Oct. 21, 1947. I. W. GROTHEY ET AL 2,429,458

MACHINE FOR MARKING CIRCULAR KNIT FABRIC FOR BOARDING

Filed Nov. 26, 1945 6 Sheets-Sheet 1

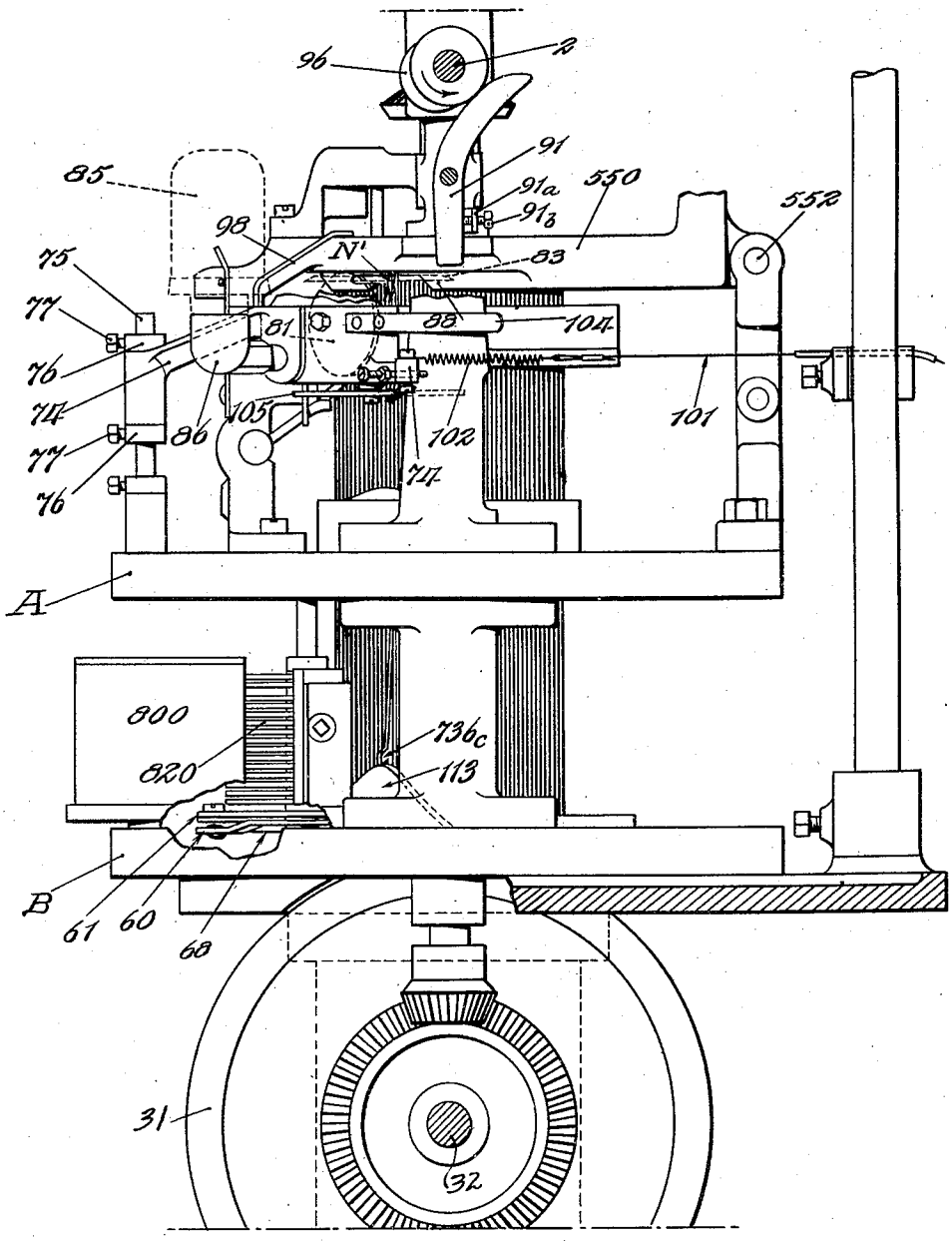


Fig. 1.

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MACHINE FOR MARKING CIRCULAR KNIT FABRIC FOR BOARDING

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Fig. 2.

