

July 13, 1943.

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2,324,442

ELECTRIC RING FOR ROTARY KNITTING MACHINES

Filed Sept. 23, 1942

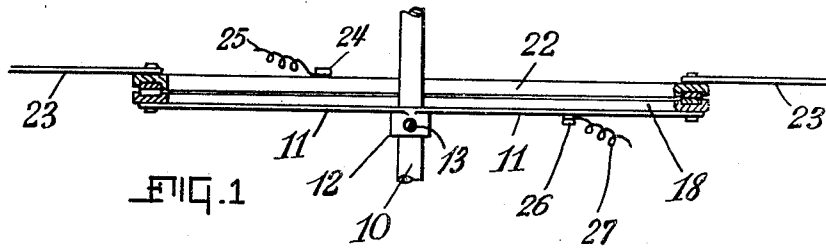


FIG. 1

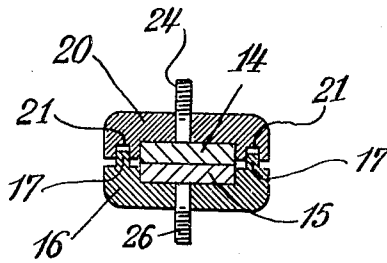


FIG. 2

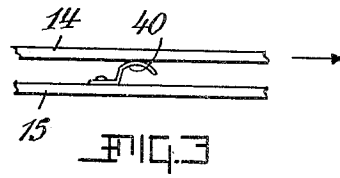


FIG. 3

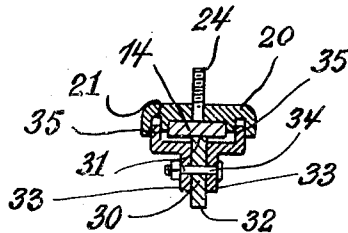


FIG. 4

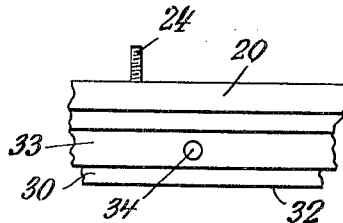


FIG. 5

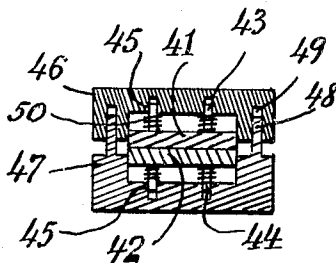


FIG. 6

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UNITED STATES PATENT OFFICE

2,324,442

ELECTRIC RING FOR ROTARY KNITTING MACHINES

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Application September 23, 1942, Serial No. 459,361

7 Claims. (Cl. 66—163)

This invention relates to electric contact rings for rotary knitting machines of the type shown in my pending application, Serial Number 436,556, filed March 28, 1942. The ring disclosed in that application comprises two contacting ring members without any provision for preventing the entrance of dust and dirt between them. The accumulation of dust, dirt and paraffin from the yarns of the knitting machine upon the contacting rings interferes with the conduct of electric current from one to the other. The object of this invention is to provide an improved electric ring including insulating coverings for the two contact rings to prevent dirt from entering between them. In the accompanying drawing illustrating the invention

Fig. 1 is a sectional view of the electric ring in position in a knitting machine stop motion mechanism of which the ring is a recognized element, parts being omitted.

Fig. 2 is an enlarged cross sectional view of the electric ring according to this invention.

Fig. 3 is a detail view showing conducting fingers between the rings.

Fig. 4 is a cross sectional view of another form of ring.

Fig. 5 is a partial side view of Fig. 4.

Fig. 6 shows a modification.

