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P. P. LA MONTAGNE

MACHINE FOR UNITING LOOPED FABRICS

Filed Feb. 17, 1922

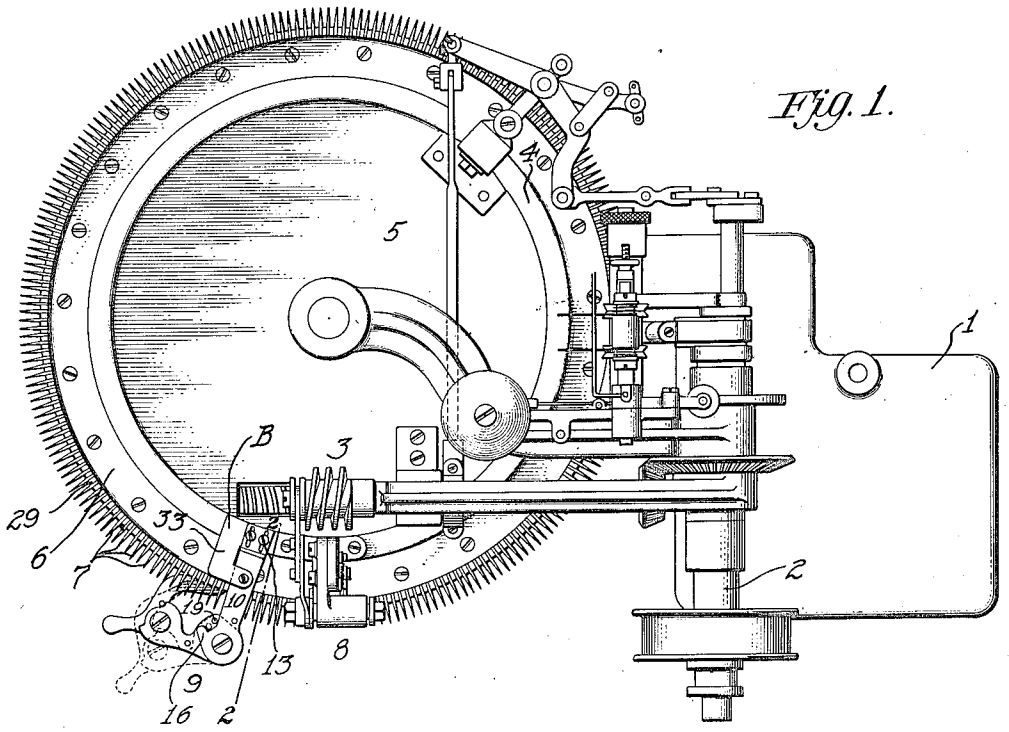


Fig. 1.

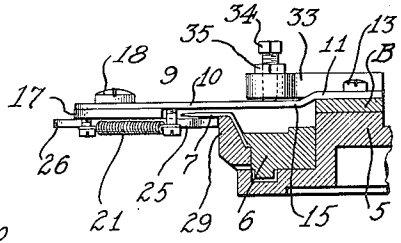


Fig. 2.

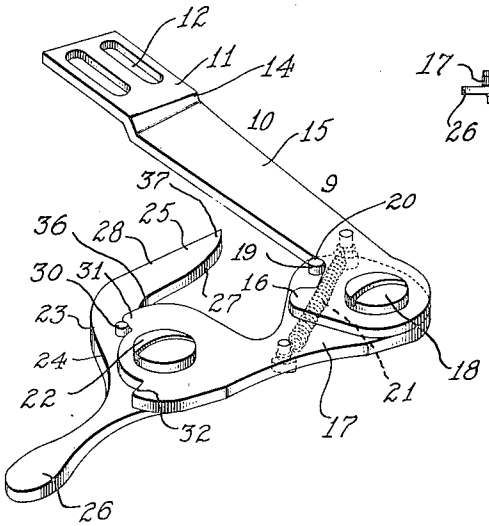


Fig. 3.

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UNITED STATES PATENT OFFICE

PATRICK P. LA MONTAGNE, OF BOURBONNAIS, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO POPE MACHINE COMPANY, OF KANKAKEE, ILLINOIS, A CORPORATION OF ILLINOIS.