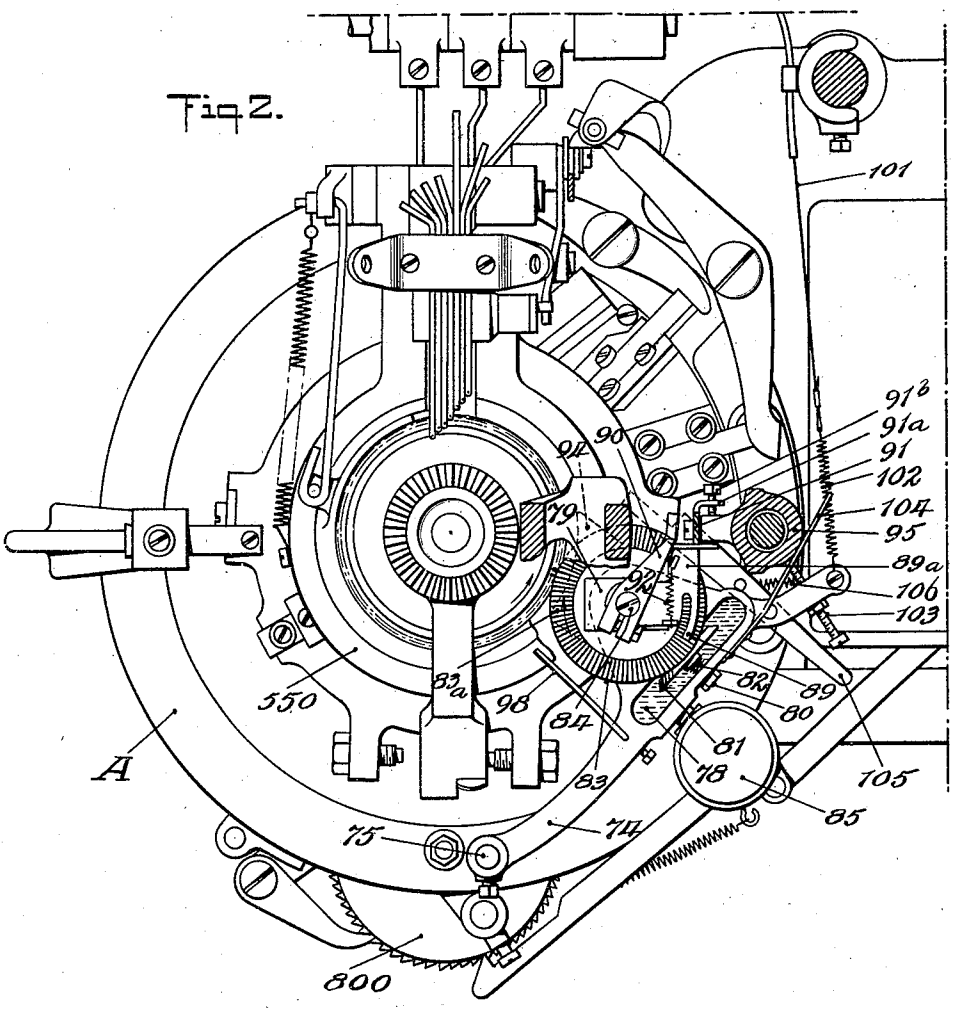
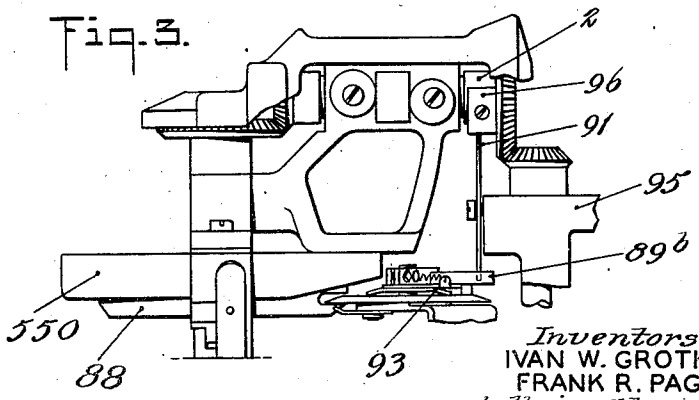


Fig. 3.



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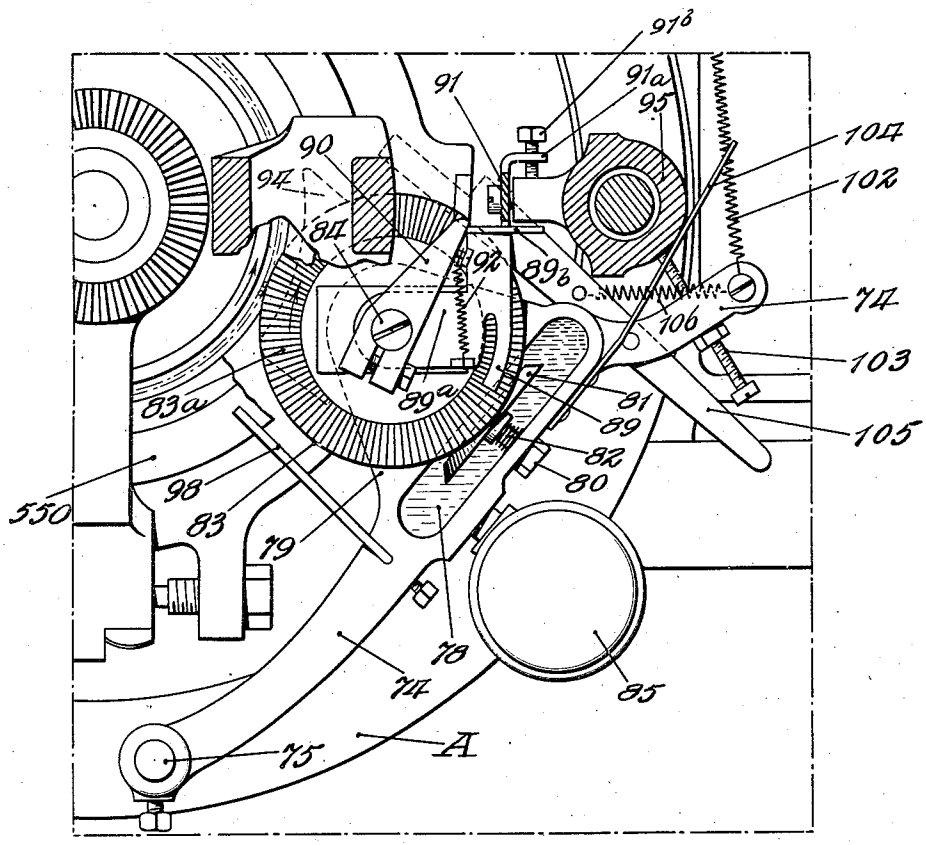
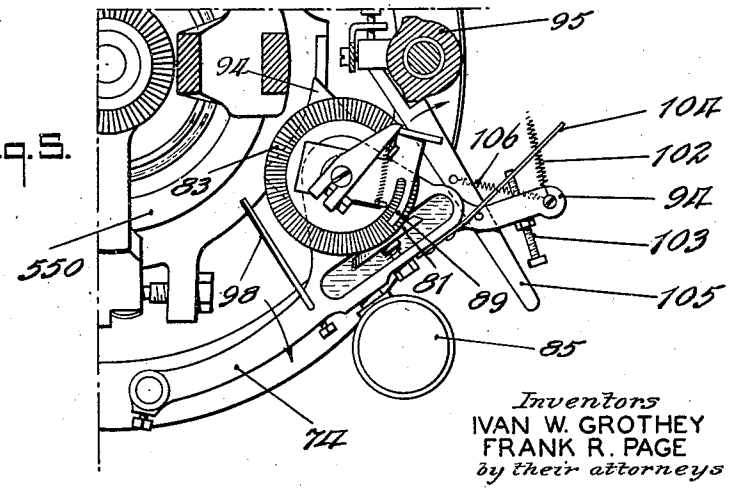


