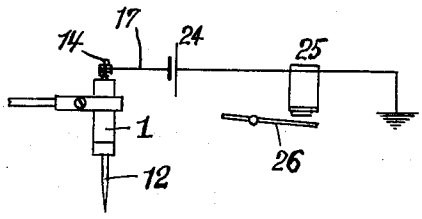
Jan. 18, 1944. J. WACHSMAN 2,339,442

CIRCUIT CLOSER FOR KNITTING MACHINES

Filed June 18, 1943

FIG. 5



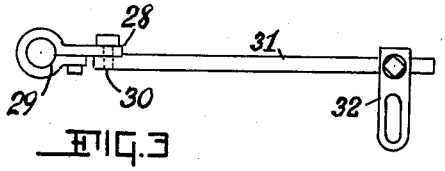


FIG. 3

FIG. 4

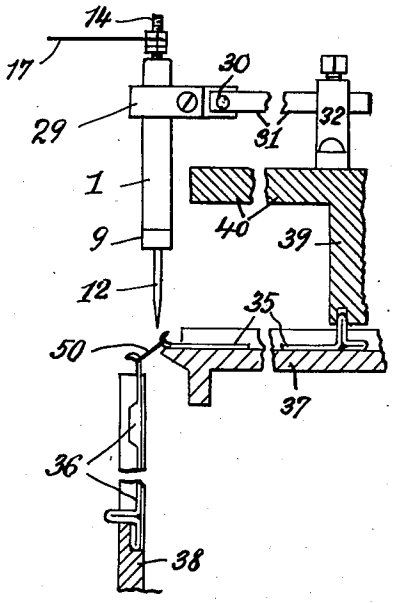


FIG. 1

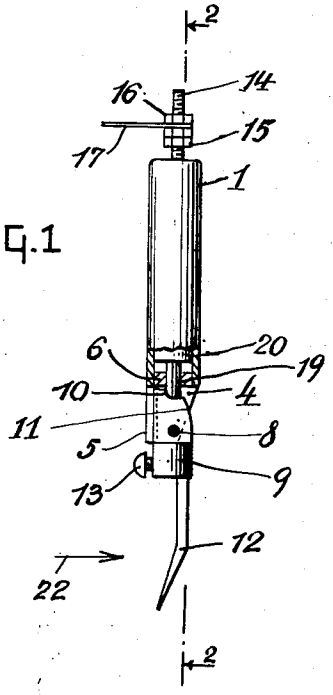
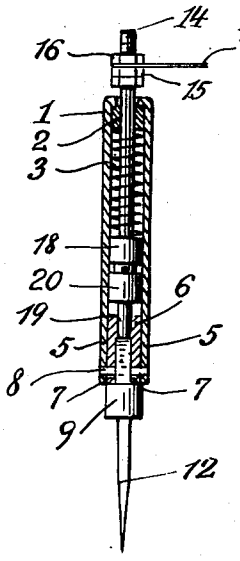


FIG. 2



INVENTOR.
JACOB WACHSMAN
BY
Ivan E. A. Konigsberg
Atty

Patented Jan. 18, 1944 2,339,442

UNITED STATES PATENT OFFICE

2,339,442

CIRCUIT CLOSER FOR KNITTING MACHINES

Jacob Wachsman, Brooklyn, N. Y.

Application June 18, 1943, Serial No. 491,293

2 Claims. (Cl. 66—157)

The object of this invention is to provide a circuit closer for knitting machines adapted to be mounted on some part of the machine adjacent the needle mechanism so that when a needle breaks or some other abnormal operation occurs in or about the needle mechanism the circuit closer will be automatically actuated to close an electric circuit which then in turn actuates a device to stop the machine so that the trouble can be attended to. One object is to provide such a circuit closer of generally improved construction and including a supporting bracket whereby the positioning of the device is facilitated for the purposes of adjustment and efficiency of operation. In the drawing accompanying this specification

Fig. 1 is a view of the circuit closer with parts broken away and parts in section.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a view of the supporting bracket.

Fig. 4 is a view partly in section and partly broken away showing the circuit closer in position adjacent the needle mechanism of a knitting machine.

Fig. 5 is a wiring diagram.

The circuit closer comprises a fixed element and a movable element. The fixed element is electrically grounded on the machine. The movable element is insulated from the fixed element and is connected by wire to a normally open electric circuit which actuates the stop mechanism. The general function and operation of circuit closers and stop motions for knitting machines are known in the art.

