

No. 761,990.

PATENTED JUNE 7, 1904.

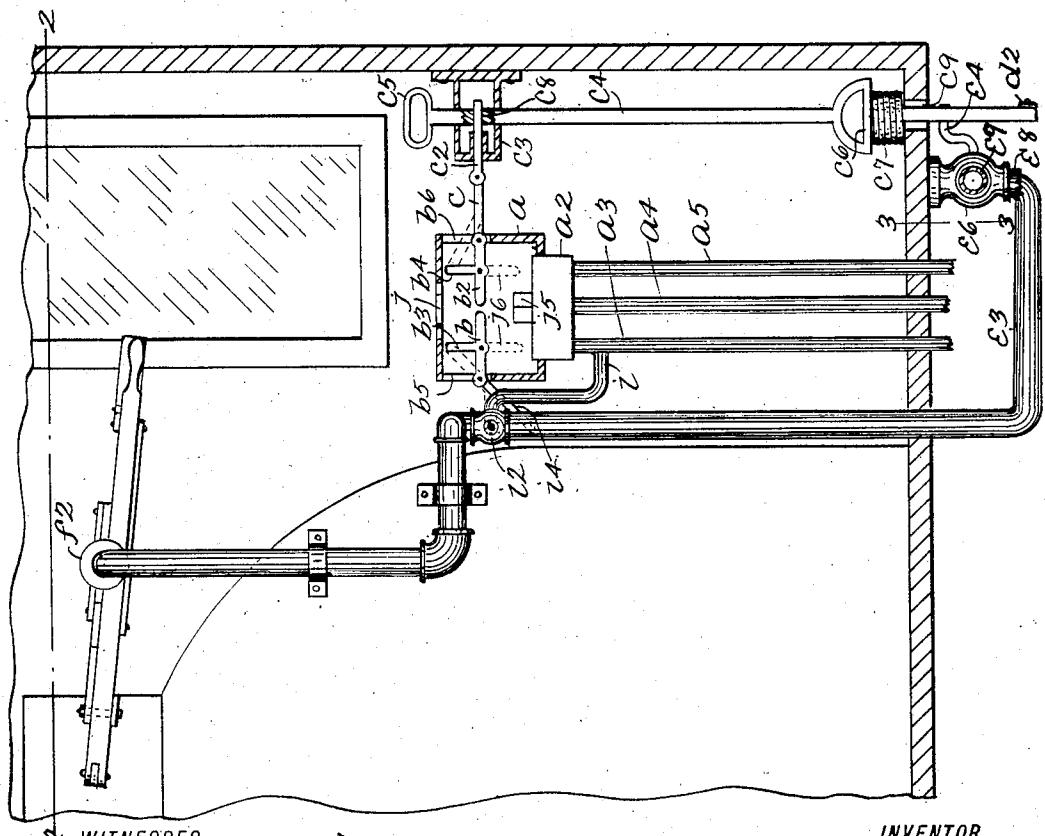
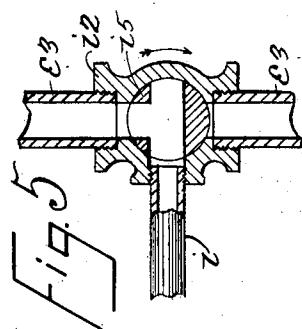
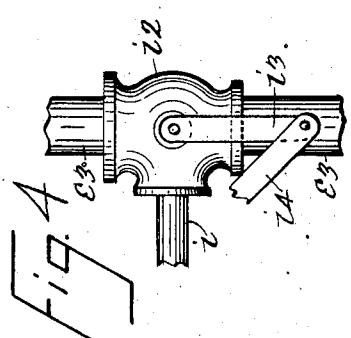
C. F. PEEL, JR.

AUTOMATIC SAFETY APPARATUS FOR LOCOMOTIVES.

