

No. 772,393.

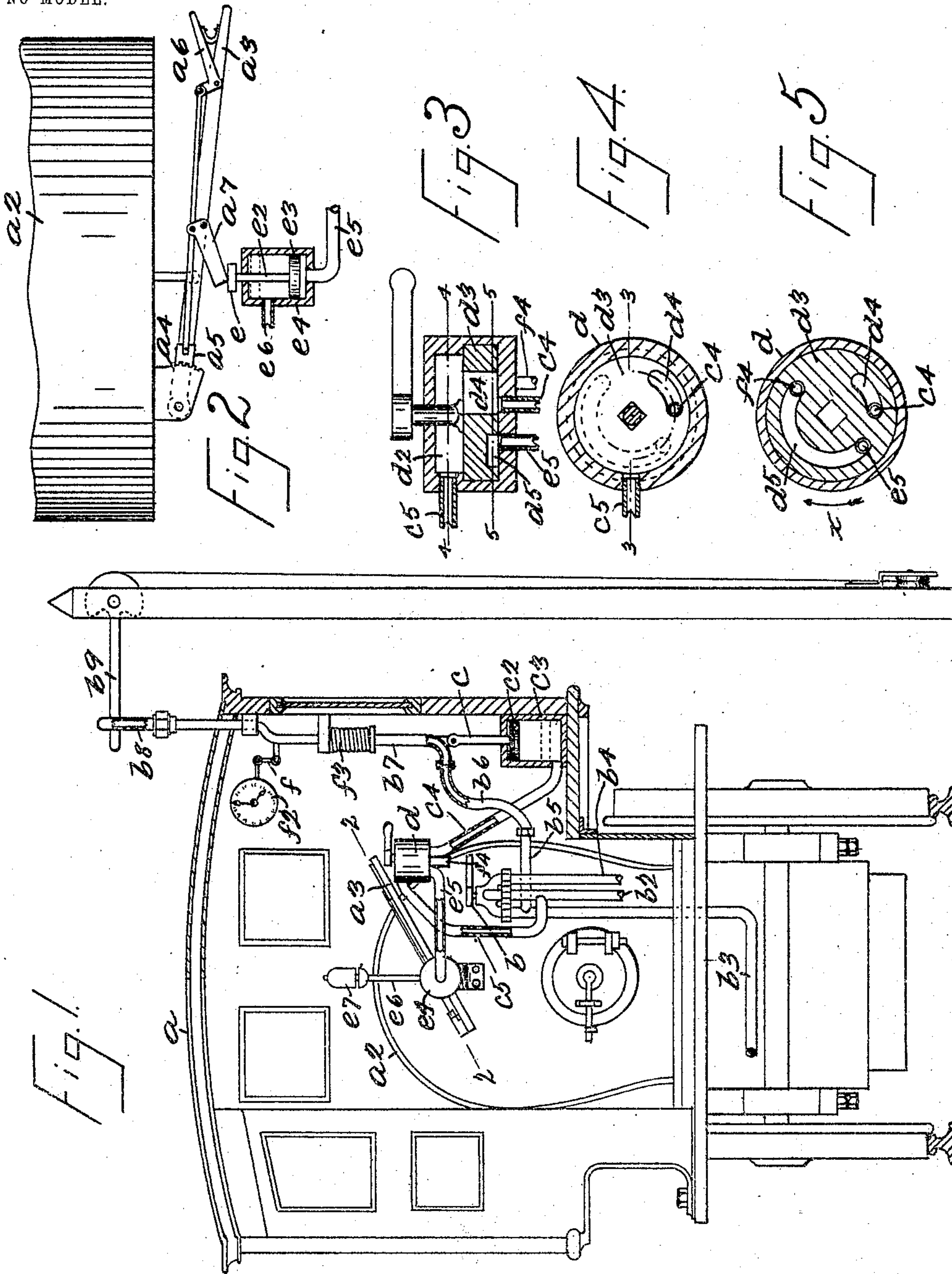
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SAFETY APPARATUS FOR LOCOMOTIVES.

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NO MODEL.



WITNESSES

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SAFETY APPARATUS FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 772,393, dated October 18, 1904.

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To all whom it may concern:

Be it known that I, JOHN BARBERIE, a citizen of the United States of America, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in 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 a safety apparatus for locomotives by means of which the train is automatically stopped if the engineer fails to see a danger-signal, but which will allow him to pass such a signal if he desires to, the said apparatus, however, shutting off the steam-supply to the engine and giving audible or visual notice of such an operation on the part of the engineer, a further object being to provide such an apparatus in which all the parts must be in their operative positions before the locomotive can be started.

My invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of the apparatus are indicated by suitable reference characters in each of the views, and in which—

Figure 1 is a rear view of a locomotive-cab provided with my apparatus in operative position. Fig. 2 is a plan view on the line 2 2 of Fig. 1 of that part of my apparatus used with the throttle of the engine. Fig. 3 is a sectional view of a three-way valve which I employ, taken on the line 3 3 of Fig. 4. Fig. 4 is a horizontal section on the line 4 4 of Fig. 3, and Fig. 5 is a similar view taken on the line 5 5 of Fig. 3.

In Fig. 1 of the drawings I have shown a locomotive-cab *a*, in which is the usual boiler *a*² and throttle *a*³ therefor, said throttle being provided with a toothed segment *a*⁴, a spring-operated block *a*⁵ in operative connection therewith and operated by means of a grip *a*⁶, and said block has also in connection therewith a supplemental lever *a*⁷, which also releases the block *a*⁵ from the segment-gear *a*⁴.

Within the cab *a* is also mounted the usual air-brake valve *b* and a main-reservoir pipe *b*², train-line pipe *b*³, and exhaust-pipe *b*⁴, connected therewith, and connected with the train-line pipe *b*³ is a branch *b*⁵, with which is connected a flexible hose or tube *b*⁶, the other end of which is connected with a vertically-movable pipe *b*⁷, projecting beyond the cab *a*, and the pipe *b*⁷ is provided with a frangible cap *b*⁸, air-tight and adapted to be broken by a semaphore-arm *b*⁹, placed alongside the tracks upon which the locomotive passes.

Adjacent to the connection between the hose *b*⁶ and vertical pipe *b*⁷ is a vertical rod *c*, hinged to said pipe *b*⁷, and on the lower end of this rod *c* is a piston *c*², operating in a cylinder *c*³ and to the bottom of which is connected a pipe *c*⁴, the other end of which is in communication with a valve *d*, placed adjacent to the brake-valve *b*, and also in communication with the valve *d* is a pipe *c*⁵, which connects the same with the main-reservoir pipe of the air-brakes.

In the same plane as the lever *a*⁷, to the rear thereof and adapted to operate thereon, is a plate *e*, connected to a rod *e*², to the other end of which is connected a piston *e*³, operating in a cylinder *e*⁴, said cylinder *e*⁴ being provided at the rear thereof with a pipe *e*⁵, which also communicates with the valve *d*, and to the rear of the outward position of the piston *e*³ is a pipe *e*⁶, as indicated in Fig. 2, and to the end of which is connected a whistle *e*⁷, the object of which will be hereinafter explained.

Connected by a link *f* to the vertical pipe *b*⁷ is a time-recorder *f*² of any construction as at present employed and the reason for which is to indicate the time at which the vertical pipe *b*⁷ is lowered from its normal position, and also connected with this pipe *b*⁷ is a coil-spring *f*³, which serves to force the same down.

The valve *d* comprises a casing within which is a chamber *d*² and a valve-block *d*³, provided with two segmental grooves *d*⁴ and *d*⁵, of which the groove *d*⁴ is the shorter and passes entirely through the block *d*³, while the longer groove *d*⁵ merely forms a recess

in said block, and beneath the block d^3 are three pipes e^5 , c^4 , and f^4 , the first two of which have been already described and the last one of which, f^4 , serves as an exhaust and may be continued through the floor of the cab, if desired. In the position of the block d^3 , as shown in the drawings, the forward edge of the groove d^4 registers with the pipe c^4 , while the rearward end of the groove d^5 registers with the pipe e^5 and the forward end thereof with the exhaust-pipe f^4 , and it will be seen that the pipe e^5 is open to the air when the block d^3 is in this position, while the pipe c^4 , being in communication with the chamber d^2 and with a pipe c^5 , which is in communication with the main-reservoir pipe b^2 , is filled with air under pressure. When the valve-block d^3 is moved from its normal position in the direction of the arrow x , the groove d^4 maintains the communication between the chamber d^2 and the pipe c^4 until the forward end of said groove reaches the pipe e^5 , at which time this pipe is placed in communication with the main reservoir-pipe b^2 and is filled with air under pressure thereby, and the groove d^5 , having passed out of communication with the pipe e^5 , is turned around until the forward end thereof registers with the pipe c^4 , and this pipe is then in communication with the outer air through the pipe f^4 and is thereby exhausted; but the groove d^5 having farther to travel to accomplish this result the pipe e^5 is filled with air under pressure before the pipe c^4 is exhausted. As the pipe c^4 leads to the cylinder c^3 when in the normal position, the valve d permits air under pressure to enter said cylinder, and the piston c^2 is forced upwardly, carrying the pipe b^7 and cap b^8 with it and in operative position for contact with the semaphore-arm b^9 , and the parts remain in this position as long as the valve d is not operated, and the pipe e^5 being in communication with the cylinder c^4 and open to the air through the groove d^5 said cylinder is exhausted of air under pressure, and the throttle being drawn back by hand the engine is free to start, and, as will be seen, the usual engineer's brake-valve is not affected in any manner by my apparatus, but may be used at will, as usual. If the engineer should not see a set semaphore-arm b^9 and the engine be under way, said semaphore-arm on striking the frangible cap b^8 breaks the same and the compressed air from the train-line pipe is free to escape and the brakes are set. If, on the other hand, the engineer does see the set signal and for any reason decides to pass the same, he operates the valve d , as previously described, and the compressed air enters the pipe e^5 and cylinder c^4 , forces out the plate e , which releases the block a^5 from the segment-gear a^4 and closes the throttle, and this shuts off the steam-supply to the engine, and when the piston c^2 is in its outermost position the compressed air enters the supple-

