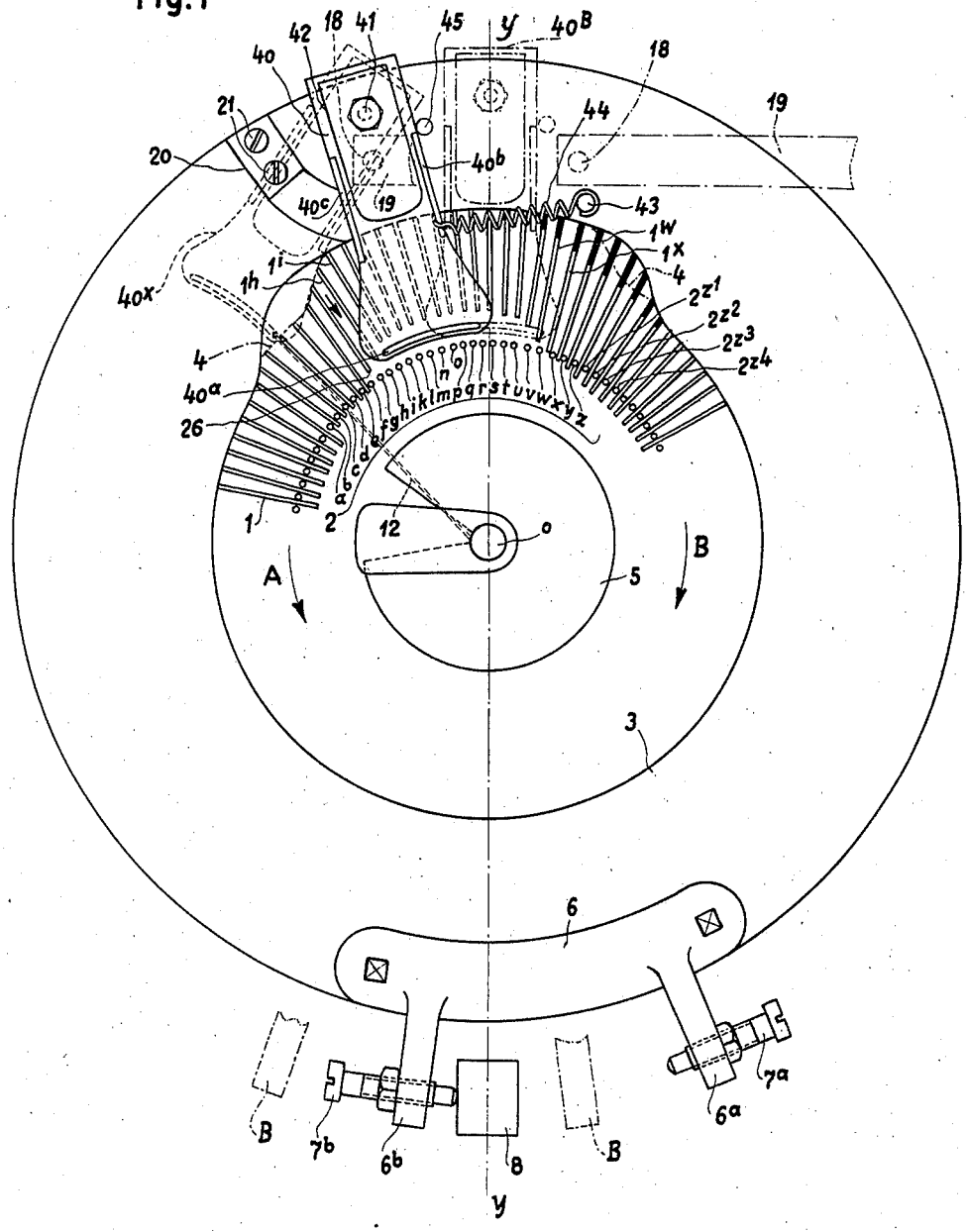
Jan. 10, 1939. M. NEBEL 2,143,630

CIRCULAR KNITTING MACHINE

Original Filed May 23, 1934 4 Sheets-Sheet 1

Fig. 1



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Fig. 2

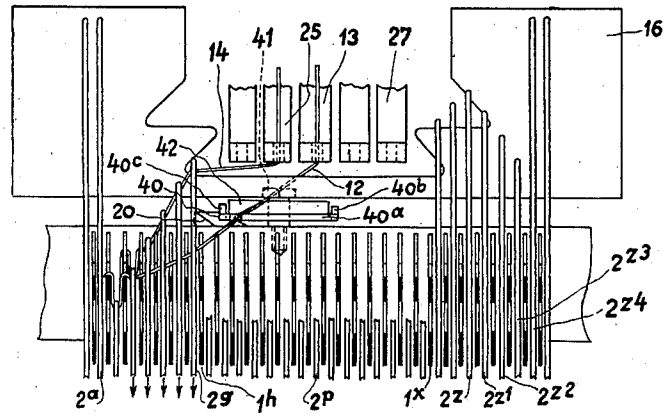


Fig. 5

