Feb. 20, 1951 C. M. ROGOW 2,542,708

ELECTRIC STOP MOTION

Filed June 22, 1949 2 Sheets-Sheet 1

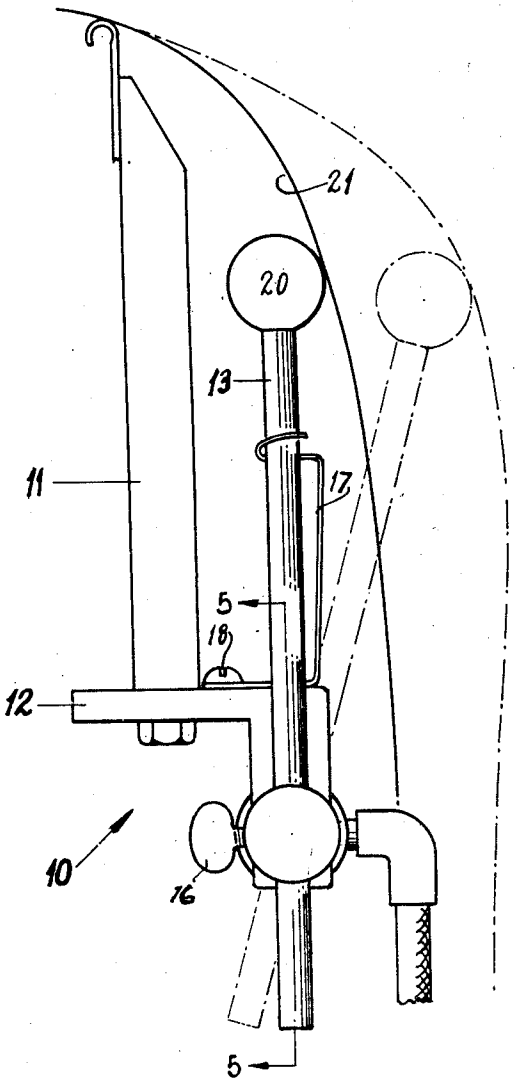


FIG. 1

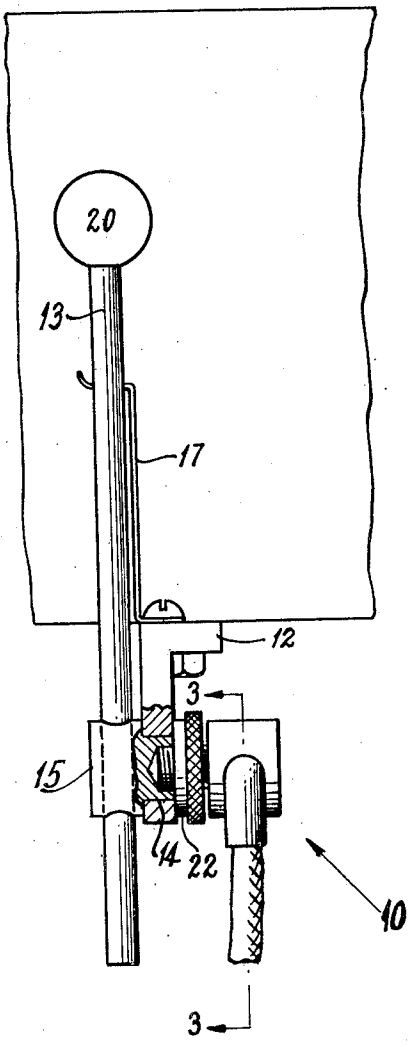


FIG. 2

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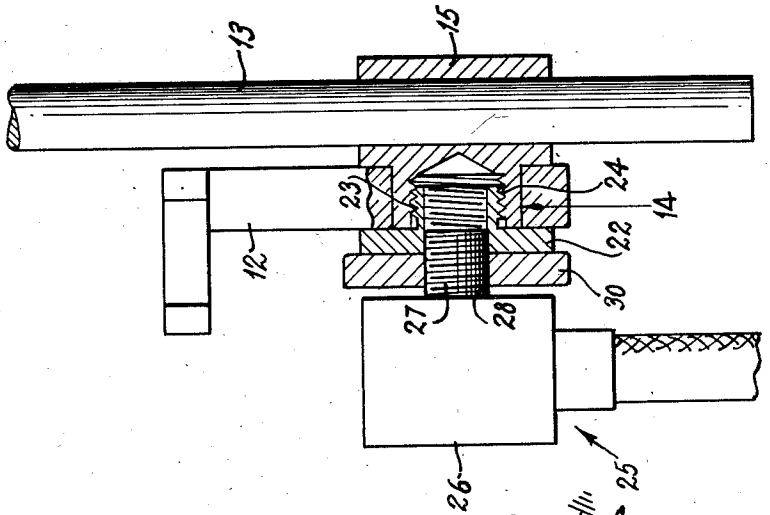