Fig. 4

Fig. 5.



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MACHINE FOR MARKING CIRCULAR KNIT FABRIC FOR BOARDING

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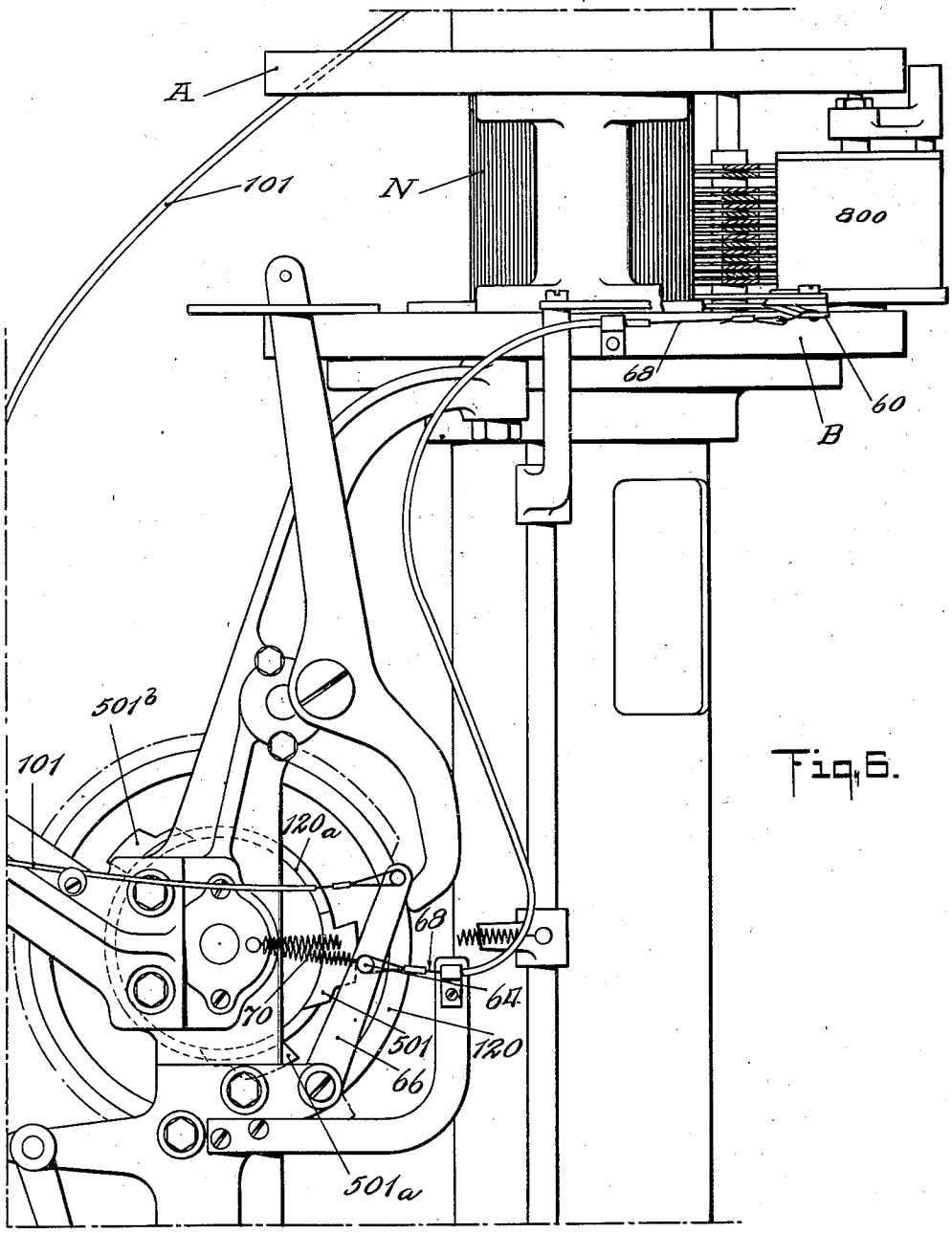


Fig. 6.

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MACHINE FOR MARKING CIRCULAR KNIT FABRIC FOR BOARDING

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Fig. 12.

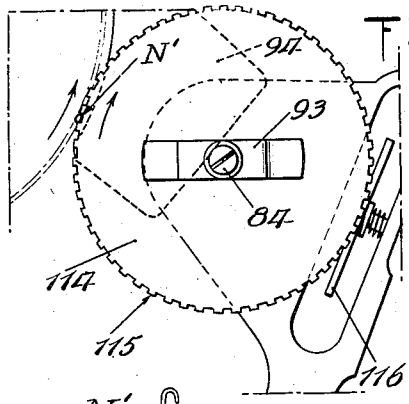


Fig. 13.