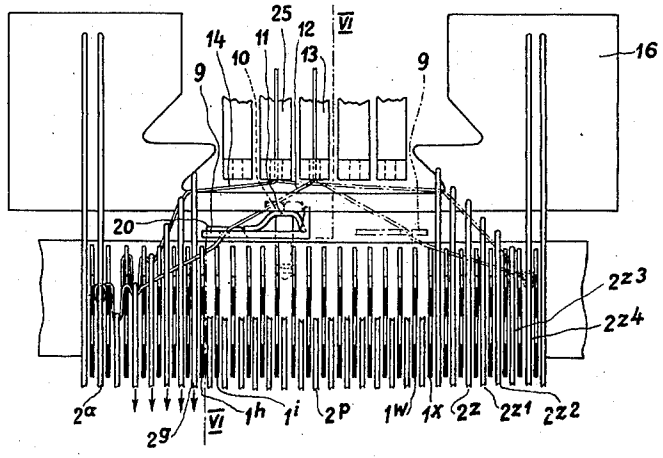
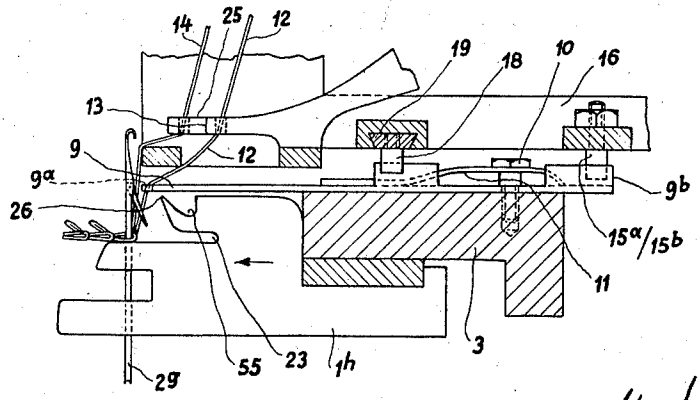


Fig. 6



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CIRCULAR KNITTING MACHINE

Original Filed May 23, 1934 4 Sheets-Sheet 3

Fig. 4

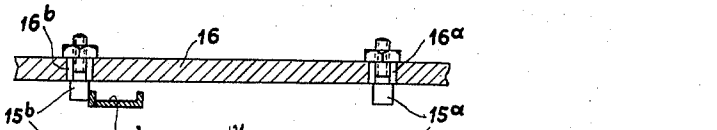
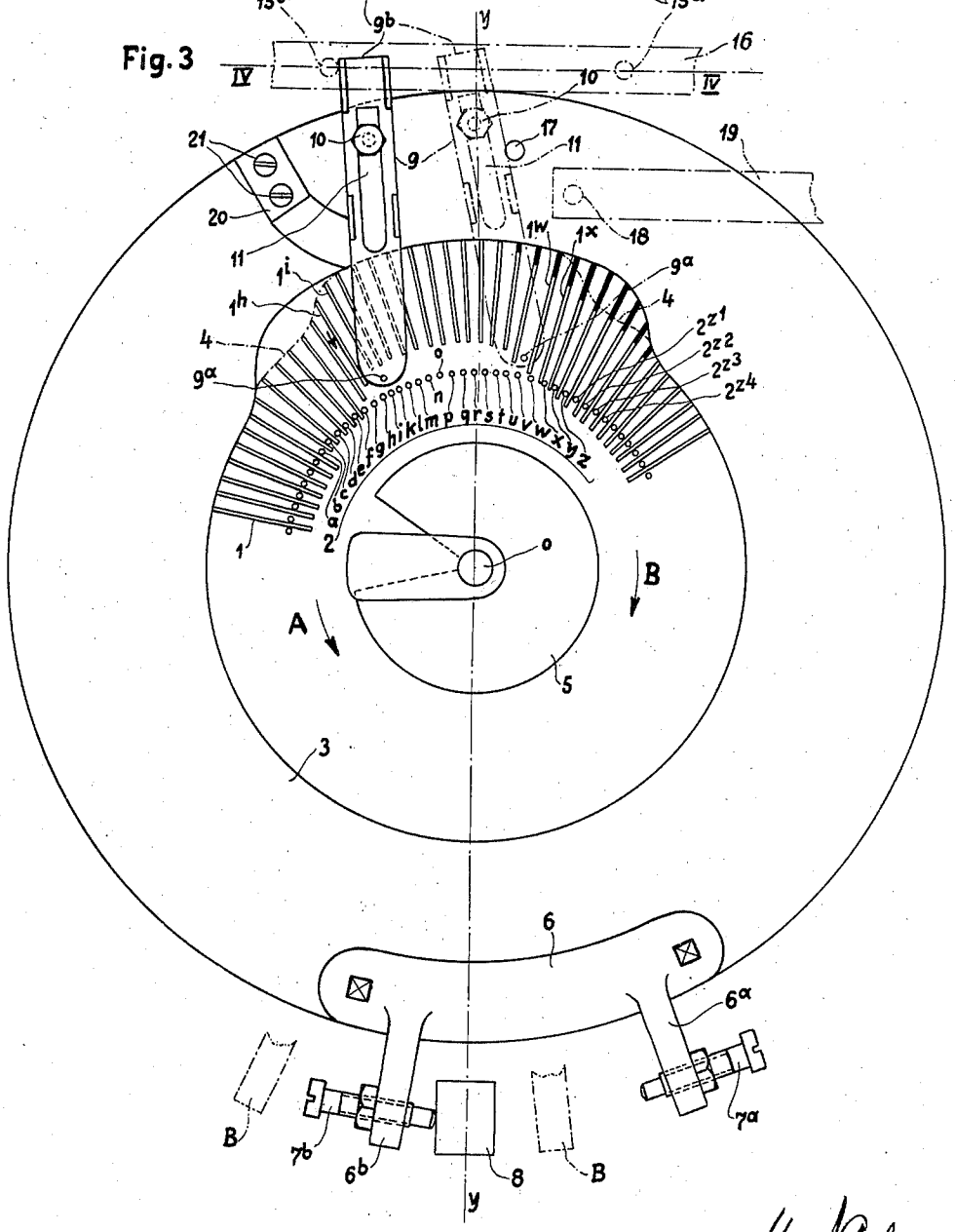


