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CONTROL APPARATUS
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Fig. 1.

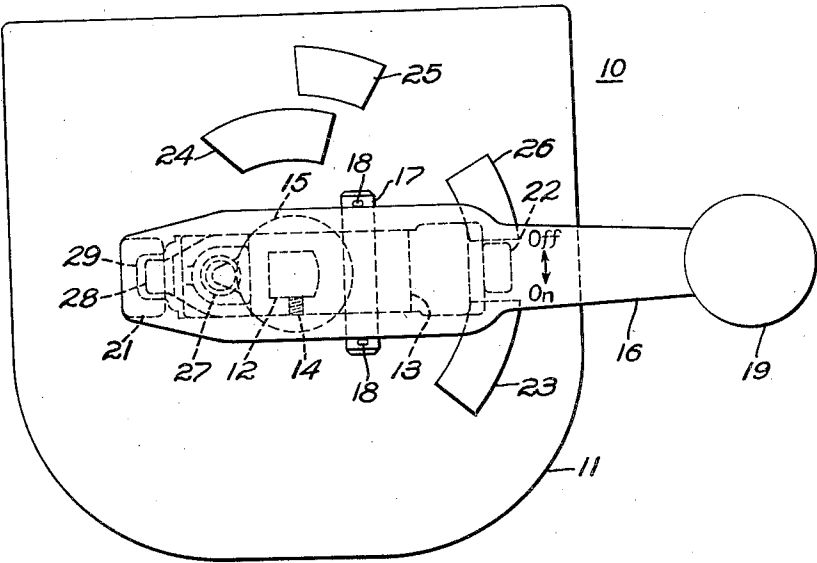
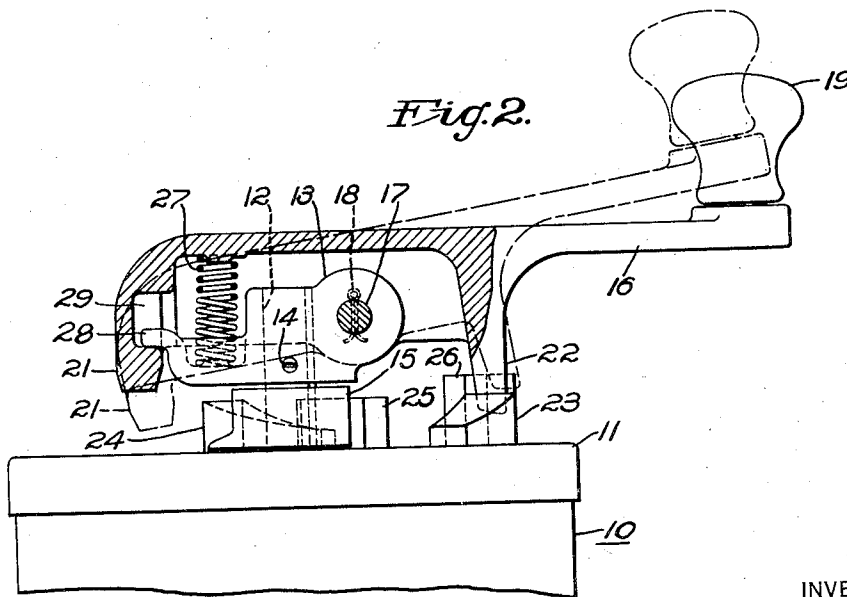


Fig. 2.



WITNESSES:

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CONTROL APPARATUS

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7 Claims. (Cl. 74-565)

My invention relates, generally, to control apparatus, and, more particularly, to safety handles for operating controllers of the drum type.

Some operators of mining and industrial locomotives have acquired the habit of grasping the handle of the controller to assist themselves in climbing into the locomotive. By so doing the locomotive is frequently started accidentally, which has resulted in injury or death to the operator or others who were working about the locomotive or cars connected to it.

An object of my invention, generally stated, is to provide a safety handle which may be readily fitted to any controller of the drum type.

A more specific object of my invention is to provide a controller handle which will prevent the operation of the controller drum until the handle has been actuated in a direction other than that for normal operation of the drum.

Another object of my invention is to provide a safety handle for a controller which cannot be wedged in a position to prevent the proper functioning of the safety feature.

Other objects of my invention will be fully explained hereinafter or will be apparent to those skilled in the art.

In accordance with the preferred embodiment of my invention, a controller handle is mounted on a rocker support which is secured to the controller shaft. The handle is provided with two projecting lugs which are so disposed with relation to stops on the top of the controller that it is necessary to rock the handle first in one direction and then in the other direction in order to rotate the handle to operate the controller drum.

For a fuller understanding of the nature and objects of my invention, reference may be had to the following detailed description, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a top plan view of a controller having a handle constructed in accordance with my invention, and

Fig. 2 is a view, in elevation, of the controller shown in Fig. 1, a portion of the handle being cut away.

Referring to the drawing, the apparatus shown comprises a controller casing 10 having a cover 11. An operating shaft 12 extends through the cover 11 and a rocker support 13 is secured on the end of the shaft 12 by means of a set screw 14 which engages the shaft 12. A spacing collar 15 may be interposed between rocker support 13 and the cover member 11. A handle 16 is pivot-

ally mounted on the rocker support 13 by means of a pin 17 which passes through the rocker support and is secured in position by cotter keys 18. The handle 16 is provided with a knob 19 for the operator to grasp when operating the controller.