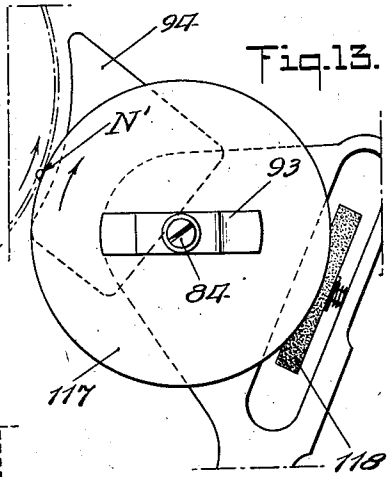


Fig. 9.

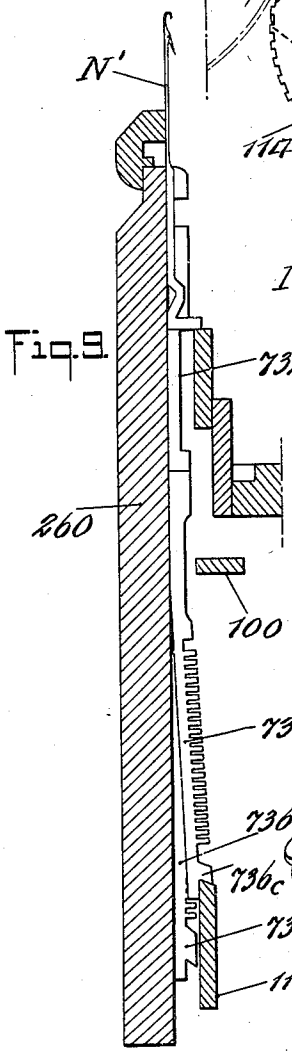


Fig. 11.

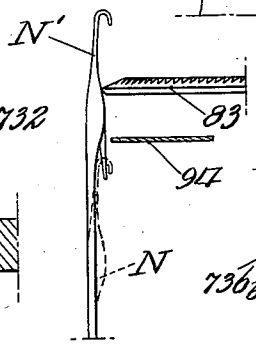


Fig. 10.

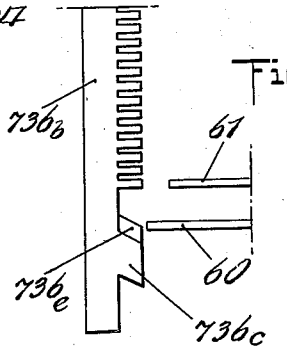


Fig. 2.

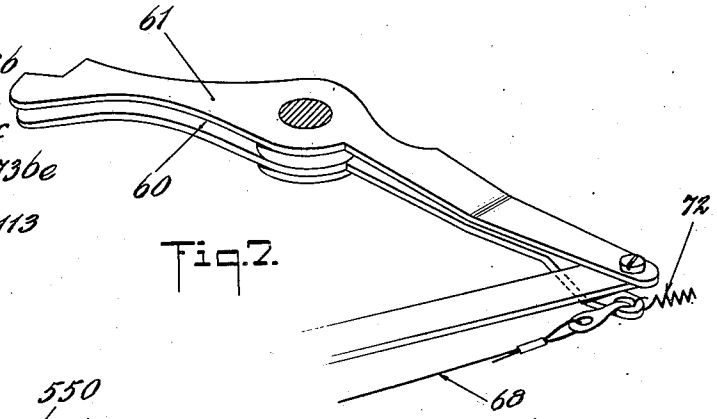
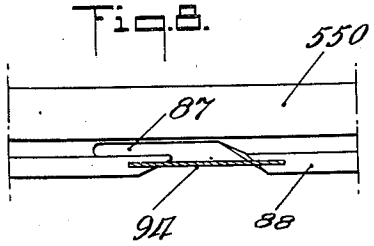


Fig. 8.



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MACHINE FOR MARKING CIRCULAR KNIT FABRIC FOR BOARDING

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Fig. 14

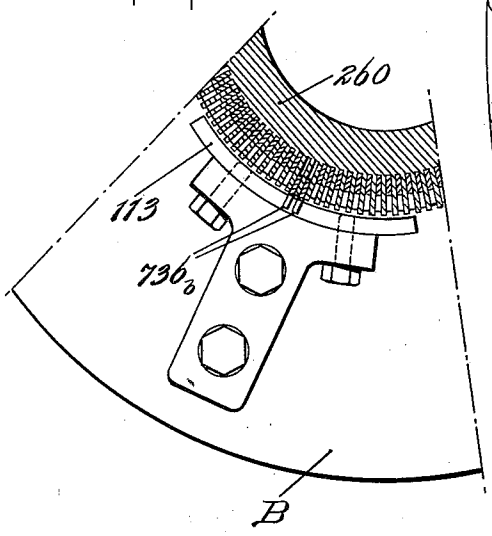


Fig. 15

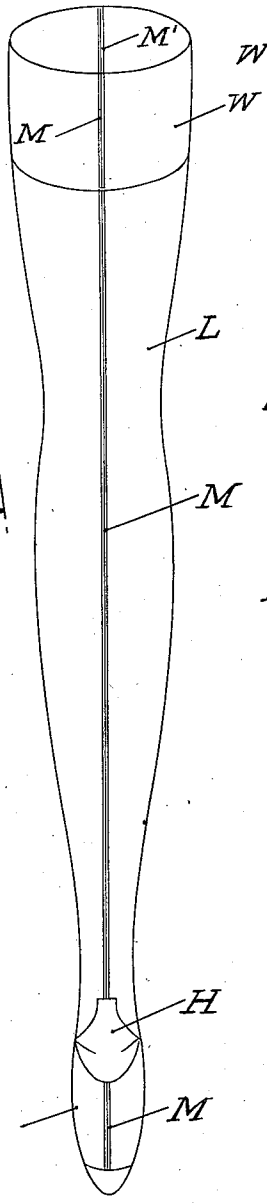


Fig. 16.

