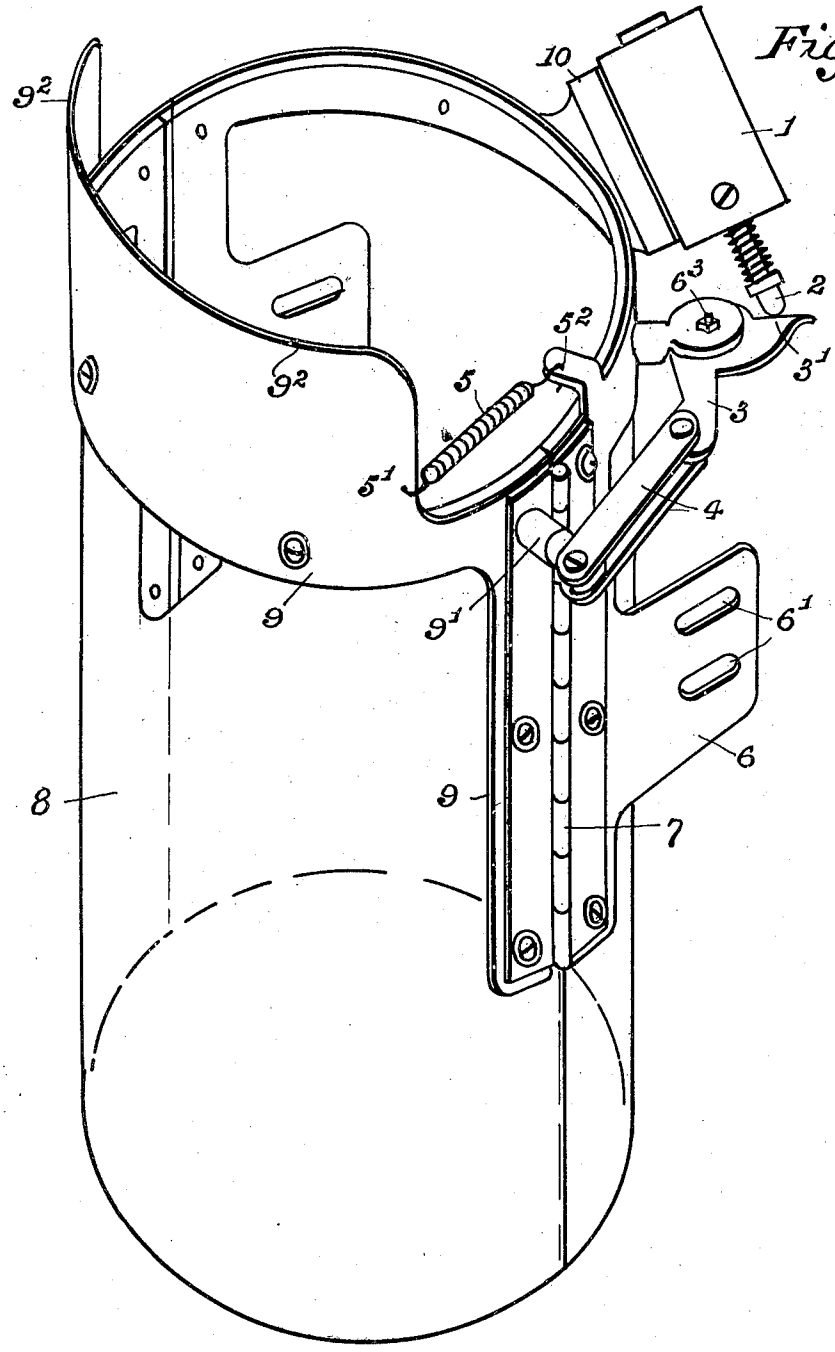
Dec. 13, 1949 H. G. DEACON 2,491,035

MACHINE TOOL GUARD

Filed July 16, 1946 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

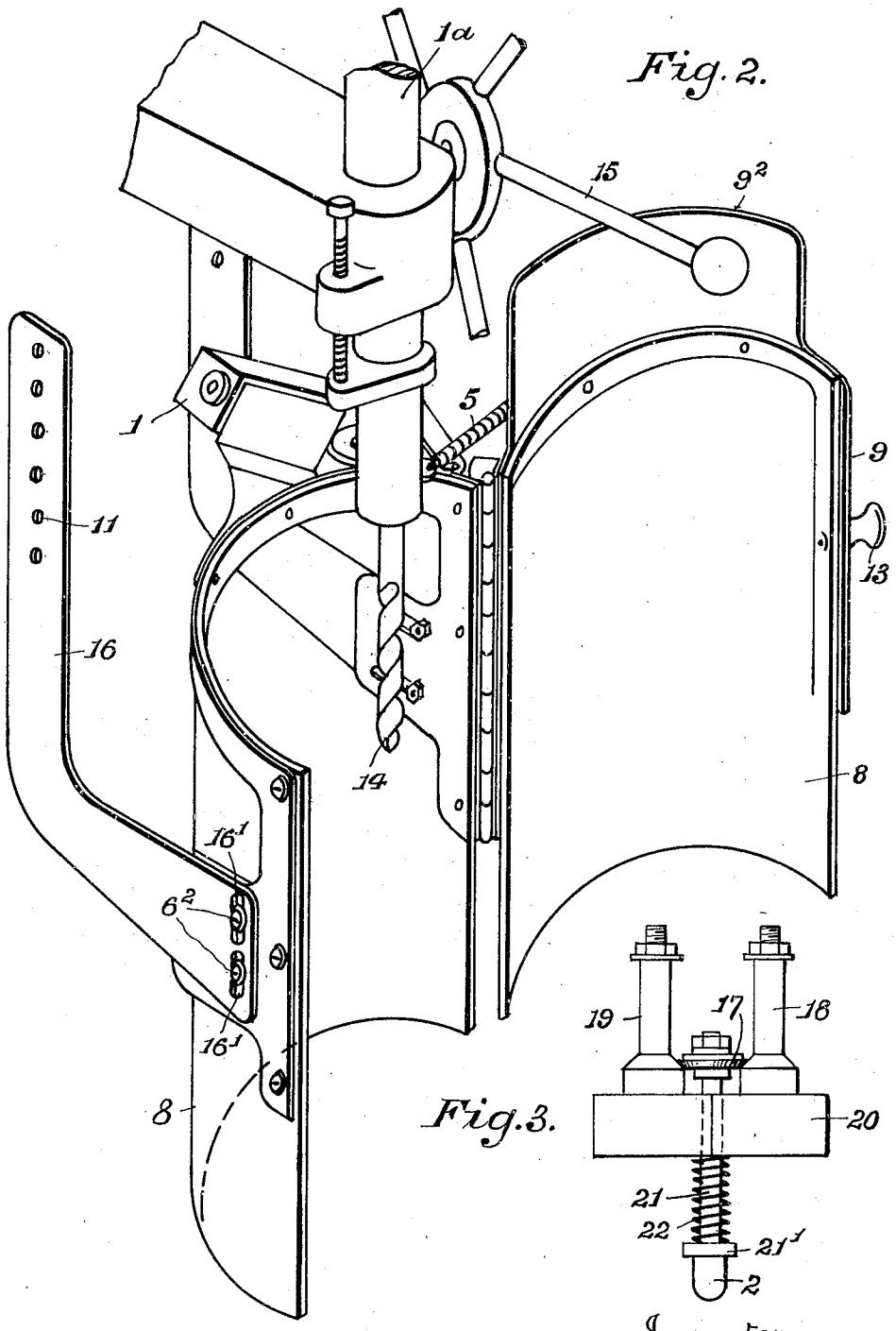


Fig. 3.

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2,491,035

MACHINE TOOL GUARD

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In Great Britain July 27, 1945

2 Claims. (Cl. 77—55)

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The invention relates to tool guards and in particular to guards for machines such as drilling machines in which a rotating tool is employed.

The invention has for one of its objects to provide a guard which, when opened or moved to enable access to be had to the drill or for any other purpose, will act as a means to prevent operation of the machine until the guard has been re-closed or moved back to operative position.

A further object of the invention is to provide a guard which, when opened or moved to enable access to be had to the tool, will act as a means to lock the drill feed until the guard has been moved back to closed position.

A still further object of the invention is to provide a guard which, when opened or moved to enable access to be had to the tool, will act as a means for switching off the supply of electric current to a motor operative to drive the machine, thus preventing the machine from being operated until the guard has been re-closed, such re-closing of the guard functioning to restore the current supply and thereby restarting the machine or enabling it to be re-started in the usual manner.

Obviously, if desired, a guard according to the invention might be arranged when opened or moved to a position to enable access to be had to the tool both to lock the drill feed and to switch off the supply of current to a driving motor, but as the idea underlying the invention, namely the safety of the operative, will be largely achieved by the switching off of the current, it may not be deemed necessary to include the means for locking the drill feed.

The accompanying drawings show an embodiment of the invention in which both switching-off of the current from a driving motor and locking of the drill feed are effected when the guard is opened or moved to expose or give access to the drill,

Fig. 1 showing the guard closed;

Fig. 2 showing it open; and

Fig. 3 illustrating the switch device by means of which, when the guard is opened, the current supply to a driving motor for the drill spindle is cut off, and when the guard is re-closed the current supply restored to restart the machine or enable it to be restarted.

