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SAFETY GOGGLE SWITCH ACTUATOR

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2 Sheets-Sheet 1

Fig. 1

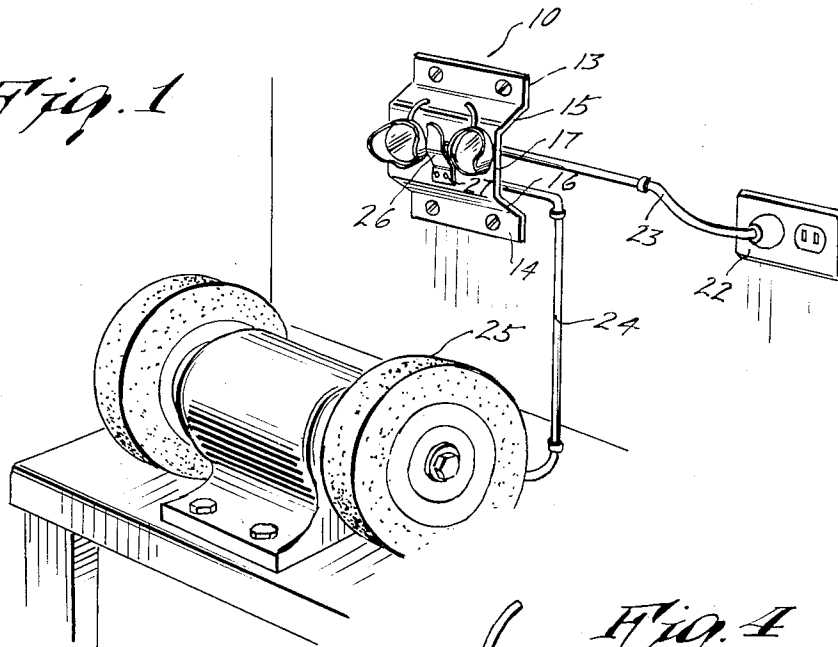


Fig. 3

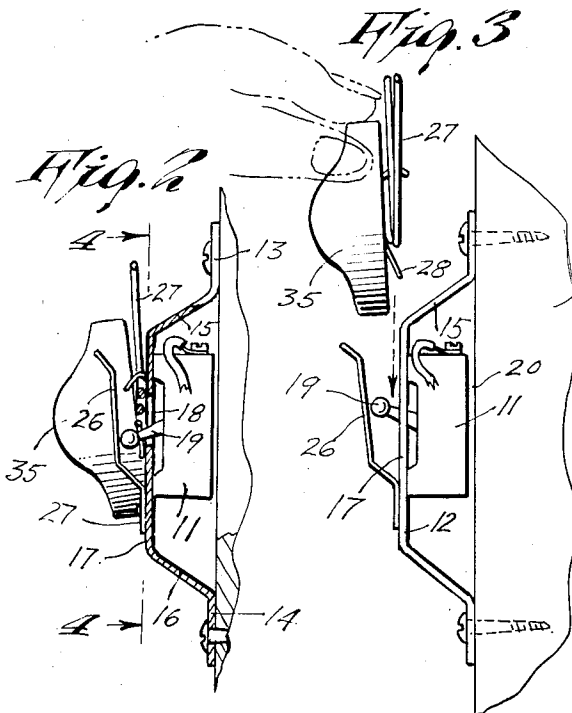


Fig. 4

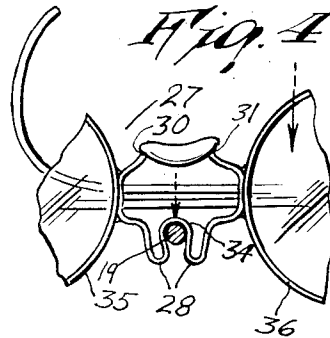
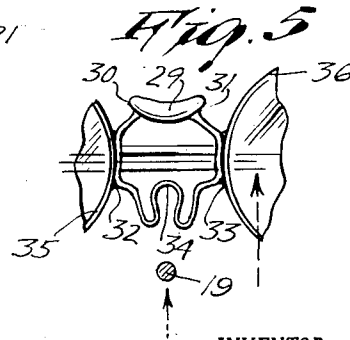