Fig. 3



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CIRCULAR KNITTING MACHINE

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Fig. 7

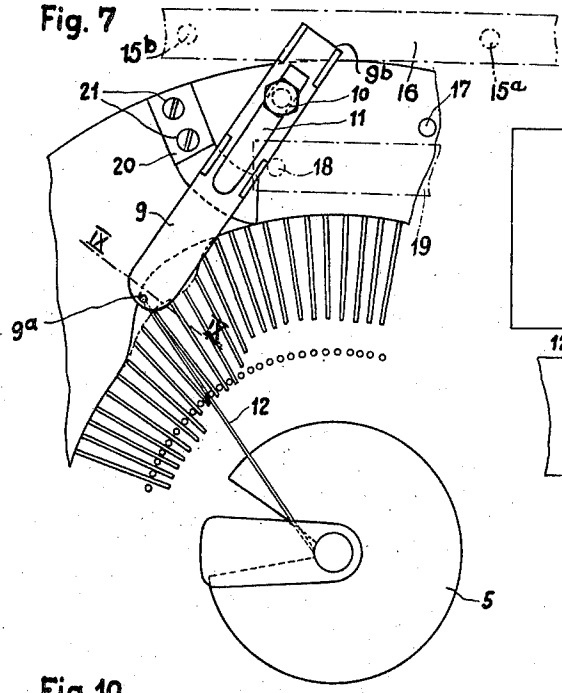


Fig. 8

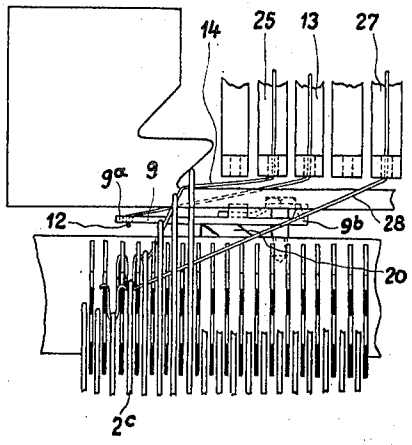


Fig. 9



Fig. 10

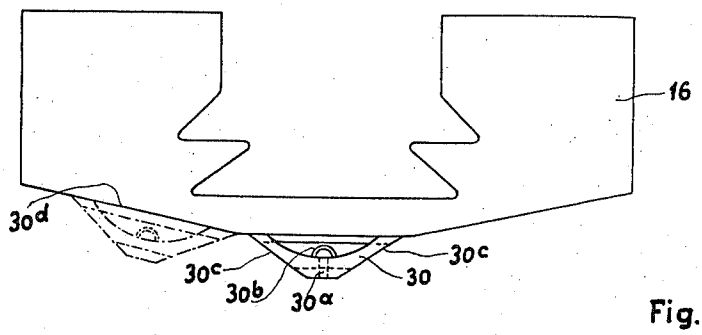


Fig. 11

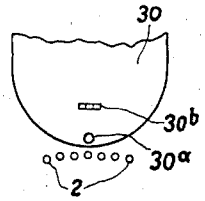
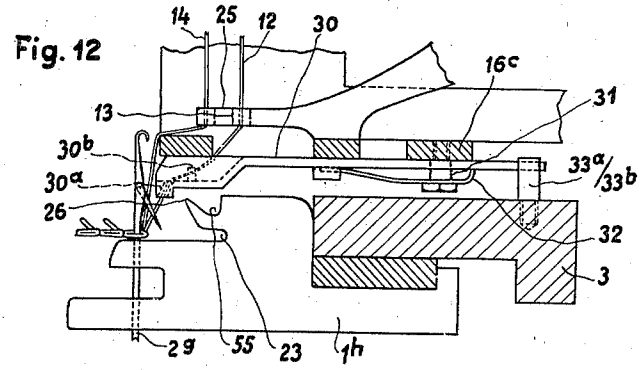


Fig. 12



Inventor

Patented Jan. 10, 1939 2,143,630

UNITED STATES PATENT OFFICE

2,143,630

CIRCULAR KNITTING MACHINE

Max Nebel, Chemnitz, Germany

Original application May 23, 1934, Serial No. 727,071. Divided and this application April 22, 1937, Serial No. 138,577

17 Claims. (Cl. 66—93)

This invention relates to circular knitting machines of the kind described in my co-pending application Ser. No. 727,071, filed May 23, 1934, now Patent No. 2,080,377, and whereof this application is a division, wherein for the production of loop-plush fabric having plush loops tied in above every, or any desired, sinker loop of the fabric or a portion thereof the ground thread is separated from the plush thread by the motion of the sinkers towards the bulging portion of the needle shank and into operative position or by the equally directed motion of special means, and wherein the separating part, such as the point, is pushed prior to sinking above the casting-off throat of the sinker between the two threads to insure their proper separation.