Referring to the drawings, 1 represents a switch controlling the supply of electric current to a motor, not shown, adapted to drive a spindle 1a carrying a drill 14, the downward feed of which

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is controlled by a corresponding downward pivotal movement of a feed control lever 15.

The switch 1 is carried by a bracket 10 secured to a rear frame part 6 having slots 6', 6', for the reception of bolts 6^2, 6^2, passed through slots 16', 16', in a bracket 16 provided with holes 11 for the reception of a bolt or bolts by means of which said bracket can be secured to the machine frame. As will be understood, the slots 6', and 16' and the holes 11 combine to enable the rear frame part 6 of the guard to be secured in various positions of adjustment.

Secured pivotally to the rear frame part 6 by means of a hinge 7 is a front frame part 9 having a knob 13 by means of which it can be moved.

Each frame part 6 and 9 is fitted with a transparent guard member 8. These guard members, and their supporting frame parts are appropriately shaped to form together when the front part 8 is in closed or operative position, as shown in Fig. 1, a guard of, in this instance, circular section surrounding, enclosing, and appropriately spaced from the drill spindle and the drill. The guard members may be of any length desired, to suit the machine concerned.

The electric switch 1 comprises contacts 18 and 19, see Fig. 3, adapted to be closed by a contact bridge 17 carried by a spindle 21 slidable through an insulating block 20. A spring 22 confined on the spindle 21 between the block 20 and a collar or enlargement 21' on the spindle normally holds the bridge member 17 in a position to close the contacts 18 and 19, from which leads, not shown, are provided to the terminals of the driving motor.

The rear frame part 6 carries pivotally, at 6^3, an angle lever 3 connected by links 4 to a projection 9' on the front frame part 9, so that as the said front frame part is swung pivotally to move the guard member 8 carried thereby to a position, as shown in Fig. 2, in which access can be had to the drill, the angle lever 3 is rocked on its pivot 6^2 and a cam portion 3' on said lever is adapted to pass beneath and engage an abutment 2 on the switch spindle 21. This action of the cam portion 3' of the lever 3 on the abutment 2, causes the spindle 21 to be moved in an axial direction against the action of the spring 22, and moves the bridge member 17 out of engagement with the contacts 18 and 19, thus cutting off the supply of current to the driving motor.

When the front guard member 8 is moved back to closed position the cam portion 3' of the lever 3 is moved away from the abutment 2 and permits the spring 22 to move the bridge member

17 back into position to close the contacts 18 and 19, thus restoring the supply of current to the driving motor and either restarting said motor or permitting it to be restarted in the usual way.

The front guard frame part 9 is shown as having an upward extension 9^2 which, when the front guard member 8 is moved to a position in which access can be had to the drill, is caused to extend beneath the drill feed control lever 15, as shown in Fig. 2, and to lock said lever against any downward movement. This feature is of importance in the case of a machine driven by a power shaft and not by a separate motor, but even in the case of a motor driven machine constitutes an additional safeguard for the operator of the machine. When the front guard member is closed, the extension 9^2 of the front guard frame is moved from beneath the feed control lever 15 and enables feed to be applied.

A coiled spring 5, connected at 5' to the front frame member 9 and at 5^2 to the rear or fixed frame member 6, functions to hold the front guard member 8 in both the closed and the open position.

The details of construction and arrangement of the improved guard and the means whereby it functions are obviously capable of variation, and I do not desire to limit myself thereto.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a machine employing a rotating tool; operating means for feeding said rotating tool arranged so as to move along a predetermined path during feeding of said rotating tool; and a movable guard member adapted to at least partly surround and enclose said rotating tool and arranged movably between guarding non-blocking position surrounding and enclosing said rotating tool and located outside of said predetermined path of said operating means and non-guarding blocking position moved into said predetermined path of said operating means, and when in such non-guarding blocking position preventing movement of the operating means and enabling access to said rotating tool.

2. In combination, a machine employing a rotating tool; operating means for feeding said rotating tool arranged so as to move along a predetermined path during feeding of said rotating tool; a stationary guard member adapted to partly surround and enclose said rotating tool; a turnable guard member; and pivoting means securing said turnable guard member to said stationary guard member turnably between guarding non-blocking position partly surrounding and enclosing said rotating tool and located outside of said predetermined path of said operating means and non-guarding blocking position enabling access to said rotating tool and located in said pre-determined path of said operating means and when in such non-guarding blocking position preventing movement of the operating means.

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