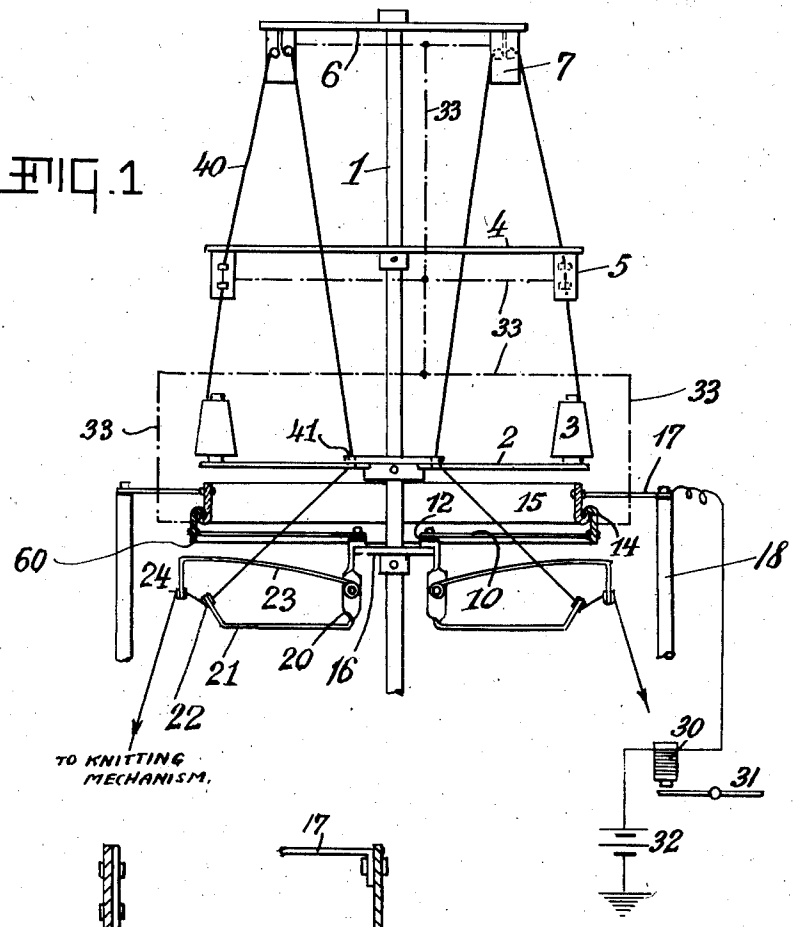
Jan. 26, 1943. M. WACHSMAN 2,309,367

ELECTRIC RING FOR ROTARY KNITTING MACHINES

Filed March 28, 1942

FIG. 1



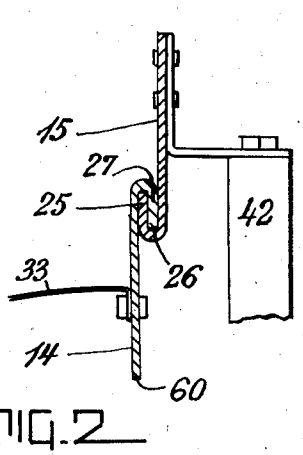


FIG. 2

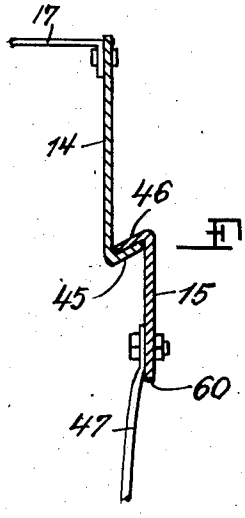


FIG. 3

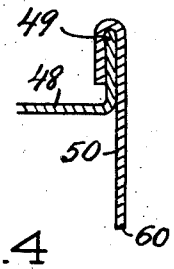


FIG. 4

Michael Wachsman
INVENTOR

BY Jean E. A. Konigsberg
Atty.

Patented Jan. 26, 1943 2,309,367

UNITED STATES PATENT OFFICE

2,309,367

ELECTRIC RING FOR ROTARY KNITTING MACHINES

Michael Wachsman, Brooklyn, N. Y.

Application March 28, 1942, Serial No. 436,556

3 Claims. (Cl. 66—163)

The object of this invention is to provide an improved electric ring for rotating knitting machines for conducting electric current to the rotating electric stop motions used in such machines. Such conducting rings are called electric rings or contact rings by the trade and some prior types are disclosed in the U. S. Patents 1,775,298, September 9, 1930, and 2,147,275 February 14, 1939. These and other prior disclosures are objectionable with respect to dependability and stability in construction and operation. This invention is embodied in a ring characterized by simplicity and ruggedness in design and construction. It is inexpensive and requires fewer parts. It may be said to be two rings in one. In the accompanying drawing illustrating the invention:

Fig. 1 is a diagrammatic view of a portion of a knitting machine with this invention applied thereto.

Fig. 2 is an enlarged sectional view of the ring.

Figs. 3 and 4 show modifications.