APPLICATION FILED MAR. 16, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



J. C. Larson
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Fig. 1.

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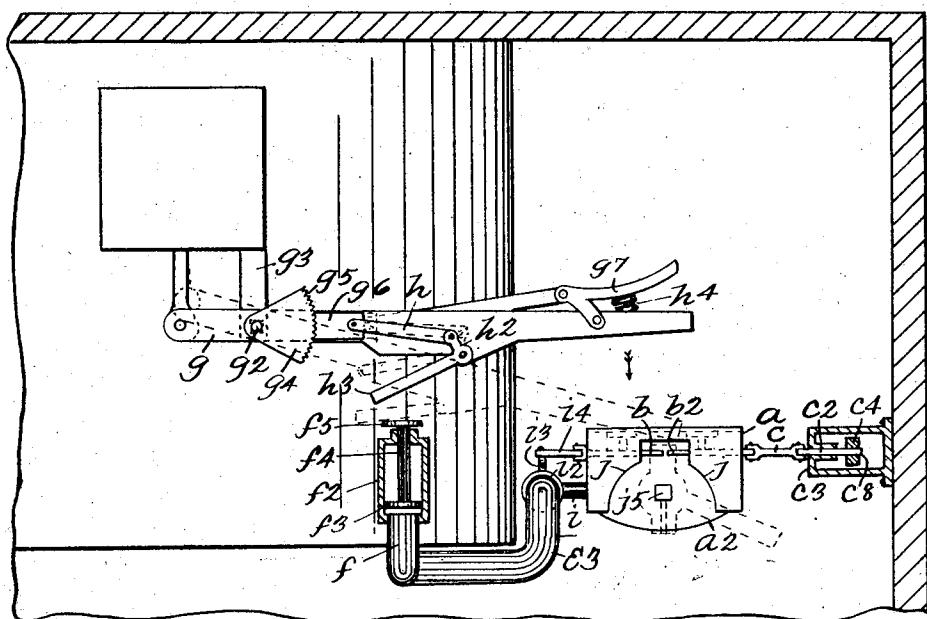
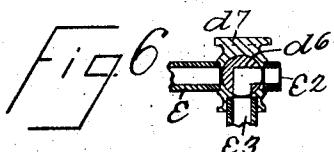
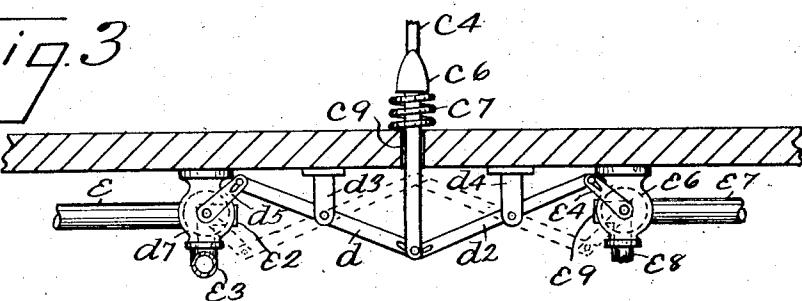


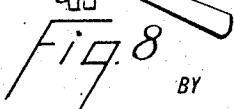
Fig. 2

Fig. 3

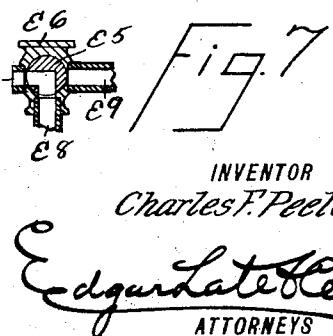


WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES F. PEEL, JR., OF NEW YORK, N. Y.

AUTOMATIC SAFETY APPARATUS FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 761,990, dated June 7, 1904.

