

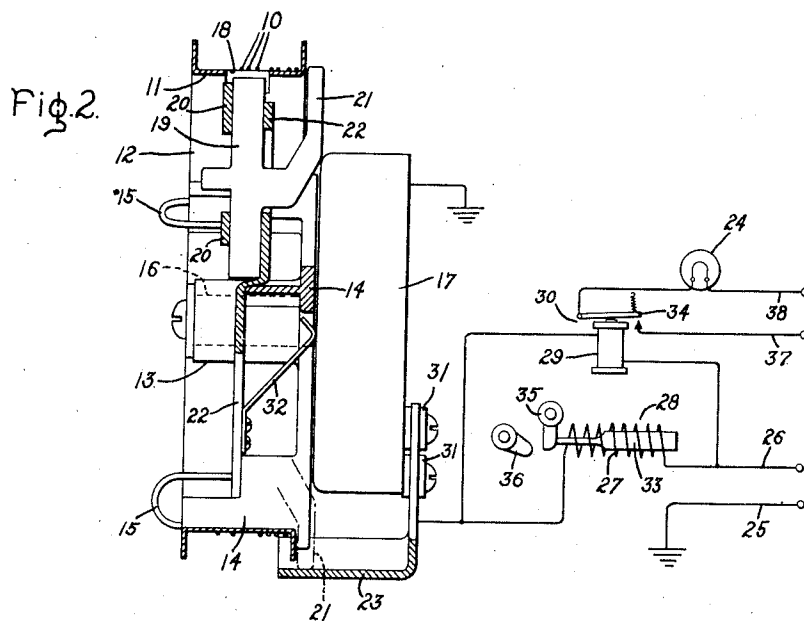
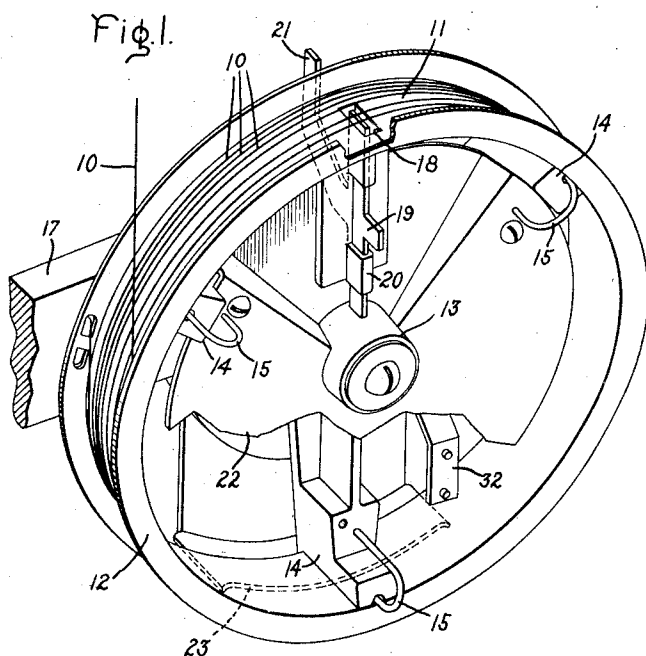
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ALARM AND CONTROL MECHANISM

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ALARM AND CONTROL MECHANISM

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3 Claims. (Cl. 200—52)

My invention relates to apparatus for providing an indication, as by setting off an alarm and causing associated mechanism to become inoperative, when the last or nearly the last of a wire or thread is unwound from a spool. Such apparatus is desirable in connection with high speed automatic machines, like those for making electric incandescent lamps, to prevent the manufacture of a considerable number of defective articles after exhaustion of a supply of wire which is being fed to the machine. In the making of stems for incandescent lamps, for instance, a number of stems are in the course of manufacture at one time and, should the supply of wire provided for the making of support wires therefor become exhausted, a considerable number of defective stems will be made before one is inspected and found to be lacking a support wire. In addition, the stems already in production must either be discarded or made defectively since any time taken to provide a new supply of wire would allow certain glass parts of the stem, which are molten at that stage, to cool and harden.

According to my invention, the improved apparatus comprises a movable finger member which is mounted on a rotatable hub provided for a spool containing the supply of wire or thread, and the withdrawing of the wire from the spool permits the finger member to move outward through an opening in said spool and engage a stationary contact member to complete an electrical circuit. The circuit, in turn, is preferably used to set off an alarm and prevent the further normal feeding of parts other than the wire into the associated machine so that the further production of stems, for instance, is stopped, although the machine continues to run to complete those already started. As in the device disclosed in my prior Patent 2,071,941 of February 23, 1937, the finger member can be arranged to give the alarm when a small amount of the wire still remains on the spool so that the manufacture of stems can continue until all the stems in the course of manufacture are completed before the wire runs out and a defective stem is made. In the present instance, the circuit making finger is attached to a separate assembly combined with the hub for the spool and the need and expense of providing such apparatus with each of the spools, which are removable, is dispensed with. Other features and advantages of my invention will be apparent from the detailed description which follows and from the drawing.

