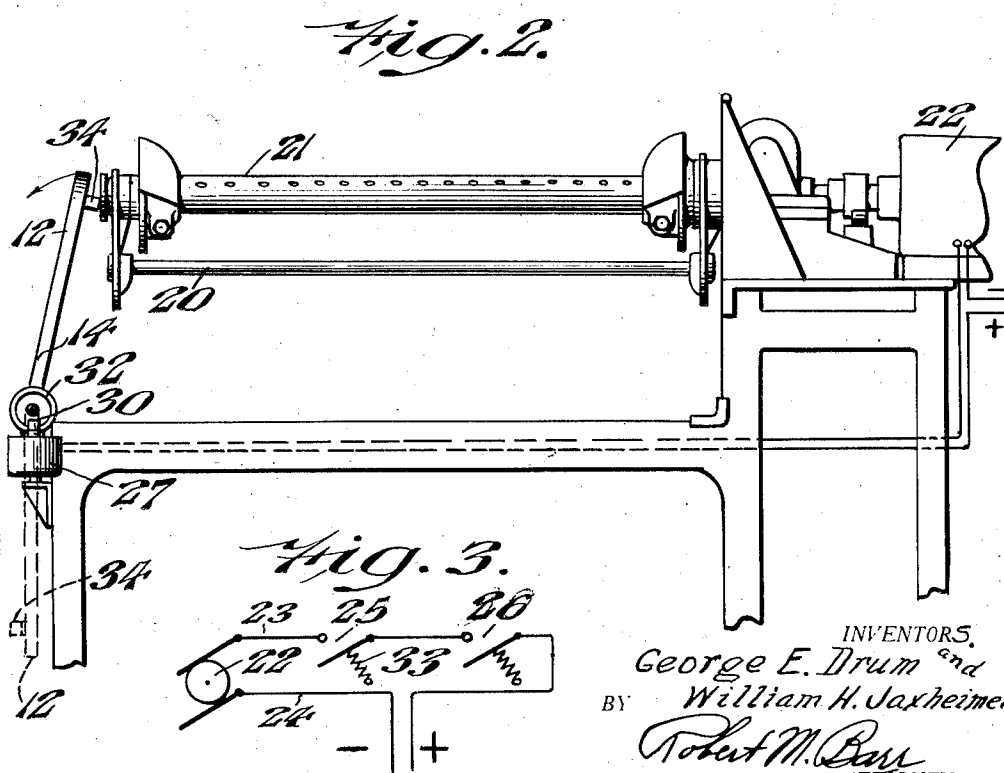
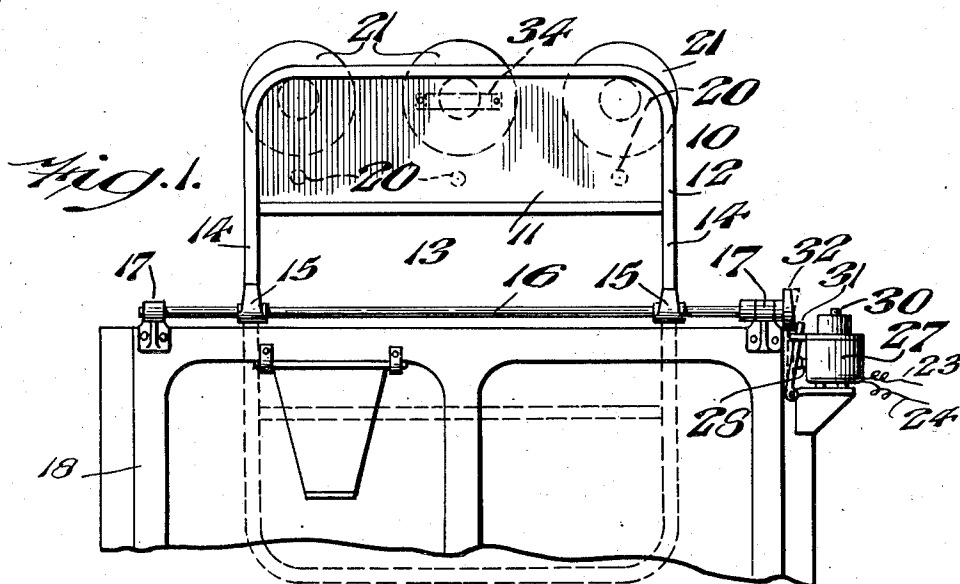


Nov. 6, 1934.