Fig. 5



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Fig. 6

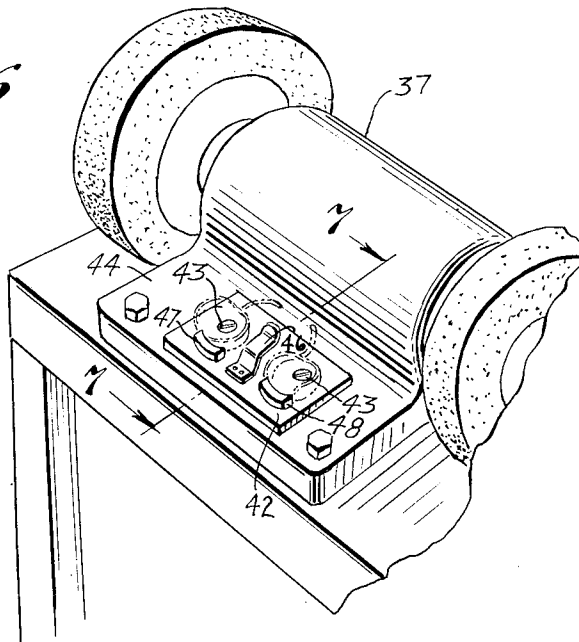
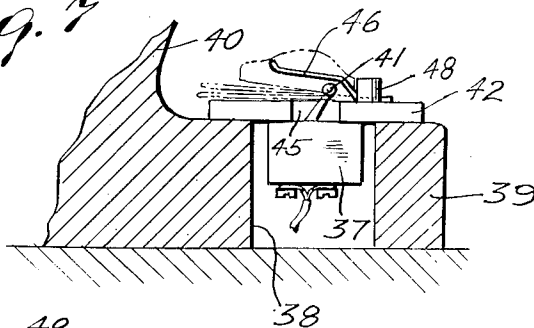
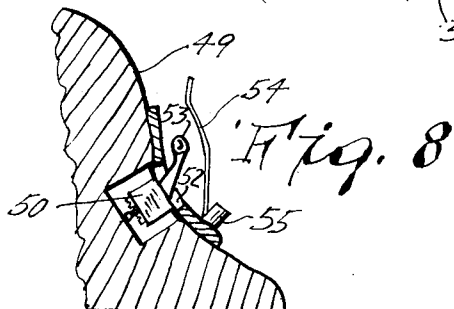


Fig. 7



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SAFETY GOGGLE SWITCH ACTUATOR

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4 Claims. (Cl. 200—61.58)

This invention relates to an improved means for causing an operator of machinery to wear various forms of safety apparel, particularly safety goggles.

A problem of great concern currently is the reduction of costly accidents resulting from the operation of various industrial machinery, such as lathes, grinders, welding apparatus, reamers, etc. Although adequate safety apparel is available for the prevention of accidental injury in most industrial establishments, many preventable injuries still occur due to negligence on the part of the operator to wear the appropriate safety gear. Consequently safety-conscious management is now concentrating on the problem of inducing the operators to wear the appropriate safety gear when at work.

Injuries to the eye and adjoining areas of the face comprise one of the most serious and prevalent categories of industrial injury.

In practically all of the instances involving such eye injury, had the operator been wearing his safety goggles, the injury would not have occurred. It has been established statistically that generally the injured operator did not wear his goggles because the goggles were not immediately available when he was about to actuate the switch to start the machine.

According to the instant invention, the operator cannot turn the switch on until he has grasped his safety goggles; that is, the safety goggles are mounted on the switch in a fashion whereby removal of the goggles automatically actuates the switch to the operative position and replacement of the goggles to their initial position actuates the switch to the imperative position; it being impossible to actuate the switch to either position manually without the use of the goggles. It is apparent then that each time the switch is to be turned on the operator must grasp the goggles. Once the goggles are in the operator's possession, it is almost a certainty that the goggles will be used. Moreover the goggles must be restored to the initial position in order to stop the machine, thereby making them readily available for the next subsequent operation.

It should be further noted that although this disclosure deals specifically with safety goggles, the invention is obviously applicable to other conventional types of safety gear.

Consequently the primary object of this invention in its broadest aspect is the provision of means for forcing an operator of automatic machinery to grasp his safety gear prior to the actuation of the machinery and to replace the safety gear to its initial position prior to deactuation of the machinery.

Another object of this invention is the provision of means for causing the operator of automatic machinery to always deposit safety gear at a predetermined location when the safety gear is not required.

A further object of this invention is the provision of a pair of safety goggles adapted to be mounted on an electric switch thereby causing the switch to be retained in an inoperative position and whereby removal of the goggles

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causes the switch to be actuated to an operative position.

A still further object of this invention is the provision of a means for preventing the manual operation of a switch and a pair of safety goggles adapted to be mounted on the said means in a manner retaining the switch in the "off" position whereby removal of the goggles therefrom causes the actuation of the switch to the "on" position.

A still further object of this invention is the provision of an adaptor mounting for a pair of safety goggles or other safety gear which can be secured to the housing of conventional forms of automatic machinery whereby manual actuation of the operating switch is prevented and whereby the goggles when in place on the mounting retain the switch in the "off" position, removal of the goggles from the mounting actuates the switch to the "on" position.

Further objects and inventive details of this invention will become more apparent from the following detailed description, appended claims and attached drawings in which:

Figure 1 is a perspective view of a grinder operated by a wall switch incorporating the instant novel safety device.

