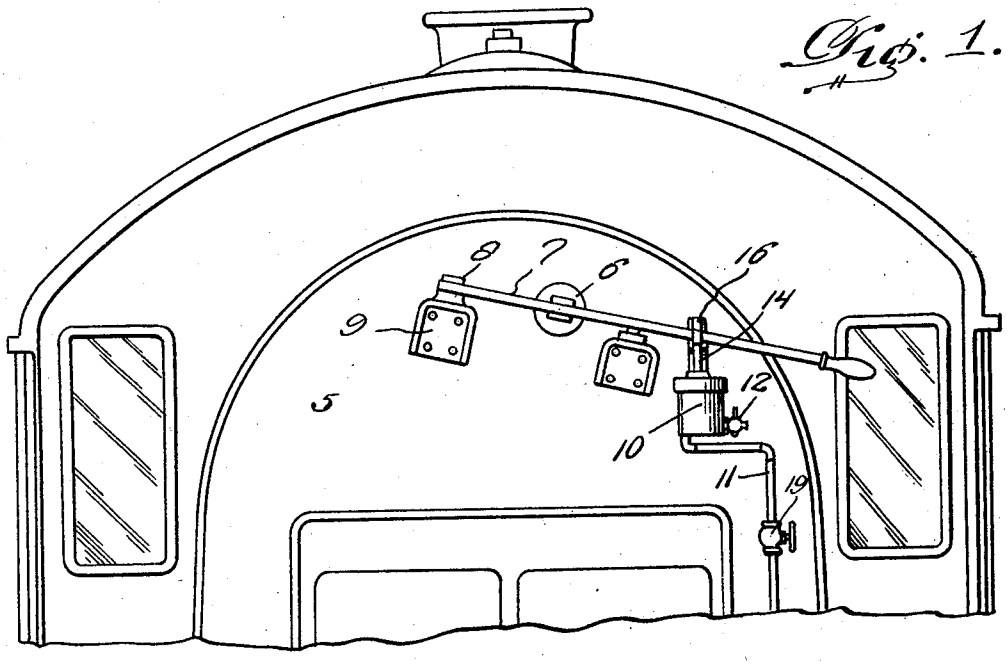
Dec. 31, 1929. B. S. HORNE ET AL 1,741,626

SAFETY DEVICE

Filed March 13, 1928

Fig. 1.



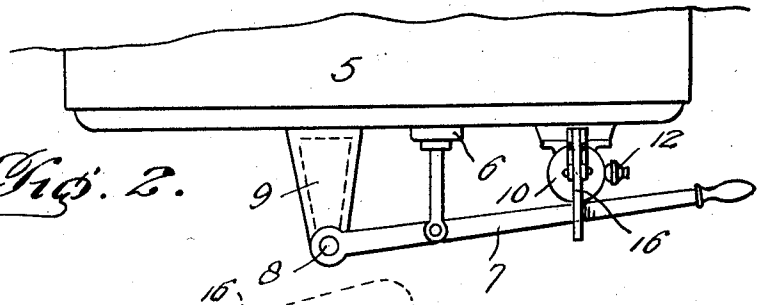


Fig. 2.

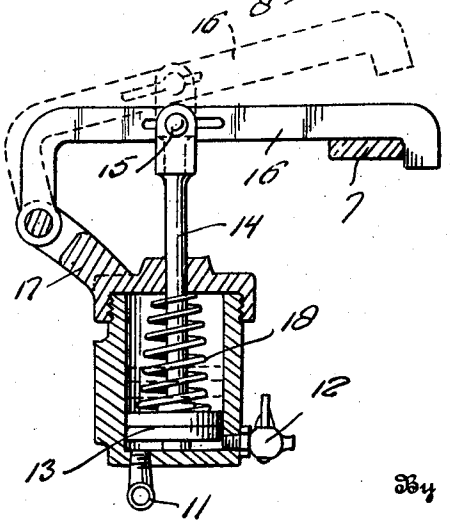


Fig. 3.

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UNITED STATES PATENT OFFICE

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SAFETY DEVICE

Application filed March 13, 1928. Serial No. 261,240.

This invention relates to a safety device for locomotives, and has more particular reference to an improved device for positively preventing unauthorized operation of a locomotive engine.

The primary object of the present invention is to provide a device for automatically locking the throttle valve of a locomotive engine in closed position when the air pressure of the air brake system is reduced below a predetermined point, whereby unauthorized opening of the throttle valve and operation of the locomotive engine is prevented to avoid endangering of life and property when the locomotive is left alone by the engineer.

A further object is to provide a safety device of the above kind embodying a locking member movable to be positioned in the path of the throttle lever when the throttle valve is closed, and means to automatically move the locking member into the path of the throttle lever when the air pressure of the air brake system is reduced below a predetermined point.

Another object is to provide a device of the above kind which is simple in construction, compact in form, and adapted to be readily installed on a locomotive without modification of the latter or presenting objectionable projecting or obstructing parts.

The invention consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawing:

Figure 1 is a view, in elevation, of the end of a locomotive boiler, illustrating a throttle lever locking mechanism embodying the present invention.

Figure 2 is a fragmentary plan view thereof; and

Figure 3 is an enlarged detail view of the locking mechanism, partly in elevation and partly in section.

Referring more in detail to the drawing, 5 designates the boiler of the locomotive, and 6 the usual throttle valve provided in the dry pipe leading from the steam dome to the main cylinders of the locomotive, the throttle valve being operated by a connection with the throttle lever 7 pivoted at 8 to a fulcrum member 9 on the back head of the boiler.