G. E. DRUM ET AL
SAFETY GUARD FOR MACHINES

1,979,457

Filed Jan. 28, 1932



INVENTORS.
George E. Drum and
William H. Saxheimer.
BY *Robert M. Bass*
ATTORNEY.

UNITED STATES PATENT OFFICE

1,979,457

SAFETY GUARD FOR MACHINES

George E. Drum and William H. Jaxheimer,
Philadelphia, Pa., assignors to Smith, Drum &
Company, Philadelphia, Pa., a corporation of
Pennsylvania

Application January 28, 1932, Serial No. 589,377

2 Claims. (Cl. 192—133)

The present invention relates to safety devices and more particularly to a guard associated with a rotating part of a skein dyeing machine.

In the dyeing of skeins of yarn it has been the practice to suspend the skeins of material upon a support and to carry out the dyeing operation by dipping the skeins in a dye bath or by subjecting the skeins to internal spraying through the medium of a rotatable part. In a new type of skein dyer, which is now being marketed, a radical departure from prior existing machines has been devised wherein the skeins are suspended from a fixed support, which includes a spray mechanism in combination with a sporadically or continuously operated rotating apparatus for lifting the skeins from the support and replacing them thereon in a different relative position. Since the skein lifting device is alternately rotatable and stationary with the latter more generally the longer period, there is the strong temptation for the operator to take advantage of this rest period and assume the risk of hand meddling with the skeins on the chance that no accident will occur at the time of the sudden starting of the rotatable parts.

Some of the objects of the present invention are to provide an improved safety guard for use with machines having exposed rotatable parts; to provide a guard for protecting the operator of a dyeing machine from injury during the operation of such machine; to provide a guard controlled means which prevents actuation of a rotatable part until the guard is in its protecting position; to provide a guard mechanism which is simple in construction, sure in operation, and one which can be built in or attached to any machine; and to provide other improvements as will hereinafter appear.

In the accompanying drawing Fig. 1 represents a front elevation of a protecting guard embodying one form of the present invention as applied to a skein dyeing machine; Fig. 2 represents a side elevation of the same; and Fig. 3 represents a diagram of one form of electrical control circuit.

Referring to the drawing one form of the present invention consists of a guard member 10 preferably comprising a plate 11 mounted in a suitable supporting frame 12. The plate 11 may be of sheet metal or any other suitable material adapted to act as a shield between the operator of a machine and a moving part of such machine. The size of the plate 11 may vary in accordance with the number or dimensions of the parts to be shielded but where used with a skein dyeing machine of the type here shown the relation of

the moving parts and the shield is such as to permit an opening 13 through which the dyeing operation can be watched from the front of the machine. This opening 13 is formed by arms 14 as continuations of the sides of the frame 12 and which project outwardly to terminate respectively in hubs 15. These hubs 15 are keyed or otherwise made fast to a shaft 16 which is journaled in bearings 17 mounted upon the frame 18 of the machine in such a position that the guard member 10 can be swung to an operating position in front of the rotatable skein lifting devices 20 or lowered to an inoperative position (as indicated in dotted lines Fig. 1) to allow access to the perforated dye supports 21.