Application filed March 16, 1903. Serial No. 147,940. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PEEL, Jr., a 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 Automatic Safety Apparatus for Locomotives, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an automatic safety apparatus for use in connection with locomotives whereby the steam in said locomotives may be automatically shut off and the air-brakes thereon applied in the event of the engineer being overcome for any cause, a further object being to provide an apparatus of the class hereinafter described and claimed whereby the locomotive may not be started by a person other than the engineer or one having the proper implement for starting the same.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a partial rear end view of a cab of a locomotive and showing my invention, said view being shown partially in section; Fig. 2, a partial plan view on the line 2 of Fig. 1; Fig. 3, a partial section on the line 3 of Fig. 1; Fig. 4, a view of a valve which I employ; Fig. 5, a vertical section thereof; Figs. 6 and 7, vertical sections of the valves shown in Fig. 3, and Fig. 8 a plan view of a handle employed in connection with my apparatus.

In the practice of my invention I provide a casing *a*, mounted on the usual air-brake controller *a* as employed at present, said air-brake controller having three pipes extending downwardly therefrom, of which the pipe *a*³ is in communication with the main air-reservoir, the pipe *a*⁴ with the open air, and the pipe *a*⁵ with the air-brakes of said locomotive. Within the casing *a* are pivotally mounted two toggle-levers *b* and *b*², provided with upwardly-extending arms *b*³ and *b*⁴, respectively, and the

outer ends of the toggle-levers *b* and *b*² preferably extend slightly beyond the ends of the casing *a*, which is provided with vertical openings *b*⁵ and *b*⁶ to provide room for the play of said toggle-levers.

Secured to the outer end of the toggle-lever *b*² is a link *c*, which is in connection with a bolt *c*², adapted to slide in a casing *c*³, secured to the side of the cab of the locomotive, and through the casing *c*³ passes a vertical rod *c*⁴, provided at its top with a handle *c*⁵ and near its bottom with a tread *c*⁶, and beneath the tread *c*⁶ and passing around the vertical rod *c*⁴ is a coil-spring *c*⁷, which operates to force said vertical rod upward. The bolt *c*² passes through an opening *c*⁸ in the vertically-movable rod *c*⁴, thereby locking the same, and the bottom of the rod *c*⁴ passes through the bottom of the cab of the locomotive, as shown at *c*⁹, and the bottom of the rod *c*⁴ is loosely connected with two levers *d* and *d*², pivoted to hangers *d*³ and *d*⁴, secured beneath the cab of the locomotive, and the lever *d* is loosely connected with a crank *d*⁵ of a valve *d*⁶ in a valve-casing *d*⁷, and the valve-casing *d*⁷ is provided with a pipe *e*, connecting said casing with the main air-reservoir and with a port or opening *e*², leading into the outer air, and a pipe *e*³, which extends upwardly into the cab of the locomotive. The lever *d*² is connected in a similar manner with a crank *e*⁴ of a valve *e*⁵, mounted in a valve-casing *e*⁶, which is provided with a pipe *e*⁷, leading to the air-reservoir, a pipe *e*⁸, leading to the air-brakes, and a port or opening *e*⁹ into the outer air, and as will be apparent when the vertical rod *c*⁴ is permitted to move vertically, the levers *d* and *d*², cranks *d*⁵ and *e*⁴, and valves *d*⁶ and *e*⁵ are operated.

The pipe *e*³ passes up into the cab of the locomotive, as hereinbefore stated, and passes in front of and above the boiler of said locomotive, preferably being secured thereto, and the pipe *e*³ is provided at its top with a forwardly-directed horizontal member *f*, at the forward end of which is a piston-chamber *f*², in which is mounted a piston *f*³, to which is secured a piston-rod *f*⁴, and at the outer end of which is a plate *f*⁵.

Above the boiler and in communication with a steam-chest is the usual throttle *g*,

which is pivoted at g^2 , and the pivot-pin g^2 carries on its end a segmental member g^4 , provided with teeth on its outer edge, as shown at g^5 , and by means of this construction the 5 segmental member g^4 is rigidly secured to the plate g^3 , while the throttle g is free to move thereon. Slidably mounted on the throttle is a block g^6 , which is of the usual construction and is provided with teeth on the side adjacent to the segmental member g^4 , said teeth being adapted to engage the teeth on said segmental member, and connected with the sliding block g^6 is the usual toggle-lever arrangement, as shown at g^7 .

