C. F. PEEL.

SAFETY DEVICE.

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1,019,081. Patented Mar. 5, 1912.

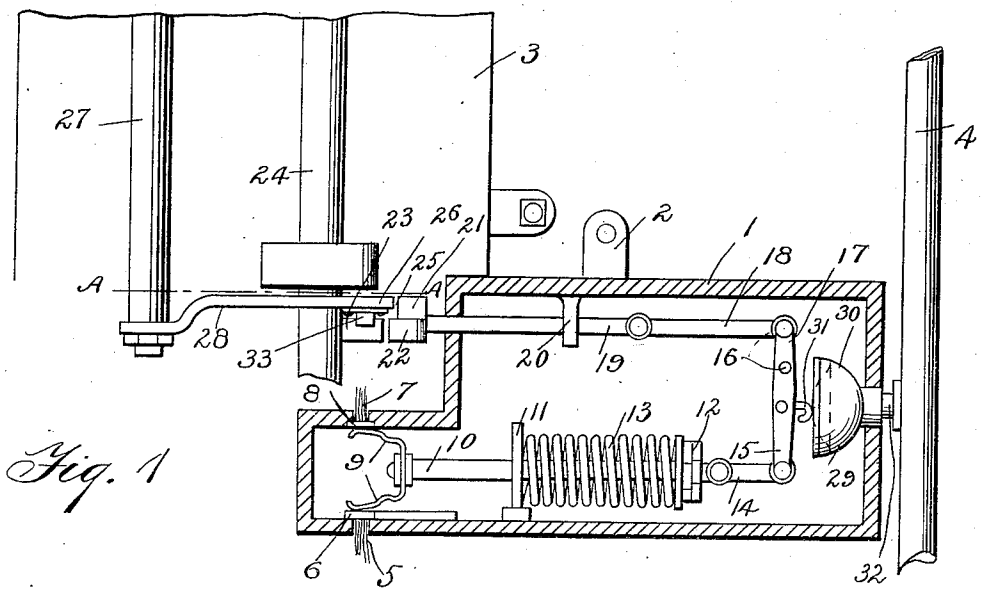

Fig. 1

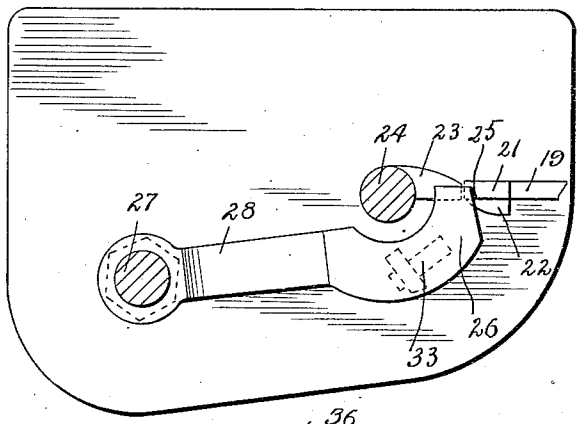

Fig. 2.

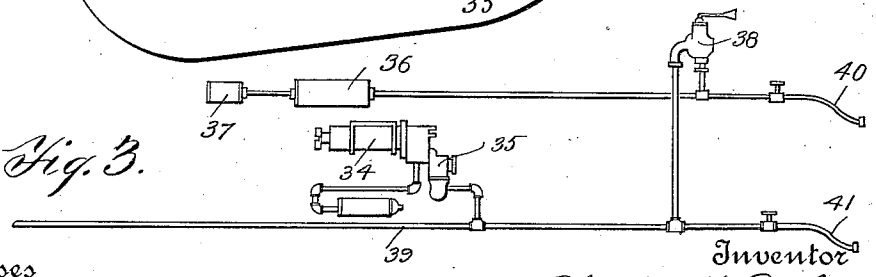

Fig. 3.

Witnesses

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SAFETY DEVICE.

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To all whom it may concern:

Be it known that I, CHARLES F. PEEL, citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Safety Devices, of which the following is a specification.

This invention relates to safety devices for electric cars where air pressure is used to operate the brakes, and the object of the invention is to provide a means through the medium of which the air pressure controlling the brakes may be utilized to make or break the electric current through which a car is operated.

Another object of the invention is to provide a means to prevent the starting of a car without proper train line pressure.

