Nov. 19, 1946. J. N. GILBREATH 2,411,259

LOOP CUTTER

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Fig. 1.

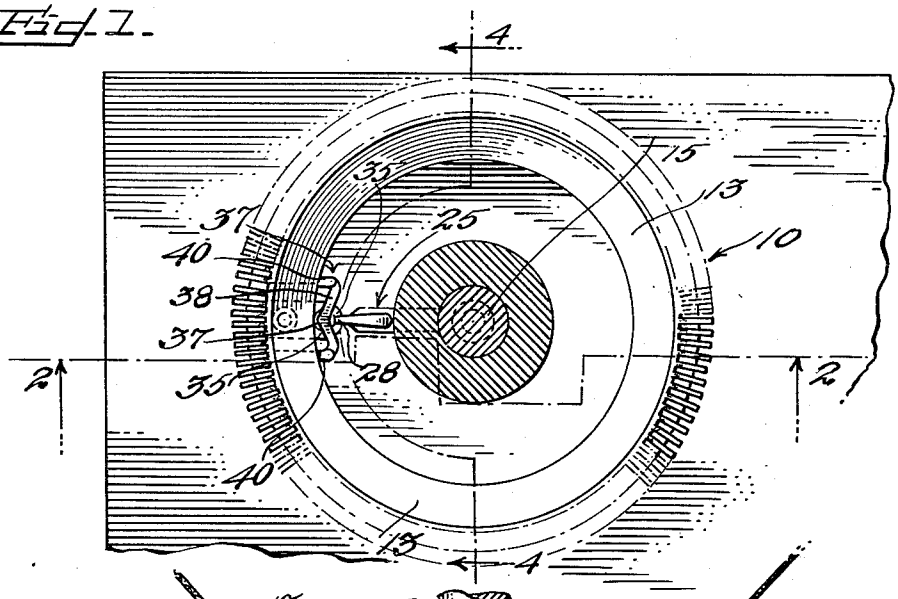

Fig. 2.