The locking mechanism of the present invention preferably embodies a pressure cylinder 10 rigidly mounted on the back head of the boiler 5 and having a bottom inlet port connected with a supply pipe 11 and a bottom exhaust port provided with a manually operable pressure release or exhaust valve 12. Slidable in the cylinder 10 is a piston 13 having an upwardly projecting piston rod 14 whose upper end is pivotally and slidably or loosely connected as at 15 to the intermediate portion of a locking lever or arm 16 which is pivoted at one end to a bracket arm 17 for vertical swinging movement and has a depending lug or hook at its other or free end. The bracket arm 17 is rigid with the top of the cylinder 10, and encircling the rod 14 within the cylinder 10 is a strong compression spring 18 which forces the piston 13 and rod 14 down and holds locking arm 16 in locking position. The cylinder 10 is mounted adjacent the free end portion of the throttle lever 7 so that the locking arm 16 is normally raised by the air pressure out of the path of the throttle lever, but so that the arm 16 is lowered to hook over said throttle lever when the piston 13 is forced downwardly and the arm 16 is lowered by the action of the spring 18 upon reduction of the air pressure below a predetermind point. These positions of the arm 16 relative to the throttle lever 7 are clearly indicated in Figure 1, and as shown in Figure 2 the arm 16 is hooked over the thottle lever when the latter is in its forwardly swung throttle valve closing position. It is therefore obvious that if the air pressure in the bottom of the cylinder 10 is reduced below a predetermined point the locking arm 16 will be lowered to position the hooked end thereof in the path of the throttle lever 7 for thereby preventing rearward movement of the latter so that opening of the throttle valve and operation of the locomotive engine cannot be effected until the air pressure is raised to a predetermind point in the cylinder 10 by the operator.

The supply pipe 11 is connected to the main

reservoir pipe of the locomotive air brake mechanism.

Any suitable means may be provided for preventing unauthorized access to or operation of the valves 12 and 19. Assuming that there is normal air pressure in the main reservoir pipe and that the engineer desires to leave the engine standing alone, he closes valve 19 and opens the valve 12. This releases the air pressure from cylinder 10 and allows the spring 18 to lower the arm 16 to the full line position of Figure 3, thereby locking the throttle lever 7 in its throttle-closing position and preventing accidental or unauthorized opening of the throttle valve and operation of the locomotive engine. When the engineer returns and desires to operate the engine, he closes the valve 12 and opens the valve 19, thereby admitting the air pressure into cylinder 10 to raise the piston 13 and disengage the arm 16 from the throttle lever 7 as shown by dotted lines in Figure 3. By closing valve 19 and allowing valve 12 to remain closed, the arm 16 may be held in this raised released position during normal running of the locomotive. When a hostler brings the locomtive into the round house and bleeds the air from the air brake system, the valve 19 is opened and the pressure is released in the line 11 and cylinder 10, thereby allowing the spring 18 to lower the arm 16 to the full line locking position of Figure 3. Should the hostler later desire to operate the engine, he must pump the necessary air pressure (usually 35 pounds) into the main reservoir pipe in order to cause release of the arm 16 from the throttle lever 7 when valve 19 is opened and valve 12 is closed. In this way, the hostler must provide sufficient air pressure in the main reservoir pipe to operate the brakes and thereby control the locomotive, before he can operate the locomotive engine. Should the pipe 11 become broken, the engineer may remove the pin at 15 and lift the arm 16 to release the lever 7. In this event, however, the pin 15 may be held in place by a suitable seal which must be broken before the pin 15 can be removed. In this way, the fact that the pin has been removed may be positively disclosed and the engineer may be required to explain why the seal was broken.

What we claim is:

1. The combination with the throttle valve of a steam propelled locomotive and its lever, of a spring-projected pressure-released device for locking said lever in throttle valve closing position, said locking device embodying a pressure cylinder having a piston therein and a locking arm pivoted to the pressure cylinder and operatively connected to the piston.

2. The combination with the throttle valve of a steam propelled locomotive and its lever, of a device for locking said lever in throttle valve closing position, said locking device embodying a pressure cylinder having a piston therein and a spring-projected locking arm pivoted to the pressure cylinder and operatively connected to the piston, said locking arm being adapted to be moved out of the path of the throttle lever when the piston is moved by a pressure medium admitted to said pressure cylinder.

3. The combination with the throttle valve of a steam propelled locomotive and its lever, of a device for locking said lever in throttle valve closing position, said locking device embodying a pressure cylinder having a piston therein and a locking arm pivoted to the pressure cylinder and operatively connected to the piston for movement out of the path of the throttle lever when a pressure medium is admitted to said pressure cylinder, and yieldable means to normally move the locking arm to locking position.

4. The combination with the throttle valve, the throttle lever, and the air brake mechanism of a steam propelled locomotive, of a spring-projected member to lock said throttle lever in throttle valve closing position, means operated by the air pressure of the air brake mechanism for releasing said locking member, and manually controlled means for effecting release of the air pressure and projection of said locking member.

5. The combination with the throttle valve, the throttle lever, and the air brake mechanism of a steam propelled locomotive, of a spring-projected member to lock said throttle lever in throttle valve closing position, means operated by the air pressure of the air brake mechanism for releasing said locking member, and manually operable means to release the air pressure from said pressure operated means.

In testimony whereof we affix our signatures.

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