

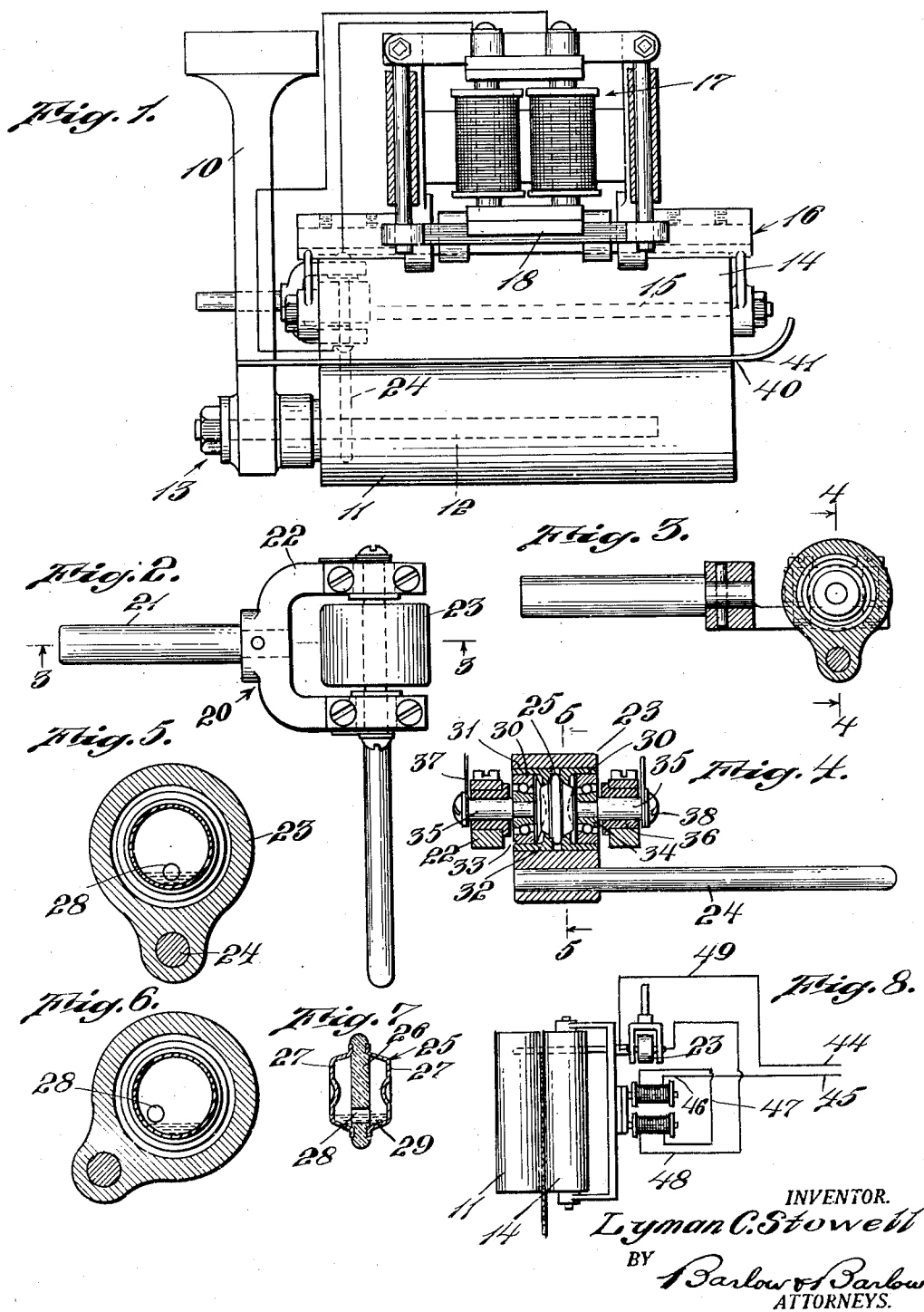
July 22, 1941.