In order to prevent the rotatable part or parts, such as the skein lifting devices 20, from rotating when the guard member 10 is in its lowered or inoperative position, the electric motor 22, by which motion is imparted to the lift devices 20, has its lead wires 23 and 24 in a circuit which includes two switches 25 and 26 arranged in series. As here shown the two switches are conveniently encased in a combination unit 27 with the switch operating plungers 28 and 30 projecting therefrom for switch control. The plunger 28 of the switch 25 is located abutting and in the path of movement of a throw lever 31 so pivoted as to cause the plunger 28 to close the switch 25 when the lever 31 is moved toward the unit 27. The lever switch closing means can be varied from the construction here shown without departing from the invention. The means for shifting the lever 31 is preferably a side face cam 32 which is keyed or otherwise made fast to one end of the shaft 16 in such a relative position that when the guard member 10 is in its operative position the cam 32 will be holding the lever 31 so that the plunger 28 maintains the switch 25 closed. The shape of the cam 32 is such that the upward swing of the guard member 10 causes the lever 31 to move to close the switch while the reverse movement allows the lever 31 to return on the influence of the spring 33 acting on the plunger 28.

For conveniently handling the guard member 10, a handle 34 is attached to a side of the member 10 where it can be readily grasped and used for raising and lowering the member 10 as desired. When in operative position this handle 34 serves as a support by resting against the adjacent end of one of the skein supports 21.

In use the guard member 10 is in the dotted line position shown in Fig. 2 whenever the machine to which it is attached is not in use. The

control or switch shifting cam 32 is now in position to allow the lever 31 to assume its inoperative position and the switch 25 is therefore open. When it is desired to start the machine the operator grasps the handle 34 and swings the guard member 10 upwardly to the full line position shown in the figures. This movement of the guard member 10 is transmitted through the shaft 16 to the cam 32 which rides across and in contact with the lever 31 so that the latter is caused to close the switch 25. The circuit controlling the motor is still open, however, because the switch 26 must be operated manually before the circuit is entirely closed. In this way the machine is always safeguarded against operation when the guard member 10 is down and consequently all danger of injury from rotating or other moving parts is eliminated. When the machine is to be stopped the plunger controlling switch 26 is actuated to break the motor circuit and then the guard member 10 is swung to inoperative position whereby the switch 25 is opened to prevent accidental starting of the machine. It will be apparent that should the supplemental switch 26 be closed while the guard member 10 is in its inoperative position there will be no starting of the machine because the circuit at this time is broken by reason of the switch 25 having been opened by the guard member when it moved to its inoperative position. The motor of the machine will remain at rest under these circumstances until the guard member is turned up to its shielding position in front of the movable parts and when this takes place the control switch 25 will have been shifted to closed position and the circuit thereby finally closed for starting the motor.

It is to be understood that the term "skein"

throughout the foregoing specification is merely by way of example and is not to be construed as a limitation of the invention since broadly the invention applies to any type of dyeing machine whether it dyes skeins, piece goods, or any other material.

While only a single form is shown in which this invention may be embodied, it is to be understood that the invention is not limited to any specific construction, but might be applied to various forms without departing from the spirit of the invention or the scope of the appended claims.

Having thus described our invention, we claim:

1. In a dyeing machine the combination of a material support, relatively movable exposed parts associated with said support, means including an electric circuit for actuating said parts, a switch in said circuit, spring means normally acting to maintain said switch open, a shaft rotatably mounted on said machine, a guard member fixed to said shaft for movement therewith into a position to shield said movable parts, and a cam on the shaft engaging the spring means to close the switch in one position of the guard.

2. In a machine of the character described including movable parts, a guard plate mounted to swing to a position in front of said parts or to a position to give free access to the same, a cam operable upon movement of said plate, means including an electrical circuit for actuating said parts, a switch in said circuit, and spring means normally acting to maintain said switch open and cooperatively associated with the cam whereby movement of the guard to operative position closes the switch.

GEORGE E. DRUM.
WILLIAM H. JAXHEIMER.

40 115

45 120

50 125

55 130

60 135

65 140

70 145

75 150