To increase the reliability of separation, particularly at the beginning of a course, i. e., when operating with pendulum motion, the ground thread, which in known manner issues at a lower level from the thread guide than the plush thread, is guided, according to the invention, by a second guide positioned laterally of the center of the thread guide bracket and so low that the ground thread issues from the eye just above and in front of the separating point of that sinker which is just about to pass into separating and sinking position. To make possible this position of the thread guide in any direction of operation during pendulum motion the thread guide, at each change of direction, is brought into the position beside the sinker happening to move into the working position. This can be most advantageously attained by horizontal displacement of the point of issue. The thread guide is for instance disposed so as to be laterally movable in the horizontal plane in such manner that in any direction of working the point of issue of the ground thread is always located towards the sinking needle barely above and in front of the separating point of that sinker which is just about to move radially in the direction of the machine axis into separating and sinking position. The ground thread is thus invariably guided at that point where separation is effected by the point of the preceding sinker. This eliminates the possibility of throwing up the ground thread, which hitherto is unguided at the point of separation, so high by vibrations due to operation of the machine that it rises above the separating point and thus onto the plush throat serving for sinking the plush thread. In the construction according to my co-pending application it may also occur that, owing to the necessity of placing the issuing point for the ground thread quite low and at a considerable distance from the sinking needle, the ground thread engages the joint of the latch and is cut when the latch closes. By providing, according to the present invention, that the thread issuing point in any direction of operation is positioned close to the sinking needle, misplacing of the thread and the troubles produced thereby are eliminated.

This additional lower guiding of the thread is effected, according to the invention, by a plate which may be arranged on the surface of the sinker cam ring so as to be oscillatable about a vertical axis. The motion of the plate is produced by the known short swinging motion of the cam ring during reversal of the rotary motion of the sinker ring, when the plate is firmly arranged on the cam ring, so that the vertical axis about which the plate oscillates coincides with the axis of rotation of the needle and sinker cylinders. If the oscillation of the cam ring is not great enough to insure, for instance at pendulum motion, that an eye in the thread plate is disposed in both directions of working directly in front of and above the sinker moving into sinking and separating position, an elongated slot is provided in the thread plate through which the thread passes and which is positioned as closely as possible to the needles and extends parallel and circularly to the needle carrier. A change in the direction of operation involves also a change of the thread from one end of the slot to the other. The slot is so long that after oscillation of the cam ring and of the thread plate carried by it the slot end concerned is always positioned directly above and in front of the separating sinker passing into sinking position. The arrangement of this thread guide plate on the cam ring facilitates also the laying out of the thread guided by it, since the thread plate can be rendered inoperative by being swung in lateral direction about a firm pivot disposed parallel to the axis of rotation of the needle ring on the cam ring to such an extent that the thread extends over and beyond the lowest needle towards the thread brake in the center of the cylinder.

If for any reasons instead of a slot a circular eye is wanted in the thread plate, the insufficient motion of the plate must be increased, according to the invention, by additional motion of the plate relative to the cam ring during the oscillation of the latter. This is effected by means of two laterally adjustable pins on the fixed thread guide bracket, between which the end of the thread plate averted from the needle carrier projects in such manner that during the short swinging mo-

tion of the cam ring the end of the thread plate abuts against one of the pins and, according to the distance of this pin from the central axis of the thread guide bracket, imparts to the thread guide the necessary additional swinging motion about its pivot on the cam ring. To protect the thread plate against unintentional motion by thread tension stops are provided on the cam ring at the point where the outer lateral edge of the thread plate is positioned.

This doubly oscillatable thread plate like the slotted one fixed to the cam ring may be rendered inoperative by lateral oscillation, and like the slotted one it is then laterally swung out in the direction of normal rotation of the sinker ring during circular knitting by means of a special pin longitudinally displaceable in this direction and positioned at the edge of the thread plate facing it to such an extent that the thread extending from the eye to the thread brake located in the center of the machine passes over the needle that is in sinking position or almost so. To make practically sure that the laid out thread is not caught by any loop-forming tool the thread plate when swinging into inoperative position moves over an inclined face on the top of the cam ring and is thus elevated more or less corresponding to the height of the inclined face.

In another embodiment of the invention the thread plate is not swingably arranged on the surface of the cam ring but on the lower face of the thread guide bracket. The swinging pins are secured to the cam ring instead of to the bracket.