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2,250,053

GUIDER

Filed July 31, 1940



UNITED STATES PATENT OFFICE

2,250,053

GUIDER

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Application July 31, 1940, Serial No. 348,847

5 Claims. (Cl. 26-66)

This invention relates to a guider of the type utilized for textile webs and more particularly to an electric guider using electric power for the actuation of the same. One of the objects of this invention is to provide a feeler mechanism which will operate better than the feeler mechanisms now known which are used in connection with electric guiders.

Another object of the invention is to provide a mercury-controlled switch in which the mercury will not splash as has heretofore been found to occur in the tube type mercury switches when rocked to cause the mercury to move.

Another object of the invention is to provide a mercury-controlled switch which will be of such construction that it will not collect the lint and dirt which is frequent in and about guiders which operate upon textile machinery.

Another object of the invention is to provide an arrangement in an electric guider whereby arcing is eliminated when the circuit makes or breaks.

Another object of the invention is to provide a mounting by reason of which mounting ease of swinging operation is provided.

Another object of the invention is to provide a mercury-controlled switch in which the wires which connect to the mercury will not move as movement occurs of the mercury and thus a construction which will eliminate failures due to such moving wires in mechanisms of this character where a large number of movements, sometimes in very rapid succession, occur.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a top plan view of a guider mechanism illustrating in dotted lines the feeler about which the improvement herein described centers;

Fig. 2 is a top plan view of the feeler mechanism removed from the entire guider unit;

Fig. 3 is a section on line 3-3 of Fig. 2;

Fig. 4 is a section on line 4-4 of Fig. 3;

Fig. 5 is a section on line 5-5 of Fig. 4;

Fig. 6 is a view similar to Fig. 5 but shows the feeler mechanism as rocked through the portion of its arc of swing;

Fig. 7 is a central sectional view through the button which contains the mercury for operation of the circuit; and

Fig. 8 is a diagrammatic view of the wiring

necessary for the connection of the device in circuit.

In the operation of electric guiders in which a circuit is closed for separation of the guider rolls from each other to relieve their action on the web of fabric, trouble is frequently experienced in and about the contact or switch for the control of the energy to and from the electrical coils which cause movements of the rolls. Such electrical switches collect lint, or because of arcing require very low voltages and because of frequent troubles require frequent service; and in order to prevent this frequent service, I have provided a button mercury control switch in my circuit which eliminates the trouble of arcing and is a construction which will not easily collect dirt and yet is sure and positive in its operation and affords opportunity for mounting of the switch and feeler in ball bearings for its operation; and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be obtained:

With reference to the drawing, 10 designates a support arm upon which is mounted a roll 11 on the fixed axle 12 secured as at 13 in the support arm 10. The roll 14 is mounted upon an axle 15 carried in a yoke 16 which may be moved to cause the roll 14 to move toward and from the roll 11 for gripping and guiding a web of fabric which may extend between the rolls. This yoke 16 and its axle 15 are moved away from the axle 12 by its own weight or a spring mechanism, while an electromagnet 17 attracts an armature 18 for movement of the axle 15 toward the axle 12. This yoke is suitably guided, while the electromagnet is controlled by a switch operable in response to a feeler.

The feeler mechanism consists of a bracket 20 having a post 21 which is adjustably mounted in the support arm 10. Bifurcated arms 22 extend from one end of the post for mounting housing 23 which carries the feeler arm 24. Within this housing there is provided the button switch 25 which consists of a disc 26 of some suitable insulating material, such for instance, as glass or some ceramic material, while a casing 27 on either side of this disc is secured thereto to form a hollow body. This casing is of some electrical conducting material, such for instance, as metal. A hole 28 extends through the glass 26, and a small amount of mercury 29 is contained within the hollow body. The amount of mercury is such that when the hollow body is in

the position shown in Fig. 7 there will be sufficient mercury to extend through the opening 23 and engage both casing sections, whereas when the device is in a different position, such for instance, as illustrated in Fig. 6, the mercury will remain on either side of the insulation 26, and no contact across between the casing members will be provided.