FIG. 5

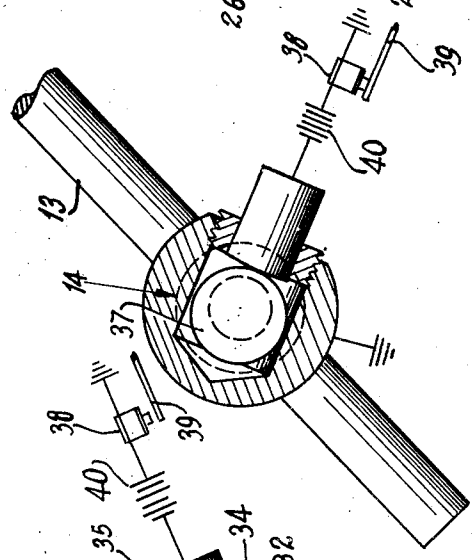


FIG. 4

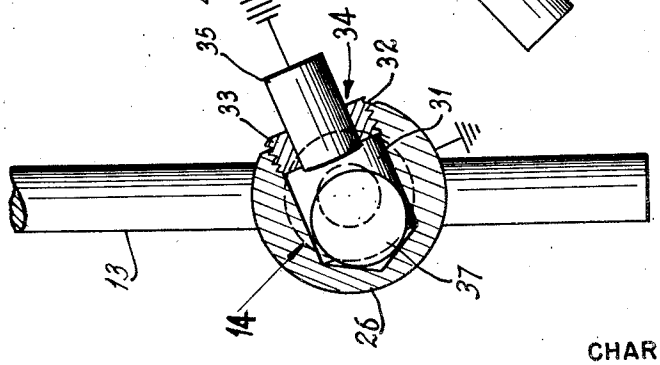


FIG. 3

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ELECTRIC STOP MOTION

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Application June 22, 1949, Serial No. 100,620

4 Claims. (Cl. 66—166)

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This invention relates to stop motion devices applied especially to knitting machines for the purpose of effecting the stopping of the machine when the knitted cloth is pressed off the needles by accident.

This stop motion mechanism relates to a type which operates to complete an electric circuit which functions to stop the knitting machine.

An object of this invention is to provide an electric stop motion for knitting machines comprising a gravity switch in which the electric contact elements are of extremely simplified form.

Another object of this invention is to provide a gravity switch in which the electrical contacts are made internally without exposure to air to prevent corrosion of the contact making parts.

Another object of this invention is to provide a gravity switch for a cloth contacting stop motion, the switch having a ball contact maker, the switch having adjustable means for varying the distance that the ball moves to make contact, thereby to control the sensitivity of the switch.

With the above and other objects in view, the invention will be hereinafter more particularly described, and the combination and arrangement of parts will be shown in the accompanying drawings and pointed out in the claims which form part of this specification.

Reference will now be had to the drawings, wherein like numerals of reference designate corresponding parts throughout the several views, in which:

Figure 1 is a front elevation of the electric stop motion mechanism attached to a knitting machine, the stop motion being also shown in dotted lines to show the two operating positions of the stop motion,

Figure 2 is a side elevation of the stop motion shown in Figure 1.

Figure 3 is a cross-sectional view of a gravity switch forming part of the invention, showing the switch in open circuit position, the section being taken on line 3—3 in Figure 2.

Figure 4 is a cross-sectional view of the gravity switch in closed circuit position.

Figure 5 is a cross-sectional view of the gravity switch, the section being taken on line 5—5 in Figure 1.

In the illustrated embodiment of the invention the numeral 10 indicates an electric stop motion mechanism for a knitting machine 11. The stop motion comprises a bracket 12 attachable to the knitting machine and having a cloth contact arm 13 pivotally mounted on a pivot 14 extending from a collar 15.

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The arm 13 is slidable in the collar 15 and is adjustable in the collar by a screw 16. The arm 13 is mounted to turn or swing freely in relation to the bracket 12 on pivot 14.

A spring 17 is fixed at one end by a screw 18 to the bracket 12 and at the free end the spring engages the arm 13 and is tensioned to cause the arm to swing to the right.

At the upper end, the arm 13 carries a ball 20 which is arranged to be in contact with the cloth 21 produced by the knitting machine.

