment of the aforesaid parts, and an element which is applied to the said parts so as to constitute the lower side of the elongated opening between the opposed recesses thereby to constrain yarn to remain in the said opening when the said parts are separated.

9. For a circular knitting machine, a yarn feeder comprising, in combination, a bracket which is formed with a yarn feeding hole and adapted to be mounted on the machine at a yarn feeding location, two separate parts each having in one side a recess, said parts being mounted side by side upon said bracket with the recesses opposed so that the latter together define the ends of a yarn feeding opening of elongated form which opening is disposed below the yarn feeding hole in the bracket and is for feeding yarn first from one end thereof and then the other during reciprocating knitting, at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of the said elongated opening, for the purpose herein specified, and means for maintaining the elongated opening closed at the bottom when the aforesaid parts are moved apart relatively to each other.

10. A yarn feeder according to claim 9, wherein semi-circular recesses are also formed in the opposing sides of the two separate parts to provide access to the yarn feeding hole in the bracket.

11. For a circular kniting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form horizontally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination two separate parts each having in one side a recess, the opposing edges of said parts being bevelled and the parts being juxtaposed side by side with the recesses opposed so that the latter together define the ends of the aforesaid elongated opening, and at least one of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to the other to vary the extent of the said elongated opening, for the purpose herein specified, and means for maintaining the elongated opening closed at the bottom when the aforesaid parts are moved apart relatively to each other.

12. For a circular knitting machine, a yarn feeder having two yarn feeding openings one of which is of elongated form longitudinally for feeding yarn first from one end and then the other during reciprocating knitting, said feeder comprising, in combination, a bracket which has a horizontally disposed projecting rib on the front thereof and is adapted to be mounted on the machine at a yarn feeding location, two separate parts each of which is formed at the back with a horizontal recess for engagement with said projecting rib and also has a recess in one side, said parts being mounted side by side upon said bracket with the recesses in the sides of the parts opposed so as together to define the ends of the aforesaid elongated opening, both of said parts being constructed and arranged to permit of adjustment thereof laterally in relation to each other to vary the extent of said elongated opening, for the purpose herein specified, and means for maintaining the elongated opening closed at the bottom when the aforesaid parts are moved apart relatively to each other.

13. For a circular knitting machine, a yarn feeder comprising, in combination, a bracket which is formed with a yarn feeding hole and adapted to be mounted on the machine at a yarn feeding location, two separate parts each of which is provided with a slot and has in one side a recess, screws which are passed through the slots into the bracket, the construction and arrangement being such that the said parts are adjustable laterally in relation to each other, said parts being mounted side by side upon said bracket with the recesses opposed so that the latter together define the ends of a yarn feeding opening of elongated form, which opening is disposed below the yarn feeding hole in the bracket and is for feeding yarn first from one end thereof and then the other during reciprocating knitting, the extent of the elongated opening being capable of variation for the purpose specified by adjustment of the aforesaid parts, and an element which is constituted by a length of wire and is slidably engaged with the said parts so as to constitute the lower side of the elongated opening between the opposed recesses thereby to constrain yarn to remain in the said opening when the said parts are separated.

HENRY HAROLD HOLMES.