With respect to the known thread guides which for the production of circularly knit and not narrowed two threaded loop-plush fabric possess an issuing point for the ground thread disposed at a lower level than the issuing point for the plush thread it is also known to cause the plush thread to issue from a horizontal slot in a guide whilst the ground thread issues from a round eye arranged under the middle of the slot from which the plush thread issues. This construction, however, fails to attain the object of the invention according to which it is of essential importance to guide also the ground thread close to the separating point of the sinker just about to move into separating and sinking position. In the known arrangement, wherein the plush thread issues from an eye arranged at a lower level and fixed as to position, it is still possible, particularly during reversal in to and fro knitting, that the constantly oscillated long thread portion located between the sinking point and the eye is accidentally thrown on the sinking throat or edge of the plush thread, whereby long ground loops producing waste are formed.

By way of example, several embodiments of the invention are illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the cam ring with sinkers and needles and the slotted thread plate on the top of the cam ring;

Fig. 2, a view of the thread guide bracket with sinkers and needles, seen from the axis of rotation of the needle carrier, and with the sinker ring and needle carrier flattened out;

Fig. 3, a top view of the cam ring with sinkers, needles and the oscillatable thread plate on the top of the cam ring;

Fig. 4, a section on the line IV—IV, of Fig. 3, through the end of the thread plate subjected to the action of the swinging bolts;

Fig. 5, a view of the thread guide bracket with sinkers and needles, seen from the axis of rotation, with the sinker ring and needle carrier flattened out;

Fig. 6, a sectional side view of the loop forming tools on the line VI—VI, of Fig. 5;

Fig. 7, a partial top view of the cam ring with sinkers and needles and with the thread plate in inoperative position;

Fig. 8, a partial top view like that shown in Fig. 7, but seen from the front, i. e., from the axis of rotation of the machine;

Fig. 9, a section on the line IX—IX, of Fig. 7, of the thread plate;

Fig. 10, a front view of the thread guide bracket, seen from the axis of rotation of the machine, with the thread plate oscillatably disposed on the thread guide bracket;

Fig. 11, a partial top view of the construction shown in Fig. 10; and

Fig. 12, a side view of the loop forming tools with thread plate, according to Fig. 10, and in the position shown in Fig. 7.

In the drawings only those parts have been illustrated which must be shown in order to enable a person skilled in the art to understand my invention.

Referring to the drawings, the sinkers 1 and the needles 2 are arranged in sinker and needle rings, not shown, so as to be displaceable either radially or in the direction of the axis of rotation. The needles are moved into and out of operating positions by the rotation of the needle ring about the axis 0 of the machine effected by means of the lock, not shown. The sinkers 1 are radially moved by the fixed cam ring 3 by means of curves provided on the lower edge thereof. The curves 4 indicated by dot and dash lines are independent of the other curves but also capable of moving the sinkers in known manner into separating and sinking position. In the center of the machine a thread brake 5 of known type is provided for clamping the threads laid out. Old in the art is further the segment 6 screwed onto the cam ring 3 and having two arms 6^a, 6^b into which set screws 7^a, 7^b are screwed which strike against the abutment 8 on the machine frame, according to the direction of operation of the sinker ring. Upon a change of the operating direction, for instance when knitting the heel and toe by pendulum movement, the cam ring, at the moment of reversal, carries out in known manner a short rotary motion about the axis of the machine until the screw 7^a or 7^b strikes the abutment 8. In Fig. 1, the direction of operation of the sinker ring and needle carrier is indicated by the arrow A, which is the normal direction of rotation for cicular knitting. In the position indicated by full lines the segment 6 with the arms 6^a, 6^b is in contact with the abutment 8. When during pendulum movement the operating direction A changes to B, the cam ring carries out a small rotary motion at the moment of reversal until the set screw 7^a strikes the abutment 8. This position of the arms 6^a and 6^b with the cam ring 3 in operating direction B is shown by dot and dash lines in Figs. 1 and 3.

The oscillation of the cam ring 3 during a change in operating direction is utilized, according to the invention, for bringing an additional thread guide arranged at a particularly low level into a position most favorable for feeding the thread during each operating motion A or B. For this purpose, the cam ring 3 is provided with a thread plate 40 fixed thereto, Fig. 1, which ends near the needle carrier and which has a

arcuately recessed front end to bring the front edge as closely as possible up to the needle carrier. Furthermore, at the smallest possible distance from this circular front edge of the thread plate 40 a narrow slot 40^a is provided and made so long that its end facing the sinker advancing into sinking and separating position is located directly above and in front of the separating point of that sinker just about to move toward the center of the needle carrier and into separating and sinking position.

According to Fig. 1, the needle cylinder moves in the direction A. The sinker 1^h has just engaged the auxiliary cam 4 and thus moves toward the center and into separating and sinking position. Above and in front of the separating point 26 of this sinker 1^h one end of the slot 40^a, Figs. 1 and 2, is located. When the needle carrier moves in the other operating direction B, the cam ring 3 partakes in this motion until the arm 6^a or its set screw 7^a abuts against the stop 8, as indicated by the dot and dash line B^1. The thread plate 40 with the cam ring 3 will then be in the position 40^B, indicated by dot and dash line, and the end of the slot 40^a disposed in this operating direction will be located in front of and above the separating point of the sinker 1^x beginning in this direction with the sinking and separating motion. For laying out the ground thread 12 guided by the thread plate 40, the latter, which for this purpose can be oscillated about a fixed pin 41 on the cam ring 3, is brought into inoperative position 40^x indicated by dots by means of a slide 19 on the thread guide bracket and of a pin 18 secured to the slide 19. A spring 42 which moves with the thread plate 40 presses it upon the cam ring 3. A spiral spring 44 fixed at 43 to the cam ring 3 constantly draws the plate 40 against the fixed stop 45, whereby unintentional motion of the plate 40 relative to the cam ring 3 is prevented. The bent up edge 40^b on one side of the plate 40 is engaged by the pin 18 which presses the plate into inoperative position, Fig. 2. To guide in inoperative position the ground thread 12, guided by the plate 40, as highly as possible over the needles and sinkers, the plate is pressed up by an inclined plane 20 secured by the screws 21 to the cam ring 3. The edge 40^c of the plate 40, which engages the inclined plane 20, is somewhat flanged to prevent excessive wear. The length of the slot 40^a in the plate 40 corresponds to the degree of oscillation carried out by the cam ring 3 during change of direction, which can be adjusted by the set screws 7^a and 7^b.

