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KNITTING MACHINE

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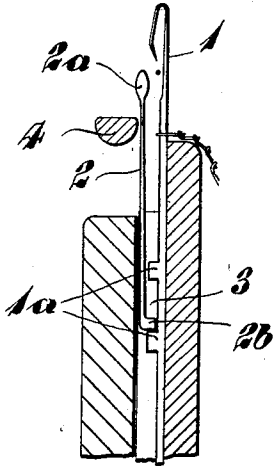


FIG 1

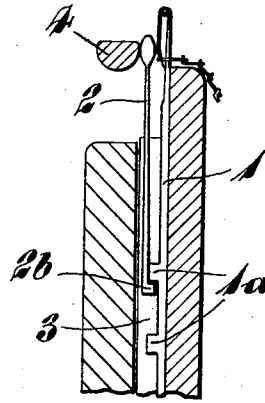


FIG 2

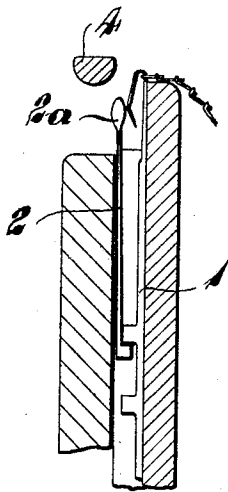


FIG 3

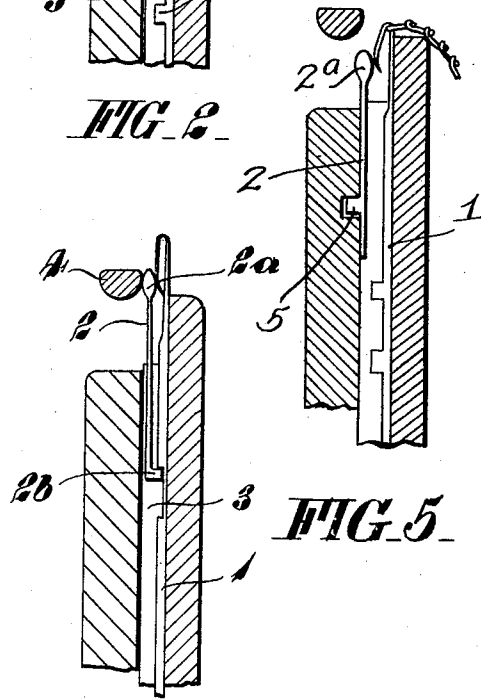


FIG 4

FIG 5

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KNITTING MACHINE

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This invention comprises improvements in or relating to knitting machines and refers to that class of machine employing bearded needles, the purpose of the invention being to provide an improved method of and means for pressing the needle beards.

Heretofore in all methods of pressing beards, such as by presser wheels, bars and the like, the disadvantage exists in that in operation such pressers having a rubbing or frictional contact with the needle beards and consequently wear down the beards and render necessary the frequent renewal of the needles.

An important object of the present invention is to eliminate this disadvantage, and with this object in view the invention consists in the provision in a knitting machine of needle pressing means which function to press the needle beards for the requisite period without relative movement between the beards and presser member co-acting therewith.

More particularly the invention consists in the provision in combination of reciprocating bearded needles, a non-reciprocating part or parts spaced from the beards of said needles, and presser members which in the operation of the machine are adapted to be reciprocated into and out of a pressing position between said non-reciprocating part and the needle beards and during the pressing period to be moved in unison with the needles.

For the purpose of more fully describing the nature of this invention reference will now be made to the accompanying drawings, wherein:—

Figure 1 illustrates in vertical section the relative position of the needle and presser at the time of laying a thread upon the needle.

Figures 2 and 3 are similar views showing the parts during the pressing and knocking-over positions respectively.

Figures 4 and 5 illustrate alternative arrangements.

In one method of carrying out the invention, within each needle trick in a needle cylinder or carrier a bearded needle 1 has assembled with same a presser member 2

conveniently comprising a wire or thin strip metal stem having at its one end an enlarged or thickened head 2a preferably of elliptical section and at its opposite end a laterally projecting butt 2b which may be formed by cranking the end of the stem. This butt 2b projects into a slot or space 3 in the needle stem, which slot may be formed by providing on the needle two lateral butts 1a spaced one above the other, said slot 3 being sufficiently long to permit of a predetermined degree of movement of the presser butt 2b within same along the needle. Alternatively the slot 3 for the presser butt 2b to move in may be provided by cutting or notching the needle stem, as shown in Figure 4.

During the customary reciprocation of a needle 1 within its trick, the presser 2 associated therewith is free to move relatively to the needle only to an extent governed by the length of the aforesaid slot 3 and the thickness or width of the presser butt 2b working therein. When, therefore, the needle descends, the presser 2 remains stationary until the butt 2b thereon reaches the upper limit of the needle slot 3 when the presser will move down in unison with the needle. Also, when the needle 1 ascends, the presser 2 remains stationary until its butt coacts with the lower limit of the slot 3, after which the presser is raised with the needle.