In the drawing Fig. 1 is a perspective view of a device comprising my invention showing the hub and spool combination, and Fig. 2 is a side elevation thereof in combination with a wiring diagram therefor, with portions broken away to show the relation of the parts.

According to my invention the wire or thread 10 is wound on the base portion 11 of a spool 12, and the withdrawing of the wire from said spool causes both the spool and the hub 13 on which it is mounted to rotate. The spool is removable and, as shown, rests on the ends of three spokes 14 which extend from the hub 13 and frictionally engage the base 11 of said spool through the U-shaped springs 15. The hub 13, on the other hand, is supported by a stud 16 on which it is rotatively mounted and which extends from a supporting arm 17 of the machine (not shown) using the wire 10.

In the instance shown, the spool 12 is nearly empty and the only wire 10 still remaining thereon is the two turns over the aperture 18 in the base 11 thereof and the four end most turns to one side thereof. The wire 10 is purposely wound on the spool 12 in this manner so that a portion thereof, in this case the said four turns, will remain thereon when the last turns over the aperture 18 have been removed and the alarm set off. A radially disposed finger member 19, which is slidably mounted in the ways of a guide 20 below the aperture 18, is the control element of the apparatus. The said finger member 19 is normally held in the position shown in the drawing by the wire over aperture 18, but, during rotation of the spool, it moves radially outward from the hub 13 and through said aperture 18 to another position when the said wire over said aperture has been removed. In this outer position, an arm portion 21 of the finger member 19 extending sidewardly through an opening in the disc 22 and outwardly beyond the rim of the spool 12 is, as shown in the dot-dash lines in Fig. 2, in position to engage a contact or shoe member 23, extending from the arm 17, during the rotation of said spool to thereby complete an electrical circuit controlling the alarm. The disc 22 is fastened to the spokes 14 of the hub 13 and supports the guide 20 which offers so little friction to the finger 19 that its weight is sufficient to move it outward from the hub 13 when it is over the contact shoe 23. However, a spring may be used for moving the finger 19 if desired.

The electrical circuit controlled by the finger 19 in this instance brings about the lighting of a

warning light 24 and the actuation of other control means which stop the further feeding of other lamp parts into a stem machine. As shown in the wiring diagram, one side 25 of the line and the arm 17 supporting the hub 13 are grounded, and the opposite side 26 of the line is connected to the coil 27 of a solenoid 28 and the coil 29 of a relay 30 which are both connected to the contact shoe 23. The said shoe 23 is not attached to the arm 17 directly, but through a plurality of screws insulated therefrom by the washers 31 and therefore does not ground this portion of the circuit. The finger 19 is the grounded part since the circuit is made from the arm 17 thereto through the guide 20, the disc 22 and a leaf spring 32 which is mounted on said disc 22 and engages the side of the arm 17 as the spool 12 and hub 13 turn. When the finger 19 contacts the shoe 23, the portions of the circuit to the solenoid 28 and the relay 30 are completed to the ground, and the armatures 33 and 34 respectively thereof are moved so that an arm 35 is turned to another position and the circuit to the lamp 24 is completed. The arm 35 functions as a blocking means for an arm 36 which is connected to the flare feeding mechanism of the associated stem machine (not shown) and, if prevented from moving, makes said mechanism inoperative. The flare feeding mechanism in this instance may be that disclosed in the Fagan et al. Patent 1,597,439, issued August 24, 1926, which disclosed similar means for causing the mechanism to be rendered inoperative. The armature 34 of the relay 30 is connected to the lamp 24 and, when operated, it engages a contact connected to one side 37 of a separate line, the other side 38 of which is connected to said lamp 24.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In an apparatus of the type described, a rotatable hub for supporting a spool having a base portion with an aperture therein over which a wire is wound, a movable finger member mounted on said hub so as to extend radially inward from the aperture in said spool and arranged to be

moved outward radially through said aperture to another position when the wire is unwound from over the said aperture, and a contact member mounted adjacent the periphery of the spool carried by said hub and arranged to be engaged by a portion of said finger member during the rotation of said spool when said finger member is in its outer position.

2. In an apparatus of the type described, a rotatable hub for supporting a spool having a base portion with an aperture therein over which a wire is wound, a movable finger member mounted on said hub so as to extend radially inward from the aperture in said spool and having an arm portion extending to one side of said spool, said finger member being arranged to be moved outward radially through said aperture to another position when the wire is unwound from over the said aperture, and a contact member mounted adjacent the periphery of the spool carried by said hub and arranged to be engaged by the said arm portion of the finger member during the rotation of said spool when said finger member is in its outermost position.

3. In an apparatus of the class described, a rotatable hub for supporting a spool having a base portion with an aperture therein over which a wire is wound, a radially disposed finger slidably mounted on said hub so as to be in alignment with the aperture in said spool and maintained in a retracted position by the wire over said aperture, said finger having an arm portion projecting from one side thereof and extending radially outward substantially parallel with said finger so as to be movable radially outward past the side of the spool on said hub, said finger being arranged to be moved radially outward through the aperture in said spool to an advanced position, and a contact member mounted adjacent the periphery of the spool carried by said hub and arranged to be engaged by the said arm portion of the finger during rotation of the spool when said finger is in its advanced position.

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