As shown, the handle 16 is also provided with two downwardly projecting lugs 21 and 22 which are disposed on opposite sides of the rocker pin 17. Several stop members 23, 24, 25 and 26 are provided on the cover 11 of the controller casing for engaging the lugs 21 and 22 on the controller handle. The stops 23 and 24 are so spaced with relation to the lugs 21 and 22 that it is necessary to rock the handle 16 on the rocker pin 17 in order to rotate the handle from the "off" position, as will be more fully described hereinafter. The stop members 25 and 26 are the usual controller stops for limiting the rotary movement of the shaft 12 to the desired degree of travel. The stop 25 serves to limit the movement of the handle in the "on" direction and the stop 26 limits the movement in the "off" direction.

As illustrated in this embodiment of the invention, in order to rotate the handle in the "on" direction, the knob 19 must first be raised to the position illustrated by the broken lines in Fig. 2 to raise the lug 22 above the stop 23. After the lug 22 has cleared the stop 23, the handle must then be lowered to a horizontal position in order that the lug 21 will clear the stop 24. It is thus necessary first to raise the handle and then to lower it in order to rotate the controller drum to a position in which the electrical circuits to the controlled device are completed.

In this manner the possibility of the operator accidentally moving the controller to start the locomotive is precluded, since the handle must be both raised and lowered, as well as rotated, in order to operate the controller drum to energize the propelling motor. A spring 27 may be placed between the handle 16 and the rocker support 13, as shown, to bias the handle to its lower position. If the knob end of the handle is heavy enough to be lowered by gravity, it is not necessary to provide the spring 27. Vertical movement of the handle 16 is limited by a lug 28 on the rocker support 13 which engages a slot 29 provided in handle 16.

It will be seen that the proper functioning of the safety feature cannot be prevented by wedging the handle in the raised position to clear the stop 23, as the stop 24 will prevent the operation of the controller through its normal range if the

handle is not lowered to permit the lug 21 to pass over the stop 24. It has been possible to so wedge the safety latch on previously constructed safety handles that the latch would not operate properly, thereby defeating the purpose of the safety feature.

Referring to Fig. 2, it will be seen that the stop members 23 and 24 may be so sloped that the lugs on the handle 16 will slide over them freely when the handle is being moved toward the "off" position, thereby permitting the controller to be quickly returned to the "off" position by operating the controller handle in the usual manner.

It is evident that the safety handle herein described has numerous advantages over handles of previously constructed types in which a safety latch is released by depressing a button or plunger. An exposed button may be inadvertently operated when grasping the handle, thereby permitting the controller to be operated accidentally, and a button which is sunk below the surface of the handle is difficult to operate when the operator is wearing gloves. Furthermore, the purpose of the safety feature cannot be defeated by wedging the safety latch in an inoperative position, as has been possible in previously constructed handles.

I do not wish to be restricted to the specific structural details or arrangements of parts herein set forth, as various modifications may be made therein without departing from the spirit and scope of my invention. I desire, therefore, that only such limitations shall be imposed thereupon as are indicated in the appended claims.

I claim as my invention:

1. In a controller, in combination, a controller shaft, a handle pivotally mounted on the shaft, projecting lugs on the handle, and stop members so disposed to engage the lugs that it is necessary to alternately raise and lower one end of the handle in order to rotate the shaft.

2. In a controller, in combination, a controller shaft, a handle pivotally mounted on the shaft, downwardly projecting lugs on the handle, and

stop members disposed on the controller to alternately engage the lugs, thereby preventing the rotation of the handle unless it is first raised and then lowered.

3. In a controller, in combination, a controller shaft, a handle pivotally mounted on the shaft, oppositely disposed lugs on the handle, and stop members disposed on the controller to engage the lugs to necessitate a rocking movement of the handle when rotating the controller shaft.

4. In a controller, in combination, a rotatable shaft, a handle pivotally mounted on the shaft and disposed to be rocked in a plane perpendicular to the normal direction of rotation of the handle, oppositely disposed lugs on the handle, and means on the controller for engaging the lugs to require a rocking movement of the handle when rotating the controller shaft.

5. In a controller, in combination, a controller shaft, a handle pivotally mounted on the shaft, oppositely disposed lugs on the handle, and stop members disposed on the controller to engage the lugs to necessitate a rocking movement of the handle when rotating the controller shaft in one direction, said stop members being sloped to permit the shaft to be rotated freely in the opposite direction.

6. In a controller, in combination, a controller shaft, a rocker support secured to the shaft, a handle pivotally mounted on the rocker support, oppositely disposed lugs on the handle, stop members disposed on the controller to engage the lugs to necessitate a rocking movement of the handle when rotating the controller shaft, and spring means disposed between the handle and the rocker support to bias the handle to a horizontal position.

7. In a controller, in combination, a controller shaft, a handle pivotally mounted on the shaft, projecting lugs on the handle, and a pair of stop members disposed on the controller to alternately engage the lugs, thereby preventing rotation of the handle unless it is rocked about its pivot point.

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