In front of the needle, i. e. the bearded side thereof, at a position opposite to the lower end of the beard when the needle is partially lowered and in its pressing position, i. e. the position shown in Figure 2, is a stationary abutment 4 which may be of suitable shape in cross section, said abutment being so spaced from the needle 1 that while there is not passing room for the enlarged end 2a of the presser member 2 and an open beard, said enlarged end can pass with a closed beard.

In operation, when the needle 1 is fully raised to receive thread and clear its loop, the enlarged head 2a of the presser 2 is located above the fixed abutment 4 and spaced from the beard to permit laying of the thread. On the downward motion of the needle the presser remains stationary until the butt 2b

thereon is engaged by the upper limit of the slot 3 in the needle, the presser 2 being then drawn downwards in unison with the needle. During this movement the enlarged presser portion 2a as it passes the fixed abutment 4 presses the needle beard to permit of the existing loop on the needle being drawn over said beard. The continued downward movement brings the enlarged presser portion 2a beneath and clear of the abutment 4 and permits the beard to open and the loop to be cast off.

It will thus be appreciated that during the period the needle beard is being pressed the needle 1 and presser 2 move in the same direction with equal speed, therefore there can be neither longitudinal nor lateral friction between the presser and the beard.

Instead of effecting reciprocation of the pressers by the needles themselves, this may be accomplished by means operating independently of the needles but functioning to move the pressers in the same direction and at the same speed as said needles during the pressing period. For example, a butt on the presser projecting away from instead of towards the needle (as indicated at 5 in Figure 5) may be caused to coact with a suitable cam race for imparting the required reciprocation to the presser.

The presser portion 2a which coacts with the beard may be so shaped or grooved that any beard tending to lie out of centre is brought to the correct position when pressed.

If desired a single presser member may be provided with an upper enlarged pressing portion of sufficient width to press the beards of a plurality or group of needles simultaneously.

When applied to a circular knitting machine the fixed abutment 4 may advantageously comprise a ring arranged concentrically with the needles and supported from any suitable part of the machine.

I claim:—

1. In a knitting machine, reciprocable bearded needles, means for reciprocating said needles, a non-reciprocating part spaced from the needle beards, presser members for the needle beards, means for reciprocating said presser members into and out of a pressing position between said non-reciprocating part and the needle beard and means whereby the needles and presser members are moved in unison during the pressing period.

2. In a knitting machine, reciprocable bearded needles, a carrier slidably accommodating said needles, reciprocable needle presser members, butts on said presser members, said butts coacting with the needles so that reciprocation of the presser members is effected by said needles, a relatively stationary part, and said presser members dur-

ing the pressing period being pressed by said stationary part on to the needle beards and moved in unison with the needles.

3. In a knitting machine, a needle carrier, tricks in said carrier, bearded needles reciprocable in said tricks, needle presser members, said presser members embodying stems with enlarged heads, said presser member stems being slidably accommodated with the needles in the carrier tricks, a relatively stationary part, said part being spaced a short distance from the bearded side of the needles projecting from the carrier, means whereby during the needle pressing period the heads of the presser members are forced by said stationary part on to the needle beards and said presser members are moved in unison with the needles, and means whereby during the initial and final periods of reciprocation of the needles the presser members are retained from movement.

4. In a knitting machine, a needle carrier, tricks in said carrier, bearded needles reciprocable in said tricks, needle presser members, said presser members embodying stems with enlarged heads, said presser member stems being slidably accommodated with the needles in the carrier tricks, a relatively stationary part, said part being spaced a short distance from the bearded side of the needles projecting from the carrier, a butt on each presser member stem coacting with a relatively larger or longer recess in a needle so as to cause the presser members to be reciprocated by said needles while permitting a certain amount of relative movement therebetween, the presser members during the needle pressing period being traversed in unison with the needles and the presser member heads being forced by the said stationary part on to the needle beards, and the initial and final periods of needle reciprocation being accomplished relatively to the presser members.

5. In a knitting machine, reciprocable bearded needles, a tricked carrier slidably accommodating said needles, needle presser members also slidably accommodated in the needle tricks of said needle carrier, a relatively stationary part, enlarged head portions on said slidable presser members, butts on said presser members, a cam device coacting with said butts and operating to move the presser members during the pressing period in unison with the needles and during said movement to bring the presser member heads between the stationary part and the needle beards so as to press the latter.

6. In a knitting machine, bearded needles, presser members for the beards of the needles, and means for moving the presser means and the needles longitudinally in unison during the pressing period, and other means operating while the said parts are moving in

unison to move the presser means laterally to cross the beards of the needles.

7. In a knitting machine, bearded needles, means for reciprocating said needles, presser members for the needle beards, and relatively stationary means with which the presser members engage, said presser members embodying a part movable in unison with the needles during the pressing period, and said parts being movable to and held in the pressing position by said relatively stationary means.

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