mental pipe e^6 and blows the whistle e^7 , thereby warning the fireman that the engineer is passing a signal and puts him on his guard, and the compressed air in the cylinder c^3 is free to escape upon the full movement of the valve d , and the pipe b^7 and cap b^8 thereon are forced down to the lowest position by the spring f^3 , this movement being indicated on the time-recorder f^2 , and when the cap b^8 is so lowered the semaphore-arm is above the same and the said cap is not broken. When the engineer returns the valve d to its normal position, the pipe e^5 and cylinder c^4 are exhausted through the groove d^4 and the throttle may be again drawn out, and at the same time this is being accomplished the air under pressure enters the cylinder c^3 and the pipe b^7 and cap b^8 are returned to their outermost position and are ready for another operation.

It will be apparent that the rapidity with which the brakes are set upon the removal of the cap b^8 depends upon the diameter of the pipe b^7 , which may be larger or smaller than the train-line pipe b^3 , thereby emptying the same in a greater or less time, and the pipe b^7 may be carried through the side or the bottom of the cab instead of through the top, as shown, and may be operated by steam instead of compressed air, as may also the piston c^2 , and instead of the spring f^3 weights may be employed to force the same downwardly. It will therefore be seen that if the engineer lowers the cap b^8 from its operative position he closes and locks the throttle, signals the fireman, and operates the time-recorder, and if he does not so operate the parts the cap b^8 is broken when in contact with a set semaphore-arm or similar device, and the brakes being thereby set the train is stopped, and another cap being placed in position the parts are again ready for another operation.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A safety apparatus for locomotives, comprising a pipe in direct communication with the air-brake pipes of said locomotive, a closure device on the top thereof adapted to be operated externally of said locomotive and means for placing said pipe and closure device into and out of operative position, substantially as and for the purpose specified.

2. A safety apparatus for locomotives, comprising a pipe in direct communication with the air-brake pipes of said locomotive, a closure device on the outer end of said pipe, devices for moving said pipe and closure device into and out of operative position and external means for engaging said closure device, substantially as and for the purpose specified.

3. A safety apparatus for locomotives, comprising a pipe in direct communication with the air-brake pipes of the locomotive, a closure device on the outer end of said pipe, de-

VICES for moving said pipe and closure device into and out of operative position, said moving devices operating also to shut off the steam-supply of said locomotive when said pipe and closure device are out of operative position and means for operating said closure device; substantially as and for the purpose specified.

4. In an apparatus of the class described, a pipe in direct communication with the train-line air-pipe, a closure device on the outer end of said pipe, means connected with the air or steam supply of said locomotive for placing said closure device into a position for engagement with a semaphore-arm and a spring for returning said closure device to an inoperative position when desired, substantially as and for the purpose specified.

5. In an apparatus of the class described, a main-reservoir air-pipe, a train-line pipe, a closure device communicating with said train-line pipe, a cylinder, and piston therein for operating said closure device, in communication with said main-reservoir pipe and means for closing said last-named communication, substantially as and for the purpose specified.

6. In an apparatus of the class described, a member carried by a locomotive and in operative connection with the air-brakes thereof, external devices for operating said member and thereby set said brakes, means for passing said devices without setting said brakes, said means, when operated, serving also to close the motive power of said locomotive, substantially as and for the purpose specified.

7. In an apparatus of the class described, a main-reservoir pipe, a train-line pipe