15 In addition to the usual throttle, as just described, I connect a link h with the sliding block g^6 , which is connected with a toggle-lever h^2 , the outer end of which, h^3 , passes in front of and in the same horizontal plane 20 as the plate f^5 of the piston-rod f^4 , and it will be apparent that when the toggle-lever g^7 is operated by the hand of the engineer the sliding block g^6 is withdrawn from the segmental member g^4 and the throttle may be 25 operated, and on releasing the toggle-lever g^7 the spring h^4 forces the sliding block g^6 into contact with the segmental portion g^4 , and said throttle is locked thereby, and if pressure be brought to bear on the outer end 30 h^3 of the toggle-lever h^2 said sliding block g^6 will be similarly withdrawn from the segmental portion g^4 , and upon the release of the toggle-lever h^2 the spring h^4 again forces the sliding block g^6 into contact with the segmental portion g^4 , and thereby locks said 35 throttle.

In Fig. 1 of the drawings I have shown a supplemental pipe i , which connects the main-reservoir pipe a^3 of the air-brake controller with a valve-casing i^2 in the pipe e^3 , and connected with the crank i^3 of the valve-casing i^2 is a link i^4 , which is connected with the outer end of the toggle-lever b in the casing a , and the valve-casing i^2 is provided 40 with a three-way valve i^5 , which in the position of the parts shown connects the supplemental pipe i with the upper portion of the pipe e^3 , this position of the parts being the normal position when the locomotive is not 45 in use.

As shown in Fig. 2, the casing a is provided with an opening j in the top thereof through which a handle j^2 is adapted to be passed, said handle j^2 being provided with a forwardly-directed member j^3 and an opening j^4 , adapted to engage the square shank j^5 of the air-brake controller a^2 , and, as shown in dotted lines, when the handle j^2 is about to be placed 50 in position the forwardly-directed member a^3 projects over the inner ends of the toggle-levers b and b^2 , and when said handle j^2 is forced into its lowest position the forwardly-directed member j^3 of said handle forces the inner ends of the toggle-levers downwardly 55 and into the position shown at j^6 in Fig. 1,

and this operation withdraws the bolt c^2 from the opening c^3 in the vertically-movable rod c^4 and also operates the valve i^5 and places the lower and upper ends of the pipe e^3 in communication with each other, and thereby shutting off the supplemental pipe i .

In the position of the parts shown in Figs. 3, 6, and 7, when the vertical rod c^4 is depressed to its lowest position the pipe e^3 is in communication with the open air and the pipe e^3 of the air-brakes of said locomotive is in communication with the main-reservoir pipe e^1 and the brakes of the locomotive are released, and when the bolt c^2 is withdrawn from the vertical rod c^4 and said vertical rod is forced upwardly by the spring c^5 the valve d^6 is operated and places the pipe e^3 in communication with the main-reservoir pipe e^1 , and the valve e^5 being operated puts the pipe e^3 from the air-brakes into communication 80 with the exhaust-port e^9 , and the air being free to escape therethrough the brakes are set, and if at this time the handle j^2 be in position and the toggle-levers b and b^2 be forced into the position as shown at j^6 the valve i^5 85 will communicate with the upper and lower portions of the pipe e^3 , and as the main-reservoir pipe e^1 is in communication with the pipe e^3 the air rushes therethrough and up into the piston-chamber f^2 , driving the piston f^3 , rod f^4 , and plate f^5 thereon forwardly, and said plate, striking the outer end h^3 of the toggle-lever h^2 , withdraws the sliding block g^6 from the segmental member g^4 and forces the throttle forwardly, thereby shutting off 90 the steam. By means of this construction it will be seen that when the engineer places his handle j^2 in position he operates the valve i^5 , which thereby connects the upper and lower portions of the pipe e^3 and also withdraws the bolt c^2 from the vertically-movable rod c^4 , and his right hand and right foot serve to keep the vertically-movable rod c^4 in a depressed position, thereby causing the pipe e^3 to be in communication with the open air, 95 and the air-brake pipe e^3 being in communication with the main-reservoir pipe e^1 and the brakes not being set the locomotive may be started by operating the throttle g , and the engineer must keep downward pressure on the 100 rod c^4 while the locomotive is in operation, for if he permits said rod to rise the air-brakes are automatically set, and, as hereinbefore described, the compressed air is free to pass through the pipe e^3 into the piston-chamber f^2 and drive the plate f^5 forwardly, 105 thereby operating the throttle g and shutting off the steam.