If this adjustability occurs within larger limits, the ends of the slot 40^a will not be exactly located any more in the intended position relative to the sinkers 1^h or 1^x moving into separating and sinking position. To eliminate this drawback and to meet the possible requirement of guiding the thread in a circular eye corresponding to its cross section, the invention provides the necessary greater oscillation of such an eye than produced by the oscillation of the cam ring 3 by additional oscillation of the plate 40 relative to the cam ring 3. In order to attain this effect a thread plate 9 is provided on the cam ring 3 and can swing about a pivot 10 screwed into the ring 3, as shown in Fig. 3. The plate 9 is firmly pressed upon the surface of the cam ring 3 by a spring 11 which swings with the plate 9 about the pin 10. In the end of the plate 9 facing the needles an eye 9^a is provided in which the ground thread 12 issuing from the middle thread guide 13, Figs. 5 and 6, is guided again at as low a level as possible. Since the relatively low thread plate 9, as indicated particularly in Fig. 6, rests on the surface of the cam ring 3 and this surface is only at a slightly higher level than the point 26 of the sinker 1, which separates the ground thread 12 from the plush thread 14, the issuing point of the ground thread 12 from the eye 9^a is also located closely above the separating point 26 of the sinker 1. If in other types of circular knitting machines the surface of the cam ring 3 lies much higher than the point 26, the thread plate 9, in accordance with the invention, will be bent down in such manner that the thread 12 issues just above the point 26. On the other hand, if the surface of the cam ring 3 is at a lower level than the point 26, the plate 9 will be correspondingly turned up at its front end. This applies also to the slotted thread plate 40.

The thread plate 9 is oscillatorily arranged on the cam ring 3 to insure issuing of the ground thread 12 from its eye always just in front of the sinker starting its sinking motion and slightly above the sinker point 26 in any operating direction including pendulum motion, notwithstanding the circular shape of the eye (cf. Figs. 3, 5 and 6). In these figures the thread plate 9 is shown swung into the position indicated by solid lines, so that the eye 9^a thereof delivers the ground thread 12 directly beside the sinker 1^h just starting its sinking motion and above the point 26. The associated needle 2^g is on its way to descend into sinking position. This position of the thread plate 9 is required according to the invention, if the operating motion occurs in the direction of the arrow A, Fig. 3, which is the normal position for knitting tubular fabrics. For example, if the heel of a stocking is to be knitted, for which operation Fig. 5 shows the necessary arrangement, only about one-half of the needles 2 are used for looping (cf. Figs. 3 and 5) and the needle and sinker rings constantly swing to and fro from A to B. The other needles, such as 2^a, 2^{24} etc., are eliminated at their highest position. When motion is reversed from A to B, the cam ring 3, to the extent permitted by the set screw 7^a or 7^b, is also driven for a short distance, so that the plate 9 is swung about the axis 0 of the machine. Besides oscillating about the axis 0, the plate 9 carries out an oscillation relative to the cam ring 3, since the end 9^b of the plate 9 during its oscillation with the cam ring 3 abuts against a pin 15^a which is disposed on the fixed thread guide bracket 16. The pin 15^a is laterally arranged in such manner that, due to the relative motion of the plate 9 about the pin 10 effected by it, the eye 9^a in the new operating direction B is located just above the separating point 26 and at the side of the sinker 1^x which in this case starts its sinking motion. This position of the thread plate 9 is shown in dot and dash lines in Figs. 3 and 5, whilst the sinkers in Fig. 3 are shown so as they are located when operating in the direction A. Upon a change in operating direction from B to A, a pin 15^b on the thread guide bracket 16 acts upon the end 9^b of the thread plate 9. To make sure that the pins 15^a and 15^b safely grip the end of the plate 9, the edges thereof are bent up (Fig. 4). To permit accurate adjustment of the thread plates 40 and 9 in oscillating position and variation of the amount of oscillation the pins 15^a and 15^b are arranged for lateral displacement in slots 16^a, 16^b of the thread guide bracket 16. Displacement of the thread plate 9 when in the position indi-

cated by dots and dashes, i. e., the position for the operating direction B, by the pull of the thread is prevented by an adjustable pin 17 screwed onto the cam ring 3.