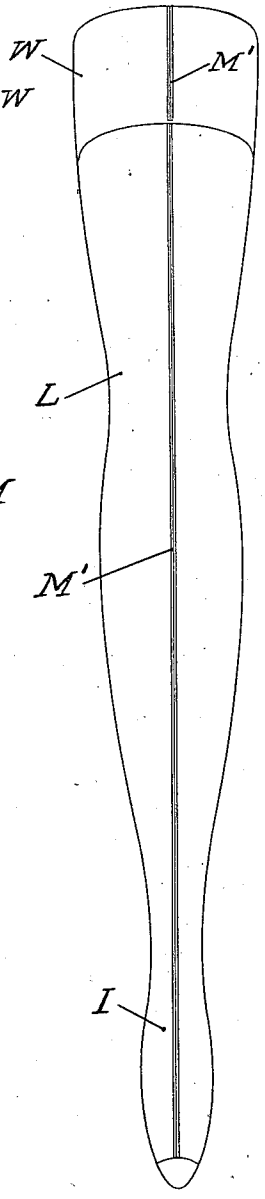
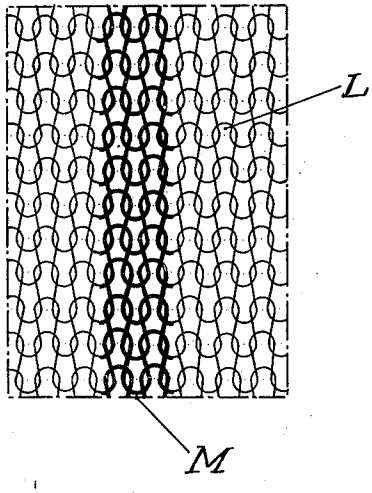


Fig. 17.



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Patented Oct. 21, 1947 2,429,458

UNITED STATES PATENT OFFICE

2,429,458

MACHINE FOR MARKING CIRCULAR KNIT FABRIC FOR BOARDING

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Application November 26, 1945, Serial No. 630,833

16 Claims. (Cl. 66—1)

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This invention relates to a knitting machine having means for marking hosiery knit of a thread formed, for example, of a material such as the synthetic fibre forming polymeric amides known as nylon which is adapted to be set to a definite shape by subjecting the material to heat or heat and moisture as in the hosiery preboarding operation. In order that the hosiery may be properly shaped by the preboarding operation it is necessary that the hosiery be placed on the preboarding form with particular wales at the back and front of the hosiery exactly following the back and front edges, respectively, of the thin flat form used in this operation. In boarding full-fashioned hosiery, the seam at the back and bottom of the hosiery provides a raised guide enabling the operator to rapidly and accurately position the hosiery on the boarding form by placing the hosiery seam along the back edge of the form, an operation which can be carried out by feeling the position of the seam on the form. With seamless hosiery there is no seam to guide the operator and in order to place seamless hosiery on a boarding form so as to have the hosiery present the most attractive appearance when offered for sale, it is necessary to place particular wales of the hosiery on the back and front edges of the form. Careful inspection and adjustment, therefore, are required to insure seamless hosiery being properly placed on the form and the operation is slow and costly. It is an object of this invention to provide a knitting machine having improved means for marking hosiery during the knitting thereof so as to properly and quickly guide the placing of the hosiery on a form.

The invention is shown in the drawings in connection with a Scott and Williams circular knitting machine for knitting hosiery having turned welts, the machine being of the general construction shown in the patent to Scott, No. 1,282,958, issued October 29, 1918, and provided with patterning mechanism comprising jacks and jack selecting means such as are shown in the patent to Page, No. 1,969,853, issued August 14, 1934, and only such parts of the knitting machine are shown as are necessary to clearly illustrate the invention.

In the drawings:

Fig. 1 is a partial view in side elevation of a knitting machine having a marking means in accordance with this invention, parts being broken away to show other parts more clearly;

Fig. 2 is a partial top plan view of the machine shown in Fig. 1, parts being broken away to show other parts more clearly;

Fig. 3 is a fragmentary view in elevation looking from the left in Fig. 1;

Fig. 4 is a fragmentary view similar to Fig. 2 but drawn to a larger scale and showing a marking means in accordance with this invention in its operative position;

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Fig. 5 is a view similar to Fig. 4 showing the marking means retained in an inoperative position;

Fig. 6 is a partial view in side elevation showing the side opposite to that of Fig. 1, some parts being omitted to show the remaining parts more clearly;

Fig. 7 is a perspective view showing needle selecting levers detached from the machine;

Fig. 8 is a fragmentary view in elevation showing the notching of the latch ring filler ring to receive the needle contacting disk of the marking means;

Fig. 9 is a partial vertical sectional view taken at a needle selected for marking the fabric and showing the relations of the needle and intermediate and pattern jacks to each other and to certain operating cams;

Fig. 10 is a fragmentary view in elevation showing the relation of the pattern jacks and the jack selecting lever provided in connection with this invention;

Fig. 11 is a diagrammatic view showing the relation of the marking disk and latch retaining plate to a selected needle;

Figs. 12 and 13 are fragmentary plan views showing marking disks of modified construction and operation;

Fig. 14 is a fragmentary plan view showing the cam operating the jacks of selected needles to which coloring matter is to be applied;

Figs. 15 and 16 are views in elevation of the back and front, respectively, of hosiery having coloring material applied by a machine in accordance with this invention; and

Fig. 17 is an enlarged view of a fragment of the hosiery fabric showing coloring material applied to the loops of two adjacent wales.