MACHINE FOR UNITING LOOPED FABRICS.

Application filed February 17, 1922. Serial No. 537,216.

To all whom it may concern:

Be it known that I, PATRICK P. LA MONTAGNE, a citizen of the United States, residing at Bourbonnais, in the county of Kankakee and State of Illinois, have invented certain new and useful Improvements in Machines for Uniting Looped Fabrics, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates primarily to machines for uniting looped fabrics, and it has especial reference to machines for sewing together the looped edges of such articles as hosiery.

The object of the invention is to provide a simple but effective device to be associated with a machine, for instance, for looping the edges of stockings, such device being designed automatically to effect a stripping of the stockings off the machine after the looped edges of such stockings have been united.

When a hosiery article is knit upon a circular knitting machine, say, beginning at the toe, the edges at such toe have to be united and sewed together to complete the stocking. Machines of this general type and of various forms are well known in the art and usually comprise a rotatable supporting cylinder or dial carrying a circular series of radially-projecting impaling pins upon which the edges of the knit or looped fabric to be united are superposed or impaled, and which edges are then, by suitable stitch-forming mechanism, constituting a component of the machine, sewed together. The articles thus to be stitched together are successively placed upon the impaling pins by the hand of the operator; and, according to present day practice, the completed stocking is manually removed from the impaling pins. It is the purpose of the present invention to effect such removal or stripping of the completed hosiery from the impaling pins automatically, whereby the operator is relieved of having manually to perform that operation and can, therefore, direct her attention almost exclusively to impaling the edges of the hosiery upon the pins and thereby speed up production to a substantial degree.

I am aware that, from time to time, it has heretofore been proposed to utilize devices for effecting the stripping action contemplated by my invention; but the action of such devices has usually developed serious difficulties in that, in the event that the stocking for any reason adheres to the impaling pins and the device fails to function to strip the same, such stocking effects a jamming of the hosiery between adjacent parts and the pins, with the result that such impaling pins are broken or otherwise seriously damaged. It is the object, therefore, of the present invention to provide an efficient automatic mechanism which will be thrown out of action by the article itself and prevent injury to the impaling pins and the article in the event that such article is not removed by the device.

In order that the invention may be more readily comprehended by those skilled in the art, I have revealed a practical embodiment thereof in the accompanying drawings; but these are to be considered as merely illustrative and it is to be understood that other embodiments and other utilizations are within the spirit of my invention and that, also, the illustrated structure is susceptible of a wide range of modification and variation without departing from the salient features or underlying principles of the invention.

In these drawings:

Figure 1 is a view in top plan of a looping machine with my invention incorporated therein;

Fig. 2 is a fragmentary view in vertical section, on the line 2—2, Fig. 1; and

Fig. 3 is a view in perspective of the hosiery-stripping device, detached.

It is deemed unessential, for the purposes of the present disclosure, to describe in detail a machine for sewing looped fabrics of the type herein illustrated, because the construction and operation thereof are well known in the art. It suffices to say that this machine includes a base 1 which, as usual, is secured to a suitable table or bench and includes a main driving shaft 2 for operating a dial-rotating mechanism designated, generally, by the reference-character 3, and stitch-forming mechanism designated, generally, by the reference-character 4, and other operating parts of the machine.

Outstanding from the base 1 is a dial-support 5, and thereon rotates a pin-support or

ring 6 provided with radially-projecting impaling pins or points 7. These pins are of sufficient number and length to hold the meshes or loops of the edges of a given article, such as a stocking, which are to be united after the operator has placed such articles successively upon the impaling pins at various distances apart.

A cutting mechanism, designated generally by the reference-character 8—and preferably of the type disclosed in United States Patent No. 1,205,107, granted November 14, 1916—is operatively associated with the pin-support 6 so as to sever the uniting thread produced by the stitch-forming mechanism 4, whereby the operations on the stocking are completed.