For laying out the thread 12 the thread plate 9 is brought into inoperative position according to Fig. 7 by the pin 18, like the plate 40 shown in Fig. 1, the pin acting upon the slide 19 on the thread guide bracket 16, Figs. 3 and 6. The slide 19 is automatically actuated and usually, as shown in Fig. 3, laterally drawn out to such an extent that the pin 18 cannot act upon the thread plate 9. By being swung into inoperative position according to Fig. 7 the plate 9 is pushed upon the inclined plane 20 and thereby somewhat raised, so that the ground thread 12 issuing from its eye 9^b and extending in the direction of the thread brake 5 moves above the needle 2^c, which has almost attained that position in which the sinking operation is performed, and the sinker 1^c at a higher level than when the ground thread is in active position. The inclined plane 20 is fastened with screws 21 to the cam ring 3. The beginning of this inclined plane, like the pin 17 in the other operating position of the plate 9, serves when the plate 9 is in position for operating in the direction A as stop to prevent unintentional displacement of the plate 9 by the pull of the thread during working. To protect the edge of the plate 9 ascending the inclined plane 20 and the edge on which the pin 18 acts against too rapid wear the edges are bent up. Fig. 8 shows that the laid out ground thread 12 issues from the plate 9 at a much higher level than when in operating position. The plush thread 14 from the thread guide 25 is still knitted into plush loops, and another ground thread 28 is supplied by the thread guide 27. Instead of knitting plush loops from the plush thread 14, it may, according to an old process, be plated as splicing thread, so that loop-plush fabric is not knitted at this point. The plush thread 14 may, without interfering with the ground thread, slide freely from one corner into the other on the thread guide bracket, as the machine performs the pendulum movement, because the ground thread is conducted to its thread guides 9, 30 or 40 at the rear of the front transverse bar.

In order to prevent damage to the needles, resulting for instance in failure of the latches to move, the front edges of the thread plate 9 are bevelled, as shown in Fig. 9.

It is further within the meaning of the invention to fulcrum the thread plate to the fixed thread guide bracket 16, as indicated in Figs. 10, 11 and 12. The pin 31 about which the thread plate 30 with the eye 30^a oscillates, is secured to the rear bar 16^c of the bracket 16. The front end of the thread plate 30 is so reinforced or so bent down that the thread issuing point is located just above the point 26 of the sinker 1. A spring 32 partaking in the oscillation of the plate about the pin 31 presses the plate 30 against the lower face of the bracket 16. The pins 33^a, 33^b effecting oscillation of the plate 30 are secured to the cam ring 3. The pin 18 with the slide 19 which brings the plate 9 into inoperative position is arranged on the bracket 16. Lifting of the thread plate when being moved out of operative position can be advantageously effected by providing the lateral portion 30^d of the lower edge of the bracket 16 in known manner with a slight upward slope, as indicated in Fig. 10. For better guiding of the ground thread a horizontal eye 30^b is disposed in front of the issuing eye 30^a on the surface of the thread plate 30. As Fig. 10 shows, the thread plate 30 preferably is bent down in troughlike fashion, has a semicircular front end (Fig. 11) and is bevelled on the sides 30^c to protect the needle latches.

To solve the problem with which the invention is concerned in the simplest manner without any oscillation of the additional thread guide, the thread plate 30 arranged on the thread guide bracket may also be fixed so as not to be movable during change in operation. It may have a slot for guiding the thread, and this slot is so long that its ends are as near as practicable to the issuing point from the auxiliary thread guide so as to attain the result effected by the above-described additional oscillation.

To make possible laying out of the thread such a slotted thread plate 30 may also be swung about a fixed pivot in the thread guide bracket by a slide or similar means against the pull of a spiral spring which may be arranged in a manner similar to that associated with the slotted thread plate arranged on the cam ring according to Fig. 1. The upward slope on the lower edge of the thread guide bracket, as shown in Fig. 10, takes care of the necessary raising of the guide slot.

The thread guided by the thread plates 9 or 30 is always the ground thread for the heel and toe of a stocking, i. e., always that ground thread which is used when the machine moves alternately in opposite directions. By designing and operating the thread plate according to the invention the reliability of the separation of the ground thread from the plush thread is increased to such a degree that the failure to form plush loops, particularly at the points where the fabric is narrowed, is practically eliminated because the position of the ground thread can be accurately determined by positioning the issuing eye directly at the side of that sinker which moves into the separating and sinking position.

I claim:

1. Circular knitting machine for producing loop-plush fabric with plush loops above every, or every desired, sinker loop, wherein separation of the ground thread from the plush thread is effected by the movement of the sinkers toward the bulging portion of the needle shank and into operating position, or by the similarly directed motion of special means so as to cause for the purpose of reliable separation of both threads prior to sinking the separating member, such as the point, to move above the casting-off throat of the sinkers between the two threads, and wherein the ground thread issues at a lower level than the plush thread from the thread-guiding tool, characterized in that under the regular thread guide a second guide for the ground thread is disposed laterally of the center of the thread guide bracket and at so low a level that the ground thread issues from the eye just above and in front of the separating point of that sinker which is about to move into the thread separating and sinking position.