As shown in Figs. 15 and 16 hosiery marked by a machine in accordance with this invention has a guide mark M of a width of one or more needle wales which may extend down the center wale or wales of the back of the leg L from the start of the turned welt W to the heel H. The mark is omitted from the heel and toe but extends along the bottom of the sole S. A similar guide mark M' may extend along the center wale or wales of the front of the leg from the start of the welt W to and along the top of the instep I to the toe. The guide marks M and M', preferably, are offset several wales from the exact back and front wales of the stocking so as to appear on the same side of the form in the preboarding operation, both marks being continuously visible to the operator and thus permitting adjustment of the stocking on the form to be readily made. Preferably the guide mark is formed of a fugitive dye contrasting sufficiently in color with the

thread of which the hosiery is knit to be readily seen when the hosiery is being placed on the preboarding form. As the preboarding operation sets the thread of which the hosiery is knit so that the hosiery tends to maintain the shape and size given it by the preboarding operation, the removal of the fugitive dye forming the guide mark during the subsequent dyeing and finishing operations does not interfere with rapid and efficient boarding of the hosiery as the shape assumed by the hosiery guides its placing on the boarding form.

The machine for forming the guide mark or marks on the hosiery during the knitting thereof shown in the drawings is a circular hosiery knitting machine having a needle cylinder **260** mounted for rotation in a suitable frame and driven through a gear **31** from a main drive shaft **32**. The needle cylinder **260** is provided with needles N, intermediate jacks **732** and pattern jacks **736** alined in the grooves thereof, there being a jack of each kind for each needle. The machine is also provided with the usual operating cams and yarn fingers operated by push rods from cams on the main pattern drum **120**. The pattern jack selecting means provided comprises a pattern drum **800** rotated step by step in the usual way and operating reader cams **820** to select jacks for operating needles in the usual manner.

A guide mark is formed in the hosiery by applying a fugitive dye to the upper ends of one or more needles knitting the central wale or wales at the back or back and front of the hosiery, or knitting selected wales adjacent the back and front of the stocking. In order that the dye may be applied to the desired needle or needles only, such needles are selected by being differentiated in position during each revolution of the needle cylinder when the guide mark is being formed prior to the operation of the adjacent needles to take the thread for knitting. To secure the differentiation in position of the selected needles N', the jacks **736***b* for these needles have an upper portion of their operating butts **736***c* cut away so that when rocked by the usual cam **100** during each revolution all patterning jacks **736** except the jacks **736***b* for the selected needles will have their operating butts **736***e* engaged by a lever **60** pivotally mounted below the usual "make-up" lever **61** on the pin mounted in the lower bed plate B on which the reader cams **820** for the patterning jacks are mounted. To operate the lever **60** there is attached to an end of the main pattern drum **120** a pattern disk **120***a* which rotates with the main pattern drum **120** and is provided with cams **501**, **501***a* and **501***b* adapted to engage a pin **64** mounted in an arm **66** which is pivotally mounted on the machine frame. The pin **64** projects on both sides of the arm **66** and has secured thereon, on the other side of the arm **66** from the cam **501**, the looped end of a Bowden wire **68**, the opposite end of which is connected to an end of the lever **60**. A spring **70** connected between the arm **66** and the machine frame opposes operation of the arm **66** by the cams **501**, **501***a* and **501***b* to permit lever **60** to be moved to its jack engaging position by a spring **72** connected between the lever **60** and the machine frame end, when a cam has released the lever **60**, serves to return the lever **60** to its inoperative position. The lever **60**, when in jack engaging position, engages the jack operating butts **736***e* of all jacks except the selected jacks **736***b* and forces back the lower portions of the engaged jacks so that their operating butts pass the usual jack operating cam **113** and are not operated thereby. The jacks **736***b* for the selected needles, not having had their operating butts pressed inwardly, have their operating butts **736***c* engaged by the jack operating cam **113** and the jacks and selected needles N' are raised thereby prior to the raising of adjacent needles to take the yarn for knitting.

To apply the coloring material to the differentiated selected needle or needles N' there is provided an arm **74** pivotally supported on a stud **75** mounted in the upper bed plate A and secured in adjusted position on the stud **75** by collars **76** and set screws **77**. The arm **74** is formed with a well **78** for coloring material and a laterally projecting flange **79** and mounted in the walls of the well **78** and projecting across the well is a pin **80** on which is rotatably mounted a metal disk **81**. The disk **81** has a beveled edge and is biased by a spring **82** on the pin **80** to bring its beveled edge into contact with a correspondingly beveled edge of a disk **83** rotatably mounted on a vertically arranged pin **84** secured in the flange **79**. The disk **81** is of such diameter and so mounted in the well **78** as to constantly dip into a liquid fugitive dye maintained at a constant level in the well by means of a detachable reservoir **85** connected by a suitable pipe fitting **86** to the well **78**. The disk **83** is of such diameter and so positioned on the flange **79** as to extend beyond the arm **74** sufficiently far as to project through a slot **87** in the insert **88** forming the inner face of the latch ring **550** and engage with the raised selected needle or needles N' above the pivot point of the latch as shown in Fig. 11. The upper face of the disk **83** is formed with ratchet teeth **83***a* arranged to be engaged by a pawl **89** formed integral with a plate **89***a* pivotally mounted on the pin **84** and having a flange **89***b* which serves to engage a stop member **90** adjustably mounted on the pin **84**. The flange **89***b* is arranged to be engaged by the lower end of an operating lever **91**. A spring **92** having its ends attached to the stop member **90** and the pawl plate **89***a* serves to bias the pawl to engage with the stop member **90** and adjustment of the stop member **90** on the pin **84** determines the extent of operation of the pawl **89** and the movement of the disk **83** upon each operation of the pawl. A spring plate **93** pivotally mounted on the pin **84** between the disk **83** and the pawl plate **89***a* holds the parts snug on the pin **84** and serves as a brake to prevent over-running of the disk **83** when operated by the pawl **89**. To the lower face of the flange **79** there is secured a plate **94** having a projecting edge shaped to substantially the arc of a circle and positioned to prevent closure of the needle latches at the slot **87** when the disk **83** is operative and the selected needles are being raised.