Figure 2 is a vertical sectional view through the switch and the guard plate for the switch showing a pair of safety goggles mounted thereon with the switch retained in the "off" position.

Figure 3 is a view similar to Figure 2 except that the goggles are shown being removed with the switch now in the "on" position.

Figure 4 is a front elevation of the goggles as seen along plane 4—4 of Figure 2 showing the switch in relation to the novel goggles when the switch is in the "off" position.

Figure 5 is a view similar to Figure 4 except that the goggles have been removed causing the switch to be moved to the "on" position.

Figure 6 is a perspective view of a modified form of the invention wherein the switch is mounted on the machine housing and an adaptor plate is mounted about the switch.

Figure 7 is a sectional view through plane 7—7 of Figure 6 showing details of the switch and goggle-carrying guard plate therefor.

Figure 8 is a further species depicted in a view similar to Figure 7 showing a modified guard plate as adapted for machines wherein the switch is located at a curved portion of the housing.

Referring now to the drawings, the embodiment of the invention shown in Figures 1 through 5 is seen to comprise a switch guard plate 10, secured to a wall or the like, having a toggle switch 11 mounted on the inner side 12 thereof. The plate 10 is trough shaped in section including a pair of similar symmetrically disposed flanges 13 and 14, which abut the supporting wall, a pair of inclined legs 15 and 16 extending from the flanges and an offset web 17 interconnecting the said legs. A central hole 18 (Figure 2) is provided through the web 17 for the reception therethrough of a toggle lever 19 that projects outwardly from the switch 11. The hole dimension is sufficient to permit movement of the lever 19, from the "off" position of Figure 2 to the "on" position of Figure 3, without obstruction. The transverse spacing between the flanges 13 and 14 and the web 17 is sufficient to accommodate the switch 11 with a small clearance 20 between the wall 21 and the switch (Figure 3).

The switch 11 controls the current which flows from the outlet 22 through the leads 23 and 24 to the grinder 25 or the like. Thus when the lever 19 is in the position shown in Figure 2, the circuit is broken and the grinder is inoperative. Actuation of the lever 19 to the position

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of Figure 3 makes the circuit and causes the grinder to operate. As will be seen from the following description, actuation of the lever 19 can only be accomplished by using a pair of specially devised goggles.

Manual actuation of the lever 19 is prevented by the guard 26 which is integrally affixed at 27 to the outer surface of the web 17 adjacent the perimeter of hole 18 and extending in cantilever fashion over and beyond the said hole. The guard 26 is sufficiently spaced from the web to accommodate the movement of the lever 19 but close enough to the web 17 to prevent the insertion of the operator's fingers therebetween. Thus direct manual access to the lever is obstructed.

Actuation of the lever 19 can only be had by using a pair of goggles 27 which are of conventional construction excepting for the provision of a pair of spring pincers 28 which extend from the bridge 29. The pincers are preferably formed of resilient wire secured at 30 and 31 to the bridge 29 and at 32 and 33 to the rims of the glasses. The pincers 28 are formed by spaced loops extending towards the lever 19 which are joined therebetween by a central loop 34 extending in the opposite direction adapted to receive the lever 19. The normal spacing between the pincers is smaller than the diameter of lever 19. However the pincers are sufficiently flexible to permit the entry of lever 19 therebetween into loop 34 upon the application of sufficient pressure against the lever to cause its actuation. The thickness of the pincer wire and the bridge 29 is smaller than the space between the guard 26 and the web 17 whereby the pincers and bridge can readily be inserted between the guard and the web. Moreover the space between the rims 35 and 36 of the goggles is greater than the width of the guard 26 allowing the unobstructed passage of the pincers into the space under the guard 26. In addition to causing the actuation of lever 19, the pincers by grasping resiliently the lever cause the goggles to be retained securely on the guard plate. Since the guard plate is always installed with the web 17 in a vertical position, the weight of the goggles bear on the lever preventing any possibility of accidental lever actuation. It is now obvious that removal of the goggles results in the upward movement of lever 19 (as shown in Figure 3) because the pincers are resilient enough to obstruct the outward movement of the lever 19 until sufficient upward force has been exerted to snap the switch to the "on" position of Figure 3.

In operation then, assuming the goggles are in place on the guard plate 10, removal of the goggles as shown in Figure 3 causes the lever 19 to spread apart pincers 28. The resiliency of the pincers is such that they will only flex sufficiently upon the application of sufficient force to cause the lever 19 to snap from the "off" position of Figure 2 to the "on" position of Figure 3. Completion of the removal of the goggles causes the lever to be moved to the "on" position resulting in the operation of the grinder. Since the operator is in possession of the goggles, he will probably wear them. At least, the maximum probability that the operator will wear the goggles has been provided. Upon completion of the work, the operator in order to stop the grinder must replace the goggles. In doing so the goggles will always be available at the same location. In replacing the goggles the pincers 28 are spread laterally apart by lever 19 until the lever snaps back to the "off" position of Figure 2; simultaneously the pincers admit the lever to be received and locked in the loop 34. With the cycle completed the goggles are back in their desired habitual location ready for subsequent use.