Referring first to Fig. 1 the numeral 1 denotes a central rotating shaft which supports the several parts of the stop mechanism. This shaft is attached to the central rotating shaft of a knitting machine, not shown. The illustration in Fig. 1 is sometimes called a knitting machine top. Its use and the manner in which it is attached to the knitting machine is known in the art. The shaft 1 carries radial arms 2 which support the spindles of the spools of thread 3. Above the arms 2 there is another set of arms 4 which carry so-called thread end detectors which may be of the type disclosed in the U. S. Patent 1,784,560, December 9, 1930. Near the top there is a third set of arms 6 which carry so-called thread knot detectors 7 which may be of the type disclosed in the U. S. Reissue Patent 19,069, February 6, 1934. The detector units are per se no part of this invention.

Below the arms 2 the shaft 1 carries a disk 16 which supports thread slack take up devices each of which consists of a bracket 20 having an arm 21 with eyelet 22. A wire spring slack take up arm 23 with eyelet 24 is also supported on the bracket 20. The disk 16 also supports radial arms 10 of insulating material or insulated as shown at 12. The outer ends of the arms 10 are connected to a rotatable ring 14 which rests upon and rotates upon a stationary ring 15. The latter is fixedly supported in any suitable manner upon the knitting machine. For example the ring 15 may be carried by fixed posts 18 by means of brackets 17. The posts 18 may represent similar posts to be found in Jaquard knitting machines and are convenient for this purpose. The electric ring 14—15 serves to conduct electric current from a source to the rotating stop units 5, 7 and other like devices. The electric circuit is normally open and leads from a battery 32 to a magnet 30 which attracts a shipping lever 31 to actuate a well known form of stop mechanism, not shown. The magnet is connected to the stationary ring 15 via the brackets 17 or it may be directly connected. The current then passes on from the ring 15 to the ring 14 and then by suitable wires 33 to the stop units and ground upon the machine. With the exception of the ring element 14—15 the other elements, their arrangement and functions are old in this art.

As seen in Fig. 2 the upper stationary ring 15 has at its lower edge an upturned flange 25 forming a groove 26. The lower rotating ring 14 has at its upper edge a downwardly tuned flange 27 which fits slidingly within the groove 26. When the machine is started and the disk 16 rotates it in turn causes the ring 14 to rotate upon the ring 15 and a good continuous electric connection is maintained between the two ring elements.

In operation the thread 40 passes from the spools 3 up to and through the detector units 5 and 7. Then down through openings 41 and eyelets 22 and 24 to the knitting mechanism, not shown. If too much slack occurs in the thread, or if the thread breaks or runs out, the spring wire 23 will be released and snap upwards to engage the rotating ring 14 to close the circuit from the ring 14 to ground upon the machine. The magnet is then energized to attract the shipping lever to actuate the stop mechanism and the machine will stop as is known in the art and will be understood. The connections between the wires 33 and the stop units may be in any suitable manner known to the art and not shown in detail.

Fig. 2 is an enlarged sectional view of the left hand side of the ring 14—15 in Fig. 1 except that in Fig. 2 the supporting post 42, similar to the post 18, is shown on the inside of the ring. The arms 10 are omitted in Fig. 2 and the wire connection 33 shown enlarged. Fig. 2, of course, also shows that if the post 42 is on the outside of the ring 15, the ring 14 may rotate on the inside of the ring 15. In other words, the rotating ring 14 may be on the outside or on the inside of the ring 15. In Fig. 3 the fixed ring 14 has an

upwardly inclined flange **45** which forms a track for a downwardly inclined flange **46** on the rotating ring **15**. The latter may not require the supporting arms **10**, Fig. 1, but may be rotated by strong wires **47** which lead from the ring **15** down to the needle controls, not shown. Fig. 4 shows a fixed ring **48** which has a single upstanding track flange **49** upon which rotates the ring **50**.

In all the forms shown the electric ring consists of a fixed and a rotating ring element, one rotating upon the other. The fixed ring supplies current to the rotating ring which in turn is connected to the rotating stop units and controls of the machine. The lower edge **60** of the ring element is engaged by the movable contact members such as the wire spring **23** in Fig. 1, for example.

The ring element according to this invention is characterized by the fact that it obviates sliding contacts for conducting the electric current to either of the rings and provides a simple compact member for easy installation. In fact, it is apparent from Fig. 2 that the rings **14** and **15** may be made almost alike as two complementary parts with diameters to fit one upon the other.

I claim:

1. As a new article of manufacture an electric ring for rotary knitting machines of the type described consisting of two rings, an inner ring and an outer ring, said rings having complementary interengaging annular flanges for rotatably supporting one ring upon the other ring, the respective flanges of said rings being bent in opposite directions to form annular grooves, the groove of the one ring receiving the flange of the other ring, said rings being in mutual rotary sliding engagement for the purpose described.

2. In a rotary knititng machine having rotating electrically operated stop motion units of the character described, an electric ring element consisting of two rings in rotary sliding interengaged relation, means for fixedly supporting one of said rings upon the said machine, means for electrically connecting the other of said rings directly to said stop motion units and means for rotating said other ring.

3. A ring element for the purpose and of the character described consisting of two rings, one of said rings having an annular flange bent back upon said ring to form an annular groove, the other of said rings having an annular flange engaging said groove to slide and rotate therein, the said other ring being supported upon the said first ring in supported rotary relation.

MICHAEL WACHSMAN.