This button 25 is mounted between ball bearings 30 within the bore 31 of the casing 23 and held therein by some suitable insulating material as 32 which encircles the ball bearings and spaces them from the casing. The outer raceway 33 of each ball bearing will be fixed with the casing, while the inner raceway 34 will be secured to the shaft 35 which is mounted in insulating bushings 36 in the arms 22 above mentioned. These shafts 35 will be fixed in the arms and have connected to each of the shafts an electrical current conducting wire 37 by reason of the clamping screw 38.

The web of material passes downwardly along the face 40 of the guide plate 41 to contact the roll 11 having the fixed axis and will be forced thereagainst by the movable roll 14 under action of the electromagnet. The web engages feeler finger 24 at right angles thereto. Should the cloth run out of line to the left, as shown in Fig. 1, the feeler finger will be pushed to the left and will rock the casing from the position shown in Fig. 5 to the position shown in Fig. 6, and, when the position of Fig. 6 is reached, the opening 23 will be moved to a position to break the mercury into two parts and insulate one side from the other, thus breaking the circuit and causing the armature to be de-energized and permitting the movable roll 14 to move away from gripping position and thus permit the rolls which are at an angle tending to spread the cloth or draw it toward the rolls to release and permit the opposite guider to draw the cloth back into position.

It will of course be recognized that this switch mechanism may be utilized in the same way as any former switch in connection with a guider.

With reference to Fig. 8, the current from the main will come in as at 44 and 45. One line 45 will connect to one coil, as at 46, and thence by means of wire 47 to the other coil and thence by wire 48 to the button in its housing 23, then by a wire 49 back to the line of supply 44, thereby putting the armature coil in series with the electromagnet control of the rolls.

By the use of a button of this character, the mercury stays approximately in a fixed position, and due to the slow rotation, the remainder of the button moves, thus breaking the contact by movement of the insulation 26 through the mercury to divide the mercury; and by this arrangement there is no splashing of the mercury and no arcing. The device is extremely compact and may be easily mounted in a ball bearing and is especially suitable for use in connection with the feeler mechanism as above set forth.

I claim:

1. A feeler mechanism for an electric web guider comprising a support, a feeler arm, means for pivotally mounting said arm on said support

to swing about an axis fixed with reference to said support in response to out-of-line movement of the web, and a button positioned to swing about a pivot passing through the button, said pivot being co-axial with the axis of swing of said arm and provided with external electrical contacts connected by mercury when in one position of rotation and separated when in a different position of rotation.

2. A feeler mechanism for an electric web guider comprising a support, a feeler arm, means for pivotally mounting said arm on said support to swing about an axis fixed with reference to said support in response to out-of-line movement of the web, and a circular button positioned to swing about a pivot passing through the button, said pivot being co-axial with the axis of swing of said arm and provided with an intermediate insulator with an opening therein and external electrical contacts connected by mercury through said opening when in one position of rotation and separated by the insulator when in a different position of rotation.

3. A feeler mechanism for an electric web guider comprising a support, a feeler arm, means for pivotally mounting said arm on said support to swing about an axis fixed with reference to said support in response to out-of-line movement of the web, a button having a hollow body moved by the swing of said arm and provided with external contacts and an insulating partition between said contacts and dividing said hollow body, said partition having an opening therethrough and a liquid conductor in said body connecting said contacts through said opening when in one position and divided by said insulation in a different position to interrupt a circuit.

4. A feeler mechanism for an electric web guider comprising a support, a feeler arm, means for pivotally mounting said arm on said support to swing about an axis fixed with reference to said support in response to out-of-line movement of the web, a circular button having a hollow body so mounted that the pivot axis of said feeler passes through said body and is moved by the swing of said arm and provided with external contacts and an insulating partition between said contacts and dividing said hollow body, said partition having an opening therethrough and a liquid conductor in said body connecting said contacts through said opening when in one position and divided by said insulation in a different position to interrupt a circuit.

5. A feeler mechanism for an electric web guider comprising a support, a feeler arm, a housing in which said arm is mounted, ball bearings in said housing for pivotally mounting said housing on said support, to swing about an axis fixed with reference to said support in response to out-of-line movement of the web, a button positioned to swing about a pivot passing through the button, said pivot being co-axial with the axis of swing of said housing and provided with external electrical contacts connected by mercury when in one position of rotation and separated when in a different position of rotation.

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