The operating lever **91** is pivotally mounted intermediate its ends upon the post **95** and positioned to have its upper end engaged by a cam **96** on the drive shaft **2** for the dial, the shaft **2** making two complete revolutions for each revolution of the dial so that the disk **83** is operated twice during each revolution of the needle cylinder. The cam **96** is so positioned on the shaft **2** that the disk **83** is at rest as the raised selected needle or needles at both the front and back of the hosiery are moved past the disk **83**.

In the machine shown, the dial supporting means and latch ring can be raised, being pivotally connected, as at **552** to a standard mounted on the upper bed plate A and in order to retain

the lever 91 in proper position when the dial is raised the lever 91 is provided with an angular projection 91a in which is mounted an adjustable stop member 91b adapted to engage the post 95 and retain the lever 91 in upright position. To prevent the dial and latch ring being raised while the disk 83 is in position to engage the selected needles, that is, inserted in the slot 87, the arm 74 is provided with a finger 98 which projects over the latch ring 550 in position to be engaged thereby to prevent the latch ring being raised while the disk 83 is in position to engage the selected needles.

To operate the arm 74 to and from the position in which the disk 83 is engaged by the selected needles N' there is provided a Bowden wire 101 connected at one end to the upper end of the arm 66 and at its other end to the arm 74 through a spring 102. An adjustable stop 103 mounted in the arm 74 in position to engage the post 95 limits the movement of the arm 74 inwardly by the Bowden wire 101 so as to properly position the disk 83 with respect to the raised selected needles N' and a spring 104 mounted on the arm 74 cushions the blow of the stop member 103 on the post 95 upon operation of the arm 74 and also serves to retract the arm 74 from operative position upon release of the arm 66 by the cams 501, 501a and 501b. A latch 105 pivotally mounted on the arm 74 is biased by a spring 106 connected between the latch 105 and the arm 74 to engage with the post 95 to hold the arm 74 with the disk 83 and finger 98 clear of the latch ring when the arm 74 is manually retracted to permit the raising of the dial and latch ring, the spring 102 permitting this operation when any one of the cams 501, 501a and 501b is in engagement with the arm 66.

In the operation of the knitting machine disclosed, the make-up lever 61 is operated to select the needles to take the thread for the starting course in the usual manner and, where the guide mark is placed in the welt, a cam, as the cam 501a, will operate the arm 66 to place the selecting lever 60 and the arm 74 in operative positions upon completion of the make-up or starting courses. The cam 501a is a two-step cam, the first step being designed to render the selector lever 60 operative to select the jacks of the needles N' to be raised and the arm 74 not being brought to a position in which the disk 83 will be engaged by the selected needles until the pin 64 in arm 66 rests on the second step of the cam. With the disk 83 in position to engage the raised needles, the cam 96 on dial operating shaft 2 operates the lever 91 and pawl 89 to shift the ratchet disk 83 between engagements of the disk by the raised needles. Rotation of the disk 83 rotates the disk 81 causing coloring material from the well 78 to be transferred to the rim of the disk 83 and thence to the raised selected needles, just above the pivot points of the needle latches. The coloring material transferred to the needles is wiped from the needles by the thread loops formed by the needles so that colored loops occur in the wales knit by the selected needles. Preferably the disk 83 is positioned so as to just touch the raised selected needles as they pass. The amount of coloring material supplied to the needles can be varied by changing the extent of contact of the beveled edges of the disks 83 and 81 as by changing the width of the beveled edge of the disk 83, the amount of coloring material supplied increasing as the width of the beveled edge of disk 83 is increased. The amount of coloring material supplied the needles can also be increased by increasing the number of teeth the disk 83 is racked at each operation. Control of the edge width and the racking of the disk permits of a sharp guide mark being formed in the hosiery. The pattern drum 120 is operated to shift the cam 501a from the pin 64 as the knitting of the welt fabric is completed permitting the springs 70 and 104 to return the lever 60 and disk 83 to inoperative positions for the transfer of the loops of the starting course of the welt. If, following the regular welt, a shadow welt having patterning for identification is knit, the lever 60 and disk 83 are retained in inoperative position and are not returned to operative position until the knitting of the leg is begun. The lever 60 and disk 83 are maintained in operative position throughout the knitting of the leg, as by the cam 501, and are withdrawn from operative position at the beginning of the knitting of heel. Upon completion of the heel, a cam, as cam 501b, returns the lever 60 and disk 83 to operative position and maintains them in operative position throughout the knitting of the instep and sole, cam 501b being operated to permit them to return to inoperative position at the beginning of the knitting of the toe.