It will be understood that the pin-support 6 rotates continuously so that the stockings, placed upon the impaling pins or points by the operator, are successively presented to the stitch-forming mechanism 4 and then to the thread-severing mechanism 8 and the continued movement of the ring-support 6 carries each stocking into the operative zone of my improved stripping mechanism, designated generally by the reference-character 9. This device includes an arm or member 10 provided with a portion 11 having elongated slots 12 to receive cap-screws 13 for securing the arm 10 and bracket B which, in turn, is secured to the support 5. The arm 10 is angulated at 14 to form an offset portion 15 overhanging the impaling pins 7 and occupying a position slightly above the plane of the pins, as shown in Fig. 2. By reason of the slots 12 and the screws 13, the arm may be adjusted in a horizontal plane whenever occasion requires. The outer extremity of the offset portion 15 is provided with a lug or extension 16, for a purpose presently to be explained.

Pivoted to the offset portion 15 of the arm 10 is a swinging connecting element 17 which turns on a pivot 18. The swinging element carries a stop or upstanding post 19 adapted to abut either against the lug 16 or against the edge 20 of the offset portion 15. Thus, coacting means carried by the arm 10 and the element 17 operate to limit the swinging movement of the element 17 in both directions. Connected to both the arm 10 and the swinging element 17—preferably on their lower faces—is a contractile spring 21, the function of which is to exert a normal pull on the element to hold the stop 19 against the edge 20 of the arm and, thus, maintain the element 17 normally in the position shown in Fig. 1. The spring 21, however, is of such strength as to yield and permit the member 17 to swing to the position shown in dotted lines in Fig. 1 when sufficient force is exerted by swinging movement of the element 17 to overcome the tension of the spring.

Pivoted, as at 22, on the swinging element 17 is a hosiery-engaging member 23 comprising, in this instance, a body-portion 24, a hosiery-stripping portion 25, and a handle-portion 26. The stripping portion 25 has a curved edge 27 and a relatively straight edge 28, the latter adapted normally to ride against the periphery 29 of the rotatable pin-carrying ring 6, as shown in Fig. 2. The hosiery-engaging member 23 carries a stop or upstanding post 30 adapted to engage lugs or projections 31 and 32, respectively, formed on the swinging element 17 at opposite sides of the pivot 22. Thus, the swinging element 17 and the hosiery-engaging member 23 carry coacting means for limiting the rotative movement of the hosiery-engaging member in respect to the swinging element. The handle-portion 26 of the member 23 enables the operator to swing the member on its pivot 22 whenever it is necessary or desirable manually to displace the edge 28 from the periphery 29 of the ring-support.

Outstanding from the bracket B is an extension 33 through which extends a set screw 34 and which carries a lock nut 35 for holding the set screw in any set position. The screw 34 is adapted to bear upon the upper surface of the offset portion 15 of the arm 9 and to adjust the same vertically in order to position the arm and the parts which it supports in proper operating relation with respect to the impaling pins 7.

Operation: It being remembered that the function of this structure is to effect an automatic removal or stripping of the hosiery from the pins 7, after action on the hosiery by the thread-severing mechanism 8, it may now be explained that as each article impaled on the pins engages the curved edge 27 of the hosiery-engaging member 23, it is caused to slide along such surface by the progressive movement of the pin-carrying ring 6 until the impaled portions of the hosiery reach the point 36, say, of the member 23, whereupon the successive loops of the article are displaced from the pins and, when all the loops of that article have been thus displaced from the pins, it will drop into a suitable receptacle provided for the purpose. Thus, it will be seen that the progressive travel of each hosiery article, impaled upon the pins, brings it into engaging position with the member 23 in order that that member may function to remove the article from the pins. If, however, the loops bind or otherwise adhere to the pins so that instead of the loops being displaced from the pins the stocking is carried forward thereby, and if the engaging member 23 were so constructed as to be rigid and unyielding, the fabric would jam between the member 23 and the pins and result in breaking or seriously damaging the pins