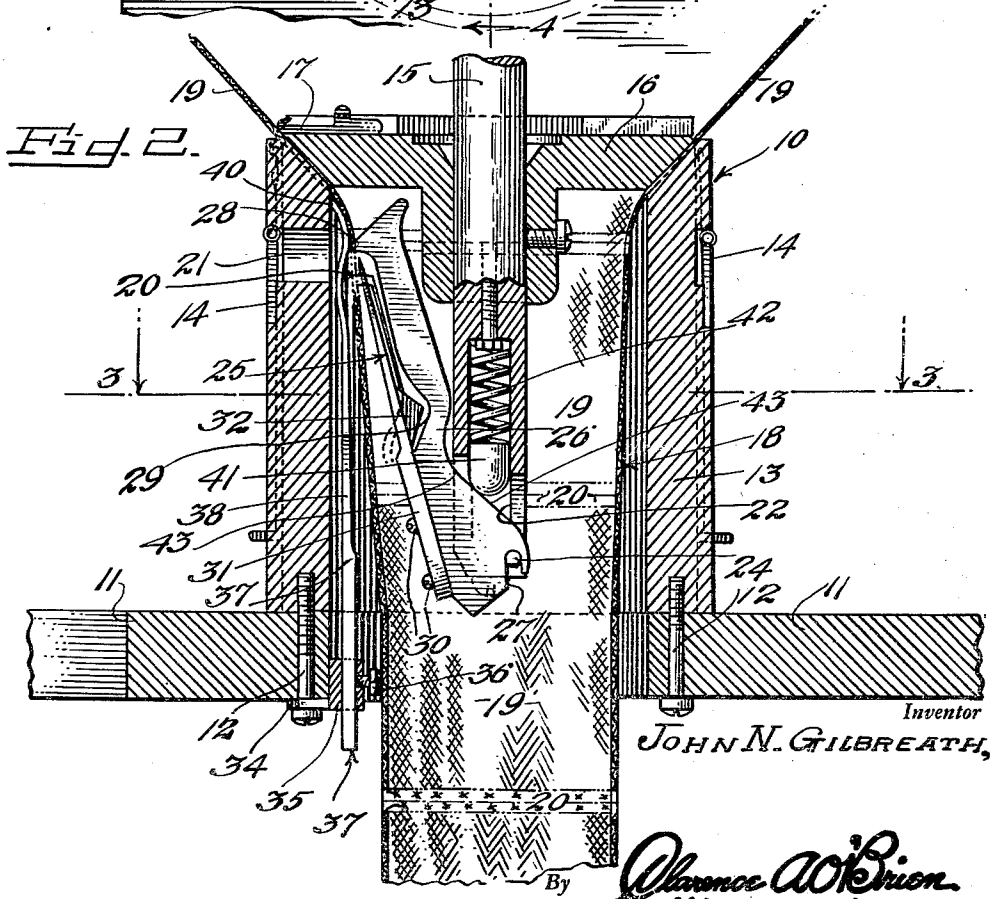

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Fig. 3.

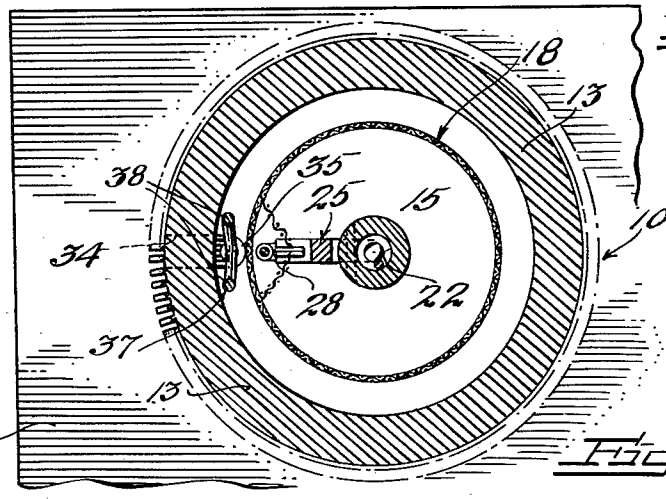


Fig. 6.

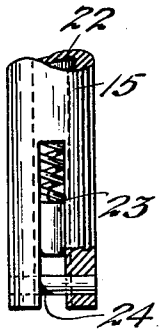


Fig. 5.

Fig. 4.

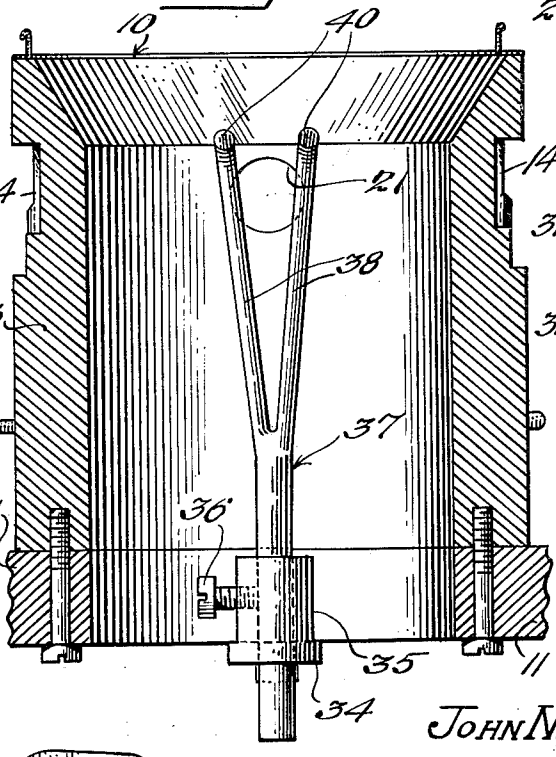
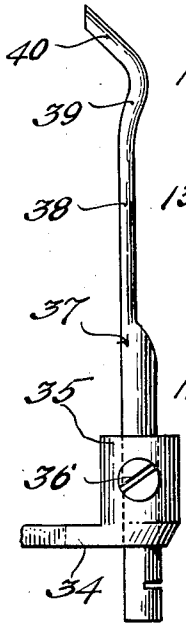


Fig. 7.



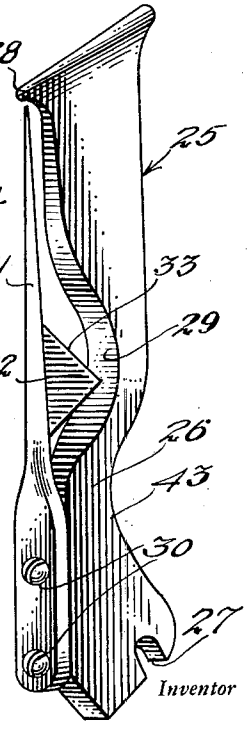
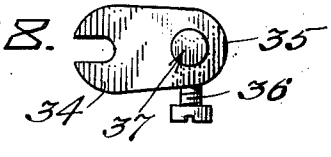


Fig. 8.