Referring to Figs. 1 and 2 the fixed element is a vertically disposed open ended cylinder 1. Within the same there is provided an insulating nipple 2 at the top and below the nipple there is a coiled expansion spring 3. At the bottom the cylinder is cut out to form a slot 4 between two depending ears 5, 5. Between the latter there is placed a bearing 6 which likewise forms two depending ears 7, 7. The ears 5 and 7 are apertured and support a pin 8. Upon the latter is pivoted a detector member 9 which occupies the space between the ears 7. The upper part of the member 9 is flat and formed with a stop 10 and a cam 11. The power part is conveniently cylindrical and carries a detector pin 12 adjustably secured by a screw 13. Before the parts are inserted and mounted in the cylinder a screw threaded plunger 14 is inserted within the cylinder from below. The plunger projects above the cylinder and carries nuts 15 and 16 for contacting the upper end of the cylinder and for attaching a wire 17, respectively. The plunger has an insulating head 18. Below the plunger there is placed a pusher pin 19 having an insulating head 20 which abuts the end of the plunger as shown. The pin 19 extends downward through a hole in the bearing member 6 and rests upon the detector member 9.

The spring 13 acts between the insulating nipple at the top of the cylinder and the insulating head 18 to push the plunger and pusher pin downward against the detector member 9. When the latter is swung to one side on the pivot 8 in the direction of the arrow 22 in Fig. 1, the resistance against the force of the spring is removed and the plunger is then pushed downward until the lower nut 15 contacts the upper end of the cylinder to close the electric circuit to actuate the stop mechanism of the machine as will be understood.

The diagram in Fig. 5 illustrates the electric circuit. The current passes from a battery 24 to the plunger 14 and to ground on the machine via the cylinder 1. Then from ground to an electromagnet 25 and back to the battery. When the magnet is energized it attracts a stop handle 26 which is a part of the stop mechanism to actuate the latter to stop the machine.

The circuit closer is supported in a bracket 28, Fig. 3. The bracket has a clamp 29 which encloses the cylinder 1 and whereby the circuit closer may be adjusted vertically. The clamp is pivoted at 30 upon a rod 31. Thus angular adjustment is provided for. The rod 31 is adjustably secured to a foot 32 for attachment to the knitting machine. The supporting bracket forms a convenient practical means for adjusting the circuit closer to suit the design and arrangement of the needle mechanism of the knitting machine.

The needle mechanism is shown in representative outlines in Fig. 4. It comprises sets of horizontally and vertically operated needles indicated at 35 and 36, respectively. The needles 35 are supported on a dial 37, the needles 36 are carried by a cylinder 38. The operating mechanism for the one set of needles is represented at 39. The portion 40 is sometimes called a locking arm of the mechanism. The bracket 32 is secured to said arm and the circuit closer adjusted in operative position adjacent the needles. During the normal operation of the needles the circuit closer remains inactive. When however a needle breaks, the broken portion may project into the path of the detector pin 12, or some other abnormal operation on the part of the nee-

dle mechanism may cause bunching of the yarn 50 or other trouble so that the detector pin becomes engaged and is then rotated on its pivot as explained above to close the circuit and the machine stops.

When the trouble has been attended to the operator moves the detector member 9 back into normal operative position. The cam 11 will then engage the pin 19 to lift the latter and the plunger screw back into normal position. The stop 10 hits the pin 19 as the detector member is then moved back and prevents it from being moved past the center of the pivot 8 as will be understood.

The circuit closer according to this invention is characterized by being so constructed that only a single movement of the circuit closing member 14 is necessary to close the circuit. All the parts are small, easily manufactured and assembled. Because of the light weight of the parts the device responds instantly to any force tending to move the detector member about the pivot 8.

It will be observed that the conducting plunger is wholly insulated from the cylinder and the detector member. The spring normally urges the plunger and the pusher pin downward but such movement is resisted by the detector member. Only when the latter is swung to one side is the plunger moved down into circuit closing position. When the detector member is swung back into normal position the plunger is automatically raised into circuit open position.

I claim:

1. A circuit closer for knitting machines comprising a cylinder, a plunger slidably supported in the cylinder, one end of the plunger projecting from one end of the cylinder, a contact member secured to the projecting end of the plunger in spaced relation to the cylinder and adapted to contact with the said end of the cylinder when the plunger is moved inwardly therein, a detector member pivoted in the other end of the cylinder and adapted to be moved on its pivot away from the cylinder in one direction only, a member in the cylinder operatively connecting the inner end of the plunger and the detector member, a spring in the cylinder for operating the plunger inwardly to move the contact member thereon into contact with the end of the cylinder, cam means on the detector member for moving the plunger outwardly to break the contact between the cylinder and said contact member when the detector member is moved back towards the cylinder and means for insulating the plunger from the cylinder.

2. As a new article of manufacture a circuit closer for knitting machines comprising a cylinder, a plunger therein projecting from one end of the cylinder, means for insulating the plunger from the cylinder, a contact member on the projecting end of the plunger in spaced relation to the cylinder, a spring for moving the plunger inwardly in the cylinder to move said contact member into contact with the said one end of the cylinder, a detector member pivoted in the other end of the cylinder in operative engagement with the plunger to resist the inward movement thereof, said detector member being adapted to move away from the cylinder in one direction only to release the plunger, cam means on said detector member adapted to operatively engage the plunger to move the same outwardly to again space the contact member from the cylinder end when the detector member is moved back towards the cylinder and a bracket for supporting the circuit closer in adjustable operative relation on the said knitting machine.

JACOB WACHSMAN.