or other parts of the machine. The replacement of such pins is an expensive and tedious operation and puts the machine out of action a considerable period. However, by reason of the construction here proposed, in the event that a stocking is not readily displaced from the pins by the device, the engaging member 23 will be given a tendency to swing on its pivot 22, and this will cause the connecting element 17 to swing on its pivot 18 and against the tension of the spring 21. In other words, the force of the traveling article is imparted to the swinging hosiery-engaging member 23, and this force is transmitted thereby to the swinging element 17, so that it will gradually swing outwardly on its pivot 18 and, as it does this, the member 23 will be permitted to swing on its pivot 22, its point 37 riding on the periphery 29 of the pin ring until such point is free of the periphery. In other words, during this swinging movement of the element 17 and the member 23, they will gradually assume the position shown in dotted lines in Fig. 1. Then, the stop 19 on the member 17 will have been moved away from the edge 20 and against the lug 16, while the stop 30 on the member 23 will be moved away from the lug 31 and into engagement with the lug 32. The dimensions of the parts are such that when the stop 19 is against the lug 16 and the stop 30 is against the lug 32, the point 37 of the member 23 will be disengaged and free to swing out of contact with the pin ring, so that the article, still hanging on the pins 7, will travel beyond the device, whereupon it may be removed by hand. In consequence of the yielding and swinging capacity of the element 17 and the member 23, danger of damage to the pins or other parts by jamming is absolutely precluded. At the same time, the tension of the spring 21 is sufficient ordinarily to resist the force of engagement of the article with the member 23 so that it will not be actuated but will, itself, function gradually and progressively to remove the different loops of the united edges of the fabric from the pins and, thus, strip the article from the ring support. In actual operation, this device has been found to function with certainty and efficiency and in such a way as to insure the machine against damage in the event that any particular hosiery article sticks to the pins, as will occur when such pins become rusted, deformed, etc.

It is to be noted that, as an article of manufacture, the article-stripping device herein-described may comprise the arm 10, the connecting element 17, the hosiery-engaging member 23, etc.; or, in some instances, such article of manufacture may also comprise not only the arm 10, the connecting element 17, the hosiery-engaging member 23, etc., but, also, the bracket B; since one or both of these structures constitutes a unit attachable to a looping machine.

From the foregoing, it will be perceived that I have provided a simple but effective device for the purpose pointed out.

What I claim is:

1. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and a hosiery-stripping device normally extending beneath the pins and swingingly mounted for movement in a direction away from the pins while the support is in motion, such swinging movement being effected under abnormal conditions by an article carried by and moving with the pins.

2. A machine for uniting looped fabrics, including a support, a pin-carrying structure movable on the support, and an article-stripping device normally stationary with respect to the pin-carrying structure and displaceable away from the support under predetermined conditions by an article carried by the pins whereby damage to such pins is prevented.

3. A machine for uniting looped fabrics, which includes a support, a pin-carrying structure movable in respect to the support, and an article-stripping device engageable by articles impaled upon the pins and rendered inactive under predetermined conditions by one of the articles operating to displace the device in respect to the support.

4. A machine for uniting looped fabrics, including a support, a pin-carrying ring rotatable in respect to the support, impaling pins thereon, and an article-stripping device associated with the support and engageable by articles on the pins to effect displacement of the articles from the pins and actuatable by the articles on the pins to effect its own displacement with respect to the support in the event that an article is not thereby displaced from the pins.

5. A machine for sewing looped fabrics, including a rotating impaling-pin-support, impaling pins circumferentially arranged thereon, a base for the support, a stripping device mounted on the base to overlie the pins and comprising a swinging member normally occupying a position beneath the pins, and means for normally maintaining the member in hosiery-engaging position with respect to the pins, such means being rendered temporarily inoperative under predetermined conditions by an article carried by the pins.

6. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and a hosiery-stripping device mounted in juxtaposition to the pins and engageable by the fabric impaled thereon to effect a stripping of such hosiery

from the pins and movable by the hosiery if and when the same remains unstripped from the pins as the support moves.

7. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and a stripping device juxtaposed to the pins for engagement by fabric impaled on the pins and having a swinging movement into an inactive position with respect to the pins to permit the fabric to travel beyond the device, such swinging movement being effected by an article on the pins engaging the stripping device and thereby effecting its inactive positioning.

8. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and a hosiery-stripping device normally stationary with respect to the pins and having a swinging movement into an inactive position effected by fabric on the pins when the device fails to strip the fabric from such pins.

9. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and a hosiery-stripping device juxtaposed to the pins and including a hosiery-engaging member and resilient means active on the member normally to hold it against movement, said member having a swinging movement into an inactive position in respect to the pins when the fabric on the pins overcomes the force of the resilient means.

10. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins circumferentially arranged thereon, and a hosiery-stripping device juxtaposed to the support and comprising a hosiery-engaging member, an arm for sustaining the same, and resilient means active on the member to maintain the same in engaging position with respect to the pins, such member having a work-effected swinging movement on the arm away from the pins into an inactive position.

11. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and hosiery-stripping means normally stationary to effect stripping of fabric from the pins and displaceable by the fabric under abnormal conditions.

12. A machine for sewing looped fabrics, including a movable impaling-pin-support, impaling pins thereon, and hosiery-stripping means juxtaposed to the support and having a normal tendency to strip fabric from the pins while the support is in motion and, under abnormal conditions, to be displaced away from the support by fabric on the pins as the support continues in motion.

13. A machine for sewing looped fabrics, including a base, an impaling-pin-support rotatable in respect to the base, impaling pins on the support, and a fabric-stripping device secured to the base and stationary in respect to the rotating movement of the support, and comprising an arm mounted on the base, a hosiery-engaging member normally extending beneath the pins, a swinging element fulcrumed on the arm and on which the hosiery-engaging member is pivoted, and a controlling element secured to the arm and to the swinging element.

14. A machine for sewing looped fabrics, including a base, an impaling-pin-support rotatable in respect to the base, impaling pins on the support, and a fabric-stripping device secured to the base and stationary in respect to the rotating movement of the support, and comprising an arm mounted on the base, a hosiery-engaging member normally extending beneath the pins, a swinging element fulcrumed on the arm and on which the hosiery-engaging member is pivoted, and a resilient element secured to the arm and to the swinging element.

15. A machine for sewing looped fabrics, including a base, an impaling-pin-support rotatable in respect to the base, impaling pins on the support, and a fabric-stripping device secured to the base and stationary in respect to the rotating movement of the support, and comprising an arm mounted on the base, a hosiery-engaging member normally extending beneath the pins, a swinging element fulcrumed on the arm and on which the hosiery-engaging member is pivoted, a resilient element secured to the arm and to the swinging element, and coactive means on the arm and swinging element for limiting movement of the swinging element in respect to the arm.

16. A machine for sewing looped fabrics, including a base, an impaling-pin-support rotatable in respect to the base, impaling pins on the support, and a fabric-stripping device secured to the base and stationary in respect to the rotating movement of the support, and comprising an arm mounted on the base, a hosiery-engaging member normally extending beneath the pins, a swinging element fulcrumed on the arm and on which the hosiery-engaging member is pivoted, a resilient element secured to the arm and to the swinging element, coactive means on the arm and swinging element for limiting movement of the swinging element in respect to the arm, and coactive means on the hosiery-engaging member for limiting movement of the member in respect to the swinging element.

17. A hosiery-stripping device including an arm, a swinging element pivoted thereto, and a hosiery-engaging member swingingly mounted on the element.

18. A hosiery-stripping device including an arm, a swinging element pivoted thereto, a hosiery-engaging member swingingly

mounted on the element, and a resilient member interposed between the arm and swinging element.

19. A hosiery-stripping device including an arm, a swinging element pivoted thereto, a hosiery-engaging member swingingly mounted on the element, a resilient member interposed between the arm and swinging element, and coactive means carried by the arm and swinging element for limiting movement therebetween.

20. A hosiery-stripping device including an arm, a swinging element pivoted thereto, a hosiery-engaging member swingingly mounted on the element, a resilient member interposed between the arm and swinging element, and coactive means between the swinging element and hosiery-engaging member for limiting movement therebetween.