In place of a metallic disk positively operated by pawl and ratchet from a drive shaft of the machine, a disk operated by engagement with the needles can be used as in the modification shown in Fig. 12. In this construction a disk 114 molded of a suitable plastic material and having teeth 115 on its perimeter is secured to the flange 79 of the arm 74 by the pin 84 and the spring plate 93 in position to engage with and rotate a plain plastic disk 116 rotatably mounted in the well in the arm 74 and positioned to dip into the coloring material in the well. In its operative position the raised selected needle or needles N' engage a tooth on the disk 114 and rotate both disks so as to bring coloring material to the selected needles, the spring plate 93 serving to brake the movement of the disk 114 at each operation. In place of a toothed-plastic disk a plain disk of a suitable composition as cork or rubber, as the disk 117 of Fig. 13, can be used. This disk is similarly mounted on the flange 79 of the arm 74 and engages with a suitable circular brush or composition disk 118 mounted so as to dip into the coloring material in the well in the arm 74. In its operative position, the disk 117 is wiped by the raised selected needle or needles N' and the frictional engagement of the needles N' rotates the disk and brush sufficiently to continuously present to the needles N' a portion of the disk 117 having coloring material thereon to be taken therefrom by the raised selected needles N'.

What is claimed is:

1. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, and means operating said disks to transfer coloring material from said second disk to said first disk and engaging said differentiated needle with said first disk to apply coloring material to said differentiated needle.

2. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, means engaging said first disk to operate said disks and transfer coloring material from said second disk to said first disk and present coloring material on said first disk to said differentiated needle and means providing relative motion between said first disk and differentiated needle.

3. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, means engaging said first disk and intermittently operating said disks to transfer coloring material from said second disk to said first disk and present coloring material on said first disk to said differentiated needle and means providing relative motion between said first disk and differentiated needle.

4. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, means operating said first disk step-by-step to transfer coloring material from said second disk to said first disk and present coloring material on said first disk to said differentiated needle and means providing relative motion between said first disk and differentiated needle.

5. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, pattern means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, a well for holding coloring material for said second disk, said second disk projecting into said well, means operating said disks to transfer coloring material from said second disk to said first disk and present coloring material on said first disk to said differentiated needle and means providing relative motion between said first disk and differentiated needle.

6. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, means operating said disks to transfer coloring material from said second disk to said first disk and means relatively moving said differentiated needle and said first disk to apply coloring material to said differentiated needle, said disk operating means operating said disks between engagements of said first disk by said differentiated needle.

7. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, pawl and ratchet means for operating said first disk, means operating said pawl and ratchet means to operate said disks to transfer coloring material from said second disk to said first disk and means relatively moving said differentiated needle and said first disk to apply coloring material to said selected needle.

8. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk having ratchet teeth thereon, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, a pawl rotatable about the axis of rotation of said first disk for engaging said ratchet teeth, means operating said pawl to rotate said disks and transfer coloring material from said second disk to said first disk and means relatively moving said differentiated needle and said first disk to apply coloring material to said differentiated needle while said disks are at rest.

9. In a knitting machine having independent needles, means for differentiating spaced selected needles in position from the adjacent needles prior to the operation of said selected needles to take a thread in the knitting of a course, a rotatably mounted disk having ratchet teeth thereon, pattern means for positioning said disk for engagement by said differentiated needles during relative motion between said disk and needles, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, a pawl rotatable about the axis of rotation of said first disk for engaging said ratchet teeth, a lever for operating said pawl, a rotating shaft, a cam on said shaft operating said lever to rotate said disks and transfer coloring material from said second disk to said first disk and means relatively moving said differentiated needles and said first disk to apply coloring material to said differentiated needles while said disks are at rest, said cam operating said disks between engagements of said first disk by successive spaced differentiated needles.

10. In a knitting machine having independent

needles, means for differentiating spaced selected needles in position from the adjacent needles prior to the operation of said selected needles to take a thread in the knitting of a course, a rotatably mounted disk having ratchet teeth thereon, pattern means for positioning said disk for engagement by said differentiated needles during relative motion between said disk and needles, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk, a pawl rotatable about the axis of rotation of said first disk for engaging said ratchet teeth, a lever for operating said pawl, a rotating shaft, a cam on said shaft operating said lever to rotate said disks and transfer coloring material from said second disk to said first disk, means for adjusting the stroke of said pawl and the speed of rotation of said disks, and means relatively moving said differentiated needles and said first disk to apply coloring material to said differentiated needles while said disks are at rest, said cam operating said disks between engagements of said first disk by successive spaced differentiated needles.

11. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk and means engaging said differentiated needle with said first disk to operate said disks and transfer coloring material from said second disk to said first disk and from said first disk to said differentiated needle.

12. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted toothed disk, means for positioning said disk for engagement of a disk tooth by said differentiated needle, a second rotatably mounted disk engaging said first disk and operated thereby, means supplying coloring material to said second disk and means engaging said differentiated needle with a disk tooth to operate said disks and transfer coloring material from said first disk to said differentiated needle and from said second disk to said first disk.

13. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, means supplying coloring material to said disk, means intermittently operating said disk to present coloring material on said disk to said differentiated needle and means relatively moving said disk and differentiated needle.

14. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion of said disk and needle, means supplying coloring material to said disk, means operating said disk step by step to present coloring material on said disk to said differentiated needle and means relatively moving said disk and differentiated needle.

15. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk, means for positioning said disk for engagement by said differentiated needle during relative motion between said disk and needle, means supplying coloring material to said disk, pawl and ratchet means for operating said disk, means operating said pawl and ratchet means to operate said disk to present coloring material to said differentiated needle and means relatively moving said disk and differentiated needle.

16. In a knitting machine having independent needles, means for differentiating a selected needle in position from the adjacent needles prior to the operation of said selected needle to take a thread in the knitting of a course, a rotatably mounted disk having ratchet teeth thereon, means for positioning said disk for engagement by said differentiated needle during relative motion of said disk and needle, means supplying coloring material to said disk, a pawl rotatable about the axis of rotation of said disk for engaging said ratchet teeth, means operating said pawl to rotate said disk to present coloring material on said disk to said differentiated needle and means relatively moving said disk and differentiated needle.

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