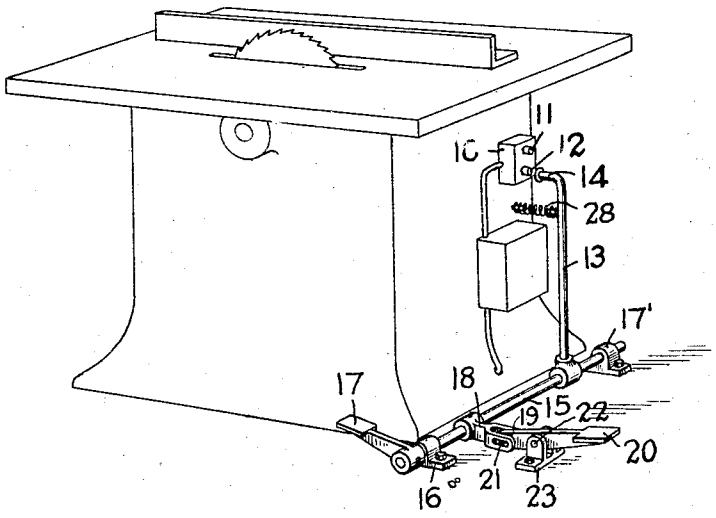
Oct. 11, 1927. 1,645,028

H. STONE

SAFETY SWITCH CONTROL

Filed May 26, 1925

Fig. 1



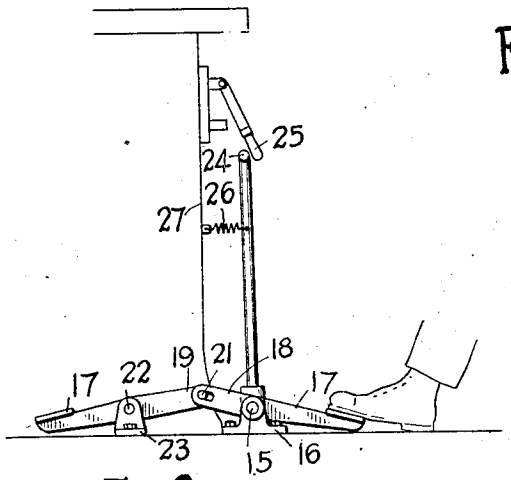
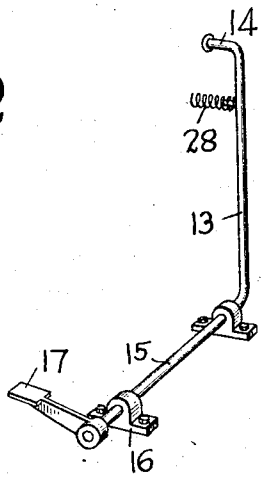


Fig. 3

Fig. 2



INVENTOR

Harry Stone

BY

Harry Jacobson

ATTORNEY

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UNITED STATES PATENT OFFICE.

HARRY STONE, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO HARRY JACOBSON, OF NEW YORK, N. Y.

SAFETY SWITCH CONTROL.

Application filed May 26, 1925. Serial No. 32,939.

This invention relates to safety devices for operating electric switches, and particularly to a mechanical device for operating a switch to cut off the current to, and thereby to stop a machine having an individual electric motor drive.

In certain types of machinery, particularly wood working machinery, it is often necessary for the operator to stop the machine quickly while both of his hands are in use. Heretofore, it has been necessary to leave the work in order to throw off the current, with consequent danger to the operator, to the work, and to the machine itself.

It is usual in machines, particularly wood working machines in which there is considerable danger to the operator if his hands should be caught in the cutting mechanism, to place the starting switch at some point distant from the operator's usual working position at the machine, so that accidental operation of the switch as by leaning against it, causing accidental starting of the machine before the operator is ready, is prevented.

Should there be any trouble in the operation of the machine, therefore, such as binding of the saw when cutting a long or wide board, the operator is compelled to drop his work and move a comparatively large distance, and losing an appreciable interval of time before he can reach the switch to cut off the current to the machine. During this interval the machine is running and the work must be neglected, so that damage to the machine and to the work, and even to the operator is an imminent danger which frequently occurs.

My invention contemplates the provision of foot operable mechanism, conveniently located at the point where the operator customarily works, for throwing off the switch and disconnecting the circuit to the motor, so that the operator need not leave the working position and he may continue to use his hands to prevent damage to the work and to the machine. In that example of my invention illustrated, my device is shown applied to a motor driven circular saw.

The various objects of my invention will be clear from the description which follows, and from the drawings, in which,

Fig. 1 is a perspective view of my invention as it appears applied to a circular saw having a push-button switch control.

Fig. 2 is a similar view of a modified form of my invention, and

Fig. 3 is an elevation of my invention as it appears applied to a knife switch.