In the pending application referred to the electric ring consists of two interengaged ring members of which one rotates upon the other. The fixed ring is secured to some fixed part of the knitting machine. The rotating ring is secured to and rotates with the central shaft of the stop motion mechanism. All this is generally known in the art. For the purpose of this disclosure only the rotating shaft is shown as being sufficient for an understanding of the invention. Referring to Fig. 1 the numeral 10 denotes the central rotating shaft of a stop motion mechanism for a rotary knitting machine. The shaft carries a set of arms 11, 11 extending from a sleeve 12 adjustably secured to the shaft by a screw 13. The electric ring consists of two ring members 14 and 15, see Fig. 2. The lower fixed ring 15 is enclosed by an insulating ring shaped covering or channel 16 with upstanding annular flanges 17, 17. The entire lower ring unit is marked 18 in Fig. 1 and is secured to the said arms 11 to rotate with the shaft 10. The electric ring also includes an upper conducting ring 14 which is likewise enclosed by an insulating ring shaped covering or channel 20 having two annular grooves 21, 21 to receive the flanges 17 as shown. The entire upper ring unit is marked

22 in Fig. 1 and is held in fixed relation to the lower ring unit by arms 23 or other means secured to some fixed part of the knitting machine, not shown. Each ring unit is provided with one or more binding posts such as the post 24 in the ring 14 for attaching the incoming wire 25 and the post 26 in the ring 15 for attaching a wire or wires 27 which lead to all the switches and controls in the stop motion and knitting machine as will be understood and as is usual in the art.

In operation the power ring unit is adjusted upon the shaft 10 to bring the ring 15 into rotary running operating conducting relation and contact with the ring 14 and the screw 13 is then tightened. The flanges 17 enter the grooves 21 whereby to completely seal the rings 14 and 15 against the entrance of dust and dirt between them. Instead of direct contact between the rings, conducting fingers 40 may be used as shown in Fig. 3.

It may be necessary to expose one edge of the electric ring to contact directly other elements. For instance, as shown in the said pending application the edge of the lower ring is arranged to be contacted by upwardly moving switch members. For this purpose a construction such as is shown in Figs. 4 and 5 may be used. In these views the upper ring 14 and its associated parts are the same as in Fig. 2. The lower ring 30 is placed with its long side vertical so that its upper edge 31 engages the ring 14 while the lower edge 32 is exposed beneath enclosing insulating members 33, 33 which are secured to the ring 30 by a bolt 34 or other means which also may serve for the attachment of wires. The lower members 33 have annular flanges 35 which enter the grooves 21 in the upper member 20 so also in this case are the two conducting rings protected against the entrance of dirt between them.

Fig. 6 shows still another form of the invention in which the two contacting rings 41 and 42 each carries posts 43, 44 respectively which enter sockets 45 in the enclosing insulating coverings or channels 46, 47 respectively. The latter have interengaged annular flanges 48 and grooves 49 as shown. Springs 50 are carried by the posts. The channels 46 and 47 being in relatively fixed relation the two contacting rings are kept in rotary sliding contact under pressure by the springs whereby good conducting contact between the rings is maintained irrespective of wear. Also in this case are the rings protected against the entrance of dirt between them. The insulating members referred to herein may be made

of suitable plastic material to be molded around the contact rings.

I claim:

1. As a new article of manufacture an electric ring for rotary knitting machines consisting of two electric current conducting rings, one of which rotates upon the other in electric conducting contacting relation, an insulating ring member enclosing each of said rings annularly, the said two insulating ring members being in interlocked sealed relation whereby to completely enclose the said two conducting rings to prevent the entrance of dirt between them.

2. An electric ring according to claim 1 including interlocked annular flanges and grooves in the said two enclosing members for the purpose described.

3. An electric ring according to claim 1 including binding posts upon the said conducting rings for attaching wires thereto.

4. An electric ring according to claim 1 in which the said conducting rings are in spaced relation and a conducting resilient finger upon one of said rings for conducting electric current to the other ring.

5. An electric ring as described comprising two rings for conducting electric current, one of said rings rotating upon the other in electric conducting contacting relation, an insulating ring member annularly enclosing each of said rings and spring means interposed between each of said rings and its enclosing insulating ring member to maintain said conducting rings in conducting contacting relation.

6. An electric ring according to claim 5 including interengaged annular flanges and grooves on said insulating ring members respectively to prevent the entrance of dirt between the said two conducting rings.

7. As a new article of manufacture an electric ring for rotary knitting machine consisting of two electric rings, one of which rotates upon the other in electric conducting contacting relation, an insulating ring member secured to the non-contacting portion of each of said conducting rings, said insulating ring members including an annular flange and groove in interengaged locked relation whereby to prevent the entrance of dirt between said insulating ring members.

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