Another object of the invention is to prevent starting a car when the brakes are set.

Another object of the invention is to cut out the electric current the instant the air pressure operating the brakes is reduced through accidental or other means to an inoperative point. And still another object of the invention is to provide a means for cutting off the current in case the controller for any reason refuses to act to cut out the current.

With the above and other objects in view, I have invented the device illustrated in the accompanying drawings in which—

Figure 1 is a vertical cross sectional view of a casing containing my invention showing the same in elevation, and Fig. 2 is a view taken on the line A—A, of Fig. 1, looking down.

Like reference characters indicate like parts throughout the specification and in the views in the drawings.

The safety appliance hereinafter described will be connected to any suitable air reservoir mechanism such as is commonly employed in trains and in Fig. 3 there is shown a dual system of air conduits one being for the main line of pipes the hose of which is designated 40, and the other the train or brake pipe line. These lines of pipe conduits are in use in electric trains and the main line of pipes include the main reservoir designated 36 connected to the conventional electrically-actuated pump 37 and to the train line or brake pipe by a pipe connection carrying a rotary valve 38 known as the engineer's valve. The brake pipe line includes the auxiliary air reservoir 34. The conventional train line hose is designated 41 and to the pipe 4 communicating therewith my safety device is connected. The pressure from the main line of pipes is co-extensive with the effective length of the train and is generated by the main reservoir, but the pressure of the train line of air pipe comes from the main line and is, as understood by those skilled in the art, controlled by the motorman and from which the brakes are directly operated.

The safety device consists in a casing 1 which is secured to a motor car by means of a lug 2, and is located directly between the controller box 3, and the train line pipe 4, of the compressed air brake operating system. The feed wire 5, enters the casing 1, and connects with the contact plate 6, and the wire 7, which carries the current to the controller is connected to the contact plate 8. A spring contact member 9, mounted on the rod 10, is adapted to connect the contacts 6, and 7, to make the circuit. The rod 10, is slidably mounted in the support 11. The nuts 12, are screw-threaded to the rod 10, and are adapted to abut the spring 13, mounted on the rod 10, between said nuts and said support 11. A link 14, connects the rod 10, with the lever 15, which is mounted upon a fulcrum 16. To the short arm 17, of the lever 16, is pivoted to a link 18, which in turn is pivoted to the rod 19, which is slidable in the support 20, and the end of which passes through an opening in the casing and is provided with a head 21, having a curved portion 22, thereon, which is adapted to be engaged by the cam 23, on the controller shaft 24. One portion of the head 21, is cut away to form an abutment 25, for the member 26, which is connected to the shaft 27, by means of the arm 28, to engage the member 26.

In the casing 1, is mounted a pressure chamber 29, which is provided with a diaphragm 30, (shown on dotted lines), which is adapted to bulge out and press upon a member 31, connected to the lever 15, and thereby hold said lever in such a position that the contact member 9, abuts the two contact plates 6, and 8, when the air pressure in the main line pipe 4, which is connected to the pressure chamber 29, by means of a connecting pipe 32, is sufficient to properly operate the brakes. The spring 13, is adapted to force the connecting member 9, out of contact with the plates 6, and

8, should the air pressure be dangerously reduced, thus breaking the electric circuit and rendering the controller useless. However, should the air pressure be down at any time and it be necessary to operate the car for any purpose regardless thereof, the cam 23, on the controller shaft 24, will engage the head 21, on the arm 19, and force it back, thus operating the lever 15, which will force the arm 10, forward causing the member 9, to contact the plates 6, and 8, and thereby connect the cut-out switch with the controller; the member 22, operable by means of the shaft 27, is adapted to lock the members in the position just described.

This device will prevent starting a car or using current when the brakes are set, except to reverse, and then only to the second point where a caution spring 33, is placed to remind the motorman to hold at this point until the main fuses blow then the controller can be opened to full multiple, thus making generators of the motors and bringing the train to a stop. The current is cut out the instant conductor's valve is opened, or the bursting of pipes or hose. If the current is on and the train line pressure should leak off and not be noticed by the motorman, the current will be automatically shut off and the controller must be brought to off position before the current is cut in again and the switch will be opened every time the controller is opened until the pressure runs up to a safe point. Should the air gage be out of order the train can be run with perfect safety with my device.