In the practical embodiment of my invention as it appears applied to a switch as 10 having a push-button control consisting of a circuit making button 11, and a circuit breaking button 12, a rod as 13 is suitably bent at one end as 14 to engage said button 12, while the other end of said rod is arranged in spaced relation to said button and is preferably secured to a shaft 15, disposed at any convenient point readily accessible to the operator, preferably as close to the floor on which the machine is supported. The shaft 15 may be supported in suitable bearings as 16 and 17', fastened to the floor or other suitable support in any suitable manner and carries a lever 17 operable by the operator while his hands are otherwise engaged, and illustrated as a foot pedal lever. Said lever is secured to said shaft in such a manner that pressure on said lever by the foot or other part of the body of the operator rotates the shaft 15 and therethrough the rod 13 for pushing the button 12 in the proper direction to break the circuit to the machine motor.

If it is more convenient to arrange the foot pedal on the opposite side of the shaft 15 from that on which the lever 17 is shown, it becomes desirable to mount a crank as 18 on the shaft 15 and to connect the ends 19 of the lever 20 to the end of said crank by a suitable slot or pin connection of the usual type as 21. Said lever 20 is pivoted as at 22 on the support 23 which may be fastened to the floor. Downward pressure on the lever 20 raises the end 19 thereof, and rotates the crank 18, the shaft 15, and the rod 13, in the proper direction to operate the button 12.

In that modification illustrated in Fig. 2, I have shown a simplified form of my device, wherein the rod 13 and shaft 15 are made of a single piece of material.

If the machine motor is controlled by a knife switch instead of a push-button switch, the end 14 of the rod 13 is replaced by a bend as 24 substantially parallel to the shaft 15, and adapted to be arranged underneath or inwardly of the switch handle 25. A tension spring 26 secured to the rod 13 and

to the machine frame 27 serves to maintain the operating rod 13 normally in its inoperative position, said spring being of such strength as to hinder the throwing out the switch handle 25 against pressure on the pedals 17 or 20. In that form of my invention shown in Fig. 1, a compression spring as 28 is interposed between the rod 13 and any other suitable object, such as the frame of the machine, and serves normally to prevent pressure on the rod 13 and therethrough on the button 12 sufficient to operate said button accidental, until pressure is applied to the pedals 17 or 20.

When the operator is at his working position, should it be necessary to stop the machine quickly as in the case of the band saw breaking or a circular saw binding in the work, or for any other reason, all the operator need do is to step on the pedal 17 or the pedal 20, if such a pedal is used, thereby operating the switch to cut off the current instantly without moving from his position or losing control of the work.

Should it be necessary to change any parts of the machine or to adjust any of such parts, the operator can be assured that there is no danger of the machine being started either accidentally by himself, or by another, if he keeps his foot on the foot pedal, thereby maintaining the switch handle 25 or the push-button 12 in circuit breaking position. It will be understood that I contemplate the use of a single pedal only in connection with my improved cut-off, though two types of pedals are shown in Figs. 1 and 2 in the same shaft. It will be seen that my improved device is simple in construction, efficient in operation, inexpensive to produce, easy to attach to any machine controlled by a switch and designed to withstand the difficult conditions of practical use. It will further be seen that various changes may be made in the construction illustrated without departing from the spirit and scope of my invention, such as in the proportion and disposition of the rods, bearings and shafts, in the design and disposition of the pedals, so that said pedals may be operated by the foot or other part of the body, in the means for supporting my improved control and other changes to conform with varying conditions in the arrangement and type of switches.

I claim:

1. In a switch cut-off, a pedal, a shaft carrying said pedal, means for supporting said shaft, a one-piece vertically arranged rod mounted on said shaft for rotation therewith, a horizontally bent portion at the upper extremity of said rod, adapted to engage a switch arranged in spaced relation to said pedal, and a compression spring adapted normally to maintain said bent portion out of contact with said switch.

2. In a wood-cutting or like machine controlled by a push-button electric switch, a bent, one-piece, spring-pressed, rotatable rod adapted to engage the button of said switch, and foot operable means in spaced relation to said switch for rotating said rod, whereby the switch is operated by said rod to cut off the current to said machine.

3. In a wood-cutting or like machine controlled by a push-button electric switch, a substantially vertical one-piece rod, a pedal in spaced relation to said switch, a horizontal shaft rotatable by said pedal and rotatably carrying said rod, a horizontal bent upper end on said rod for engaging the push-button of said switch for operating said switch to cut off the current to said machine, and a spring for normally preventing said bent end from operating said switch.

4. In a switch cut-off, a pedal, a shaft carrying said pedal, bearings adapted to be secured to a floor for rotatably supporting said shaft, a substantially vertical one-piece rod mounted on and extending from said shaft to said switch for rotation therewith and provided with a bent upper end adapted to operate said switch for cutting off the current therefrom on the operation of said pedal, and a spring for normally preventing said rod from operating said switch.

HARRY STONE.