A collar 22 has a threaded extension 23 in engagement in a threaded aperture 24 in the collar 15. The length of the extension 23 is made so that it will abut the radial wall of the aperture 24 and this serves to hold the collar in close frictionally contacting relation with the bracket 12. This arrangement permits the assembled collars 15 and 22 to swing freely as a unit in relation to the fixed bracket arm 12. The collar 15 serves as the pivot for the contact arm 13.

The stop motion 10 operates to complete an electric circuit when the knitted cloth is pressed off the needles by accident. The electric circuit is completed by a gravity switch 25 comprising a grounded metallic switch body 26 of cylindrical form having a threaded extension 27 centrally and at one end thereof.

The threaded extension 27 is threaded into a centrally threaded aperture 28 in the collar 22. A lock-nut 30 is threadedly mounted on the extension 27 and serves to retain the switch body 26 in desired angular relation, as shown in Figures 3 and 4.

As shown in Figure 3, the switch body 26 has a central cylindrical cavity or opening 31 starting in a threaded portion 32 in which is mounted a threaded bushing 33 having a central aperture 34. The cylindrical cavity 31 is perpendicular to the axis of the pivot 14. The bushing 33 is made of insulating material. A metallic contact member 35 is pressed into the aperture 34 of the bushing 33 so that the inner end of the contact member 35 extends slightly beyond the inner face of the bushing 33.

A metallic ball 37 is mounted in the opening 31 and is of a size to be freely movable in the opening 31 so that when the gravity switch 25 is oscillated to the position shown in Figure 4, the ball 37 will come into contact with the metallic member 35 while at the same time contacting the metallic body 26.

In the open circuit position shown in Figure 3, current is not passing through the metallic contact member 35 and an electromagnet 38 which

normally operates a stop lever **39** is not energized, allowing the knitting machine to operate.

In the closed circuit position shown in Figure 4, current from a source **40** is passing through the metallic contact member **35** into the metallic ball **37** through the switch body **26**, then into the knitting machine to which the stop motion is connected and which serves as a ground. The electromagnet **38** is energized, thus moving stop lever **39** so as to stop the knitting machine.

In operation of the cloth contacting stop motion, the cloth contacting ball **20** is normally held by the cloth in the upright position shown in Figures 1 and 3. When the cloth **21** is pressed off the needles of the knitting machine and becomes slack the arm **13** and the ball **20** move to the dot-and-dash position, thereby causing the gravity switch **25** to assume the closed circuit position shown in Figure 4.

In accordance with the patent statutes I have described and illustrated the preferred embodiment of my invention, but it will be understood that various changes and modifications can be made therein without departing from the spirit of the invention as defined by the appended claims.

I claim:

1. An electric stop motion for knitting machines, comprising a bracket attachable to the knitting machine, a spring-urged cloth contact arm having a pivot and being pivotally mounted in said bracket and the movements of which are cloth controlled, an electric gravity switch secured to the pivot of said contact arm, said gravity switch having a cylindrical cavity perpendicular to the axis of said pivot, an insulation member fitted at one end of said cavity and an elongated metallic contact member extending centrally of and into said cavity, a metallic ball in said cavity, said gravity switch having a grounded body member, the free end of said contact member being connected to a source of electric current, whereby when said cloth contact arm is permitted by slack in said cloth to swing on said pivot, said ball moves into contact with said contact member and closes the circuit to effect the stoppage of said knitting machine.

2. An electric stop motion for knitting machines, comprising a bracket attachable to the knitting machine, a spring-urged cloth contact arm having a pivot and being pivotally mounted in relation to said bracket, the movements of said arm being cloth controlled, an electric gravity switch secured to the pivot of said contact arm, said gravity switch having a cylindrical cavity perpendicular to the axis of said pivot, an insulation member fitted at one end of said cavity, a metallic contact member extending centrally of said cavity, a metallic ball movably mounted in said cavity, said gravity switch having a grounded body member, the free end of said contact member being connected to a source of electric current, whereby when said cloth contact arm is permitted by slack in said cloth to swing on said pivot, said ball moves into contact with said contact member and closes the circuit to effect the stoppage of said knitting machine.

3. The invention as defined in claim 2, wherein said switch is adjustable relative to said contact arm to permit said arm to operate in various angular relations with the cloth being knitted.

4. The invention as defined in claim 2, wherein said switch is adjustable relative to said contact arm to permit said arm to operate in various angular relations with the cloth being knitted, and wherein the said switch has means for varying the distance that the ball moves to make contact and thereby control the sensitivity of the switch.

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No references cited.