21. A hosiery-stripping device including an arm, a swinging element pivoted thereto, a hosiery-engaging member swingingly mounted on the element, a resilient member interposed between the arm and swinging element, coactive means between the swinging element and hosiery-engaging member for limiting movement therebetween, and coactive means interposed between the arm and swinging element for limiting movement therebetween.

22. A hosiery-stripping device including an arm, a swinging element pivoted thereon, coactive means carried by the arm and element for limiting the movement of the element with respect to the arm, a contractile spring interposed between the arm and element for normally holding the element in one position in respect to the arm, and a hosiery-engaging member on the element.

23. A hosiery-stripping device including an arm, a swinging element pivoted thereon, coactive means carried by the arm and element for limiting the movement of the element with respect to the arm, a contractile spring interposed between the arm and element for normally holding the element in one position in respect to the arm, and a hosiery-engaging member swingingly mounted on the element.

24. A hosiery-stripping device including an arm, a swinging element pivoted thereon, coactive means carried by the arm and element for limiting the movement of the element with respect to the arm, a contractile spring interposed between the arm and element for normally holding the element in one position in respect to the arm, a hosiery-engaging member swingingly mounted on the element, and a stop carried by the hosiery-engaging member for limiting its movement in respect to the element.

25. A hosiery-stripping device including an arm comprising a slotted portion and an offset portion, a swinging element pivoted on the offset portion for a swinging movement in respect thereto, a stop carried by the element and engageable with the arm for limiting movement of the element, a spring interposed between the arm and element and adapted to hold said stop against the arm, and a hosiery-engaging member pivoted on the element for a free swinging movement thereon, and a stop carried by the member for limiting its swinging movement.

26. A hosiery-stripping device including an arm having a slotted portion and an offset portion, the latter formed with an outstanding lug, a swinging element pivoted on the offset portion, a stop carried by the element and engageable alternately with said offset portion and lug, said element being provided with two spaced lugs adjacent one of its extremities, a spring interposed between the arm and element for holding the stop against the offset portion, and a hosiery-engaging member pivoted on the element for free rotative movement thereon and carrying a stop engageable with the lugs on the swinging element.

27. A hosiery-stripping device including an arm, a swinging element pivotally mounted thereon, a spring interposed between the arm and element, and a hosiery-engaging member pivoted on the element and comprising a body-portion, an angular hosiery-engaging portion, and an arm on the body-portion.

28. A hosiery-stripping device including an arm, a swinging element pivotally mounted thereon, a spring interposed between the arm and element, a hosiery-engaging member pivoted on the element and comprising a body-portion, an angular hosiery-engaging portion, and an arm on the body-portion, and coactive means carried by the arm and element and by the element and member, respectively, for limiting the movement of the element and member, respectively.

29. A hosiery-stripping device including an arm comprising a slotted portion and an offset portion, a hosiery-engaging member sustained by the arm, a support for the arm, and means carried by the support and engageable with the arm for effecting a vertical adjustment thereof.

30. As an article of manufacture, a hosiery-stripping device comprising a bracket having an angular extension, an arm adjustably mounted on the bracket, an adjusting screw carried by the extension and engageable with the arm for adjusting it vertically, the arm being also adjustable in approximately horizontal plane in respect to the bracket, means for adjustably securing the arm to the bracket, and a hosiery-engaging member sustained by the arm.

31. As an article of manufacture, a bracket, an arm mounted thereon, a connect-

ing element pivoted to the arm, a spring for controlling movement of the element, and a hosiery-engaging member pivoted on the element.

32. As an article of manufacture, a bracket having an extension, an arm secured to the bracket, means carried by the extension and engageable with the arm for adjusting the latter, a connecting element swingingly carried by the arm, a spring for controlling movement of the element, and a hosiery-stripping member carried by the element.

33. As an article of manufacture, a bracket having an extension, an arm adjustably carried by the bracket, adjusting means interposed between the extension and arm for adjusting the latter, and a hosiery-stripping member sustained by the arm and having a swinging movement in respect thereto.

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

PATRICK P. LA MONTAGNE.

Witnesses:

HENRY H. RICHTER,

WILL A. RICHTER.