2. Circular knitting machine according to claim 1, wherein the second guide for the ground thread is oscillatable in a horizontal plane and thus at a change in operation (pendulum movement when knitting the heel and toe of a stocking) can be moved so that in each operating direction of the sinker cam ring and of the needle cylinder it will be located with its eye just above and in front of the separating point of the sinker starting on its separating and sinking operation.

3. Circular knitting machine according to

claim 1, wherein the second guide for the ground thread, oscillatable in a horizontal plane, is always moved into the new operating position in that direction, in which the needle carrier and the sinker ring rotate or, at a change in direction, in which the cam ring is swung.

4. Circular knitting machine according to claim 1, wherein the second guide for the ground thread, oscillatable in a horizontal plane, is always moved into the new operating position in that direction, in which the needle carrier and the sinker ring rotate, and wherein oscillation of the second thread guide in the horizontal plane at a change in operating direction (pendulum movement when knitting for instance heel or toe of stockings) is automatically effected at the moment of reversal of the sinker cam ring and of the needle cylinder by the oscillating motion of the cam ring occurring at this instant.

5. Circular knitting machine according to claim 1, wherein the second thread guide is oscillatable in a horizontal plane and provided with a thread-guiding slot which extends parallel to the needle carrier and is so long that the end of the slot extending in operating direction is always located in front of and above the point **26** of the sinker 1^{l} or 1^{w} passing into separating and sinking position.

6. Circular knitting machine according to claim 1, wherein the ground thread guided by the lower thread guide is laterally laid out by oscillation of the lower thread guide to such an extent that the ground thread extends above the lowest sinking needle toward the thread brake.

7. Circular knitting machine according to claim 1, wherein the ground thread guided by the lower thread guide is laterally laid out by oscillation of the lower thread guide to such an extent that the ground thread extends above the lowest sinking needle toward the thread brake and wherein the lower thread guide **40** is arranged on the cam ring **3** so as to be oscillatable about a pin **41** and can be laterally swung out of operating position by a pin **18** on a slide **19** disposed in the superposed thread guide bracket so that the ground thread **12** is laid out whilst a spring **44** which at nonaction of the slide **19** draws the thread guide **40** constructed as flat plate against an abutment **45** firmly arranged on the cam ring **3** prevents unintentional oscillation of the lower thread guide when in operating position.

8. Circular knitting machine according to claim 1, wherein the second lower thread guide **9** having an eye 9^{a} is arranged on the surface of the sinker cam ring **3** so as to be horizontally movable about a pin **10** and at the moment of reversal of direction is pressed with its end 9^{b}, averted from the needles, owing to the oscillation of the guide with the cam ring **3**, against one of two pins 15^{a}, 15^{b} which are secured to the thread guide bracket **16** and between which the end 9^{b} extends, so that oscillation of the lower thread guide **9** relative to the cam ring **3** about its axis or the pin **10** is effected thereby and the eye 9^{a} is brought just above and at the side of the separating point of the sinker about to advance into separating and sinking position.

9. Circular knitting machine according to claim 1, wherein the second lower thread guide **40** or **9** is oscillatable in a horizontal plane and is pressed against the surface of the cam ring **3** by a spring **42** or **11** secured to a pin **42** or **10** and partaking in the motion of the thread guide **40** or **9** constructed as plate.

10. Circular knitting machine according to claim 1, wherein the second ground thread guide is oscillatable in a horizontal plane and stop pins 15^{a}, 15^{b} are laterally adjustably screwed to the thread guide bracket **16** for regulating the stroke of the thread plate.

11. Circular knitting machine according to claim 1, wherein the second thread guide is oscillatable in a horizontal plane and an inclined plane **20** is arranged on the cam ring **3** which is ascended by the thread plate or second ground thread guide **9** or **40** when swinging into inoperative position.

12. Circular knitting machine according to claim 1, wherein the second ground thread guide is oscillatable in a horizontal plane and an inclined plane is arranged on the cam ring which is ascended by the second thread guide when swinging into inoperative position and wherein a pin **17** is provided which secures the thread guide **9** against automatic displacement in the direction of the thread tension if not located at the beginning of the inclined plane **20**.

13. Circular knitting machine according to claim 1, wherein a second ground thread guide is oscillatable in a horizontal plane and the second thread guide **30** is oscillatorily arranged on the lower surface of the thread guide bracket **16**.

14. Circular knitting machine according to claim 1, wherein a second ground thread guide is oscillatable in a horizontal plane and secured to the lower surface of the thread guide bracket and wherein pins 33^{a}, 33^{b} effecting oscillation of the second thread guide are adjustably disposed on the cam ring **3**.

15. Circular knitting machine according to claim 1, wherein the second ground thread guide is oscillatable in a horizontal plane and the second ground thread guide **9** or **3** has its free end bent down or up in such manner that when the surface of the cam ring **3** is at a higher level than the separating point **26** the outlet opening of the thread eye secured to this free end is located just above the point **26** of the sinker 1^{h}.

16. Circular knitting machine according to claim 1, wherein the second ground thread guide **9** or **30** or **40** is bent down in troughlike fashion and the lateral edges thereof abut against the lower face of the thread guide bracket **16** and in front of the eye 30^{b} in the trough.

17. Circular knitting machine according to claim 1, wherein a second ground thread guide is provided **9** or **30** or **40** whose edge at the end thereof is curved.

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