In Figures 6 and 7, another embodiment of the invention is depicted. This particular form is applicable to more conditions met in actual practice than the previously described form of Figures 1 through 5. In the instant embodiment, a switch assembly 37 is mounted directly in a bore 38 formed in the base 39 of a housing 40 for an

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electrically operated grinder or the like. To provide the grinder with the safety means described in connection with the wall mounted switch of Figures 1 through 5, an adaptor plate 42 is provided which is mounted over the bore 38 by means of the bolts 43 or the like. The supporting surface 44 for the plate 42 is in this case planar. However, curved or other non-planar contours are contemplated in practicing this invention. As in the previous embodiment, the plate 42 includes a central hole 45, through which projects the lever 41, and a guard 46 which prevents manual access to the said lever. In addition there are also provided a pair of similar symmetrical rim guides 47 and 48 which functions to support the goggle rims in a predetermined position. The operation of the switch and the manipulation of goggles is exactly identical to that described in connection with Figures 1 through 5. The instant embodiment merely being an illustration of the manner of incorporating in a machine having an integral switch, the novel goggle actuating means.

In Figure 8 a further embodiment is shown similar to the embodiment of Figures 6 and 7 excepting that the housing surface 49 adjacent the switch assembly 50 is curvilinear rather than planar. Thus the guard plate 51 is formed of complementary curvature. Again the said plate includes a central hole 52, for the toggle lever 53, a guard 54 and the rim guides 55. The operator is also similar to that of the form depicted in Figures 1 through 5.

Reiterating, it is now apparent that switches which are provided with the above described guard plate structures cannot be manually actuated without using a specially devised safety device (in this case goggles). Thus whenever the goggles should be worn, precisely at that time, the operator must reach for the goggles in order to accomplish his work. Machines of all standard descriptions including those actuated by "push-button" type switches can be modified readily to incorporate this safety feature by merely affixing an economical fixture over the switch lever. Wall switches of standard construction can also be similarly modified.

The modification of the safety goggles to co-act with the guard plates can be effected with almost negligible costs. Moreover the utilization of the goggles as a switch actuator introduces no significant inconvenience and prevents loss or the misplacing of the goggles.

Use of this safety feature has already caused, and will result in, the prevention of serious accidents involving losses that can't be evaluated in economic terms.

It should be further noted that the embodiments disclosed herein are merely preferred forms of practicing the invention, and that many variations can be devised by one skilled in the art without departing from the inventive scope.

Having thus described in detail the nature of the invention, a grant of Letters Patent is duly desired for the novel disclosure as defined in the following claims:

1. In an automatically operated machine having a toggle switch mounted integrally therewith, a guard assembly comprising a plate mounted about the switch and a shield obstructing access to the switch lever in combination with a pair of safety goggles adapted to be removably mounted on the assembly including spaced pincers resiliently biased in a position permitting the insertion therebetween of the lever when the goggles are mounted on the assembly, whereby the mounting of the goggles on the assembly causes the pincers to engage and grasp the lever moving it to an inoperative position and whereby removal of the goggles from the assembly causes the pincers to move the lever back to an operative position.

2. A safety device adapted to be removably mounted over the external switch actuating means of a switch actuated device comprising a plate having a hole thru which

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the actuating means can protrude and a guard plate superimposed over the said hole in a manner generally obstructing access to the area adjacent the hole, said guard plate being integral with the plate at one side and having portions spaced from the plate whereby an article of safety gear can be inserted between the guard and the plate and be retained therebetween, the spacing between the guard and the plate being so designed that insertion of the safety gear causes the gear to move the protruding actuating means to an inoperative position and removal of the gear actuates the said means to the operative position.

3. A safety device as in claim 2 in combination with safety gear having means for retaining the switch actuating means in an inoperative position when the gear is mounted on the safety device.

4. The combination of a safety device and a switch controlled machine having a manually actuated button projecting from the machine, said button being reciprocable from an "on" position to an "off" position said safety device including means for integrally connecting the safety

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device to the machine over the said button, said device comprising a plate having a hole thru which the button is adapted to project and reciprocate and a guard having one end secured to the plate and portions spaced from the plate and superimposed over the button obstructing access to the button, in further combination with safety gear adapted for insertion between the guard and the plate, said guard and plate comprising means for supporting and retaining the safety gear on the safety device, said gear including a member for moving and retaining the button in the "on" position when mounted on the safety device, said member being detachable from the button when the gear is removed from the safety device.

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