Having now fully described my invention, that which I claim to be new and desire to procure by Letters Patent is:

1. In a motor control, a contact member, an arm thereon, a lever connected to said arm, a diaphragm adapted to hold said lever in a fixed position, said diaphragm being controlled by fluid pressure, a spring on said arm adapted to hold said contact member normally out of contacting position, said air pressure diaphragm adapted to overcome the action of said spring while a predetermined pressure is maintained, a cam arm attached to said lever, means on said controller by which said contact member may be operated when said diaphragm is expanded.

2. In a motor control, a contact member, an arm thereon, a lever connected to said arm, a diaphragm adapted to hold said lever in a fixed position, said diaphragm being controlled by fluid pressure, a spring on said arm adapted to hold said contact member normally out of contacting position, said air pressure diaphragm adapted to overcome the action of said spring while a predetermined pressure is maintained, a cam arm attached to said lever, means on said controller by which said contact member may be operated when said diaphragm is expanded, the contraction of said diaphragm adapted to prevent the normal operation of said contact member.

3. In a motor control a contact member, an arm thereon, a lever connected to said arm, a diaphragm adapted to hold said lever in a fixed position, said diaphragm being controlled by fluid presure, a spring on said arm adapted to hold said contact member normally out of contacting position, said air pressure diaphragm adapted to overcome the action of said spring while a predetermined pressure is maintained, a cam arm attached to said lever, means on said controller by which said contact member may be operated when said diaphragm is expanded the contraction of said diaphragm adapted to prevent the normal operation of said contact member, and means whereby said contact member may be operated when said diaphragm is contracted.

4. In a motor control, a contact member, an arm thereon, a lever connected to said arm, a diaphragm adapted to hold said lever in a fixed position, said diaphragm being controlled by fluid pressure, a spring on said arm adapted to hold said contact member normally out of contacting position, said air pressure diaphragm adapted to overcome the action of said spring while predetermined pressure is maintained, a cam arm attached to said lever, means on said controller by which said contact member may be operated when said diaphragm is contracted, means whereby a motorman will be reminded that he is operating without said determined pressure.

5. In combination with a controller and a fluid delivery, a casing at right-angles to said controller, a bottom extension to said casing, two electric contacts at the opposite walls of said extension, a bifurcated brush for engagement with said contacts, a horizontal plunger connected to said brush, a cam at the bottom of said controller, a horizontal plunger carrying a beveled arm for engagement with said cam, a lever pivoted to the ends of said plungers and fulcrumed intermediate its ends, a boss upon said lever at one side of its fulcrum, a shoulder upon the arm of said plunger, a spring embracing the first-named plunger, a diaphragm actuated from said fluid delivery to engage said boss and thereby cause said brush to engage said contacts, said cam arranged to replace the action of said diaphragm, and a manually-controlled lever engaging said shoulder after the cam has actuated the integral lever.

6. In combination a controller carrying a cam, a casing at right-angles thereto, two oppositely arranged contacts in said casing, a spring-controlled reciprocating plunger in said casing carrying a bifurcated brush for

engagement with each contact, a reciprocating plunger in said casing carrying a tongue engaged by said cam, a lever pivotally connected to each plunger and fulcrumed intermediate its ends to cause said plungers to move in opposite directions, a fluid-actuated device engaging said lever to cause said brush to have contact and to retract said tongue, said cam adapted to replace the actuation of said device when said tongue is urged forward, and means for holding said cam-actuated tongue in set position.

7. A device of the kind described comprising a controller, a casing, a cam on said controller, oppositely arranged contacts for inducing propulsion in said casing, a brush for engagement with each contact simultaneously, a fluid-controlled diaphragm, an arm engaged by said cam, means actuated by said diaphragm to throw said brush into and said arm out of engagement, said cam arranged to replace the action of said diaphragm, and engaging said arm to throw it out of operation, and manually-controlled means for holding said cam-actuated arm out of engagement.

8. In a car having a controller, two oppositely-arranged contacts controlling electric propulsion, a spring-controlled brush for engagement with said contacts, and a fluid-controlled diaphragm, the combination of a tilting lever normally holding said brush out of contact and actuated by said diaphragm to hold it in contact, and means actuating said lever when said controller is turned, to throw said brush into engagement with said contacts.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES F. PEEL.

Witnesses:
JAMES G. GILMOUR,
EDYTHE A. HASSELL.