If any person other than the engineer while the locomotive is at rest should interfere with the toggle-levers b or b^2 , the same results would follow, and if he only interfered with the toggle-lever b the compressed air would rush from the supplemental pipe i and into the piston-chamber f^2 , and the plate f^5 would be 110 115 120 125 130

- forced forwardly, so that the throttle g could not be operated, and in this manner serves as a protection against curiously-inclined people or meddlesome boys, as a locomotive cannot be started without the handle f^2 , for the reason that the air-brake pipe a^5 is in communication with the open-air pipe a^4 , and the compressed air being thereby exhausted the brakes are set, and if a person other than the engineer should depress the toggle-lever b the air would rush into the piston-chamber, drive out the plate f^5 , and because of the compressed air in the piston-chamber the throttle could not be operated.
- 15 It will be seen from this construction that all danger of accident resulting from the engineer's being overcome for any reason is avoided, as the moment he releases pressure on the vertically-movable rod c^4 the train is brought to a standstill, and, furthermore, the locomotive cannot be started by any one other than the engineer or one having the necessary handle f^2 wherewith to accomplish the same.
- Having fully described my invention, what 25 I claim as new, and desire to secure by Letters Patent, is —
1. In combination with a locomotive provided with air-brakes, an automatic safety apparatus comprising a piston-chamber adjacent to the throttle of said locomotive, a piston therein, a piston-rod and plate thereon carried by said piston, air-pipes connecting said piston-chamber with the main reservoir of said air-brakes, a vertically-spring-operated rod in operative connection with said air-brakes and means for operating said vertically-movable rod and said piston, substantially as shown and described.
 2. In an apparatus of the class described 40 comprising a spring-operated vertically-movable rod in operative connection with the air-brakes of a locomotive, a plurality of valves in the main reservoir-pipes of said air-brakes, a crank secured to each of said valves, a lever connecting each of said cranks with said ver-

tically-movable rod and means for operating said vertically-movable rod, levers, cranks and valves, substantially as shown and described.

3. In combination with a safety device for locomotives of the class described, a throttle 50 in communication with the steam-supply of said locomotive comprising a pivot-support, a segmental toothed plate secured thereon, said throttle operating on said pivot, a toothed sliding block in operation with said segmental plate and a spring-operated toggle-lever in operative connection with said sliding block; a supplemental toggle-lever mounted on said throttle and in operative connection with said sliding block, and means for operating said 60 supplemental toggle-lever, substantially as shown and described.

4. In combination with a locomotive provided with air-brakes, an automatic safety apparatus comprising a piston-chamber adjacent 65 to the throttle of said locomotive, a piston therein, a piston-rod and plate thereon carried by said piston, air-pipes connecting said piston-chamber with the main reservoir of said air-brakes, a vertically-movable spring-operated rod in operative connection with said air-brakes, a casing adjacent to said vertically-movable rod and secured above an air-brake controller of the usual construction, toggle-levers pivotally mounted in said casing, a link 75 connecting one of said toggle-levers with a valve in said air-pipes, a link connecting the other of said toggle-levers with a bolt passing through said vertically-movable rod and means for operating said toggle-levers, substantially 80 as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 14th day of March, 1903.

CHARLES F. PEEL, JR.

Witnesses:

J. C. LARSEN,
T. A. STEWART.