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UNITED STATES PATENT OFFICE

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LOOP CUTTER

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Application September 24, 1945, Serial No. 618,121

10 Claims. (Cl. 66—147)

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This invention relates to a loop cutter, and more particularly to an attachment for use on a circular knitting machine.

The primary object of the invention is automatically to clip a selected loop of the shed-off strip or band which is ordinarily formed between units of the knitted product, such, for instance, as a sock top.

In the process of knitting, it is customary to knit the bodies or units and join them by what is commonly referred to as a shed-off strip or band. These shed-off strips or bands comprise a loosely knitted strip or band by which the units are joined in the continuous knitting process.

It is then customary to separate the knitted units by unravelling the shed-off strips, and to do this, it is necessary to clip a fiber loop at a certain point so that separation of one unit from the next may be easily accomplished.

Another object of this invention is to intercept and re-direct a loop of the loosely knitted shed-off strips and to clip the same so as to facilitate the subsequent separation of one knitted unit from another.

The above and other objects may be attained by employing this invention which embodies, among its features, a selector needle associated with the needle cylinder of a circular knitting machine which is adapted yieldingly to engage the work so that when a shed-off strip is encountered, the needle will engage a loop thereof and re-direct it to a cutting device or blade by which the loop is severed.

Other features include a V-shaped guide cooperating with the needle in re-directing a loop of the shed-off strip, and means yieldingly to hold the needle in a position with relation to the V-shaped guide to cause a loop of the shed-off strip to be re-directed.

Still other features include vertical adjustment of the V-shaped guide and yielding means for urging the selector needle into operative relation therewith.

In the drawings—

Figure 1 is a plan view of a knitting machine equipped with this improved fiber clipper, portions thereof being shown in section to more clearly illustrate the details of construction,

Figure 2 is a transverse sectional view taken substantially on the line 2—2 of Figure 1,

Figure 3 is a horizontal sectional view taken substantially on the line 3—3 of Figure 2,

Figure 4 is a vertical sectional view taken substantially on the line 4—4 of Figure 1,

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Figure 5 is a perspective view of the selector needle and needle guard and carrier,

Figure 6 is a fragmentary side view of the lower end of the dial-supporting post,

Figure 7 is a side view of the V-shaped guide, and

Figure 8 is a bottom plan view of Figure 7.

Referring to the drawings in detail, a conventional circular knitting machine, designated generally 10, comprises the usual bed 11, to which is secured as by bolts 12 a conventional knitting cylinder 13 in which needles 14 are slidably mounted. Supported in the conventional manner above the cylinder 13 is a dial post 15 upon which a needle dial 16 is supported in proper relation with the cylinder 13, and this dial 16 carries the conventional radial needles 17 which cooperate with the needles 14 in producing the product designated generally 18. The work product 18 comprises units 19 which are joined together in the process of production by the conventional shed-off strips or bands 20. These shed-off bands or strips 20 differ from the units 19 in that they are composed of a plurality of loosely knitted loops, whereas the units 19 are closely knitted in the conventional manner.

Formed in the cylinder 13 near its upper end is a peep-hole 21 and extending upwardly from its lower end in the post 15 is an axial bore 22. A transversely extending slot 23 extends across the lower end of the post 15 and when the parts are assembled, this slot 22 extends in a plane with the longitudinal axis of the peep-hole 21. Extending transversely of the slots 23 adjacent the lower end of the post 15 is a pivot pin 24 upon which the selector needle, to be more fully hereinafter described, is supported. A selector designated generally 25 comprises an elongated body 26 having formed adjacent its lower end a notch 27 which is adapted to receive the pin 24 to pivotally support the selector 25 in position on the post 15. Formed at the upper end of the body 26 is a forwardly projecting bill or guard 28 and formed intermediate the guard 28 and the lower end of the body 26 is a recess 29 for a purpose to be more fully hereinafter described. Attached, as at 30, to the forward edge of the body 26 adjacent its lower end is the selector needle 31, the upper end of which is positioned slightly inwardly of the forward end of the bill 28 in spaced relation to the underside thereof. A blade 32 is attached to the needle 31 intermediate its end and projects inwardly toward the inner wall of the recess 29 and the upper edge 33 of the blade is sharpened so that a fiber moving downwardly

along the needle will be severed upon engagement with the upper end of the blade.

Carried by a suitable bracket 34 which is supported on the under side of the bed 11 by one of the screws 12 in vertical alignment with the axis of the peep-hole 21 is a socket 35 having a transversely extending set-screw 36 by means of which a guide member, designated generally 37, is supported adjacent the inner side of the cylinder 13. This guide 37 is provided with a pair of divergent, upwardly extending fingers 38, the upper ends of which are bowed inwardly, as at 39, to straddle the upper end of the selector 25 while the extreme upper ends of the fingers 38 are bent outwardly, as at 40, toward the wall of the cylinder 13 adjacent the upper end thereof.

In operation, it will be understood that the cylinder needles 14 and the dial needles 17 cooperate at the junction of the cylinder and dial to form the knitted product 18 which passes downwardly between the inclined edges of the upper end of the cylinder 13 and the periphery of the dial 16 in the form of a fabric tube. As previously explained, between the knitted units 19, the machine automatically produces the shed-off bands 20. Passing downwardly through the interior of the cylinder 13, the knitted product 18 encounters the fingers 38 and is pressed into position therebetween by engagement with the bill 28 until such time as the shed-off band 20 is encountered, when one of the loosely knitted loops thereof will be picked up by the point of the needle 31, and travelling downwardly on the needle will encounter the blade 32 and be severed, thus enabling the units 19 readily to be separated one from the other.

Any suitable yielding means may be employed to urge the selector 25 into position between the fingers 38 and in the present instance, this yielding means takes the form of a follower 41 mounted to slide vertically within the bore 22 of the post 15, and to be urged toward the open end of said bore on the influence of a compression coil spring 42. The lower end of the follower 41 is preferably of spherical formation to contact with the cam surface 43 formed on the back of the elongated body 26, as will be readily understood upon reference to Figure 2.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction and combination and arrangement of parts may be restored to without departing from the spirit and scope of the invention as claimed.

Having thus described the invention, what I claim is:

1. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle yieldingly mounted on the post within the cylinder, said needle being adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, and a knife interposed in the path of travel of said re-directed loop to severe it.

2. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle within the cylinder adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, a guard to prevent the knitted units from

engaging the needle, and a knife interposed in the path of travel of said re-directed loop to severe it.

3. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle yieldingly mounted on the post within the cylinder, said needle being adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, and a knife carried by the needle to sever the re-directed loop.

4. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, a selector needle mounted on the post and adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, and a knife interposed in the path of travel of the re-directed loop to severe it.

5. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, a selector needle mounted on the post and adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, and a knife carried by the needle to sever the redirected loop.

6. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle within the cylinder adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, a knife interposed in the path of travel of said re-directed loop to sever it, and a guide for cooperation with the needle in re-directing the loop.

7. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle within the cylinder adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, a knife interposed in the path of travel of said re-directed loop to sever it and a guide mounted adjacent the inner wall of the cylinder for cooperation with the needle in re-directing the loop.

8. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial-supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle within the cylinder adapted to intercept and re-direct a loop of the shed-off strip of the product of the machine, a knife interposed in the path of travel of said re-directed loop to sever it, and a vertically adjustable guide mounted adjacent the inner wall of the cylinder for cooperation with the needle in re-directing the loop.

9. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle pivotally mounted on the post, a V-shaped guide mounted adjacent the inner wall of the cylinder for cooperation with the needle in intercepting and re-directing a loop of the shed-off strip of the product of the machine, and means interposed

in the path of travel of the re-directed loop to sever it.

10. A loop cutter for circular knitting machines which includes the combination with a needle cylinder and a dial supporting post upon which the needle dial is secured in operative relation with the cylinder, of a selector needle pivotally mounted on the post, a V-shaped guide mounted

adjacent the inner wall of the cylinder for co-operation with the needle in intercepting and re-directing a loop of the shed-off strip of the product of the machine, means interposed in the path of travel of the re-directed loop to sever it, and yielding means to hold the needle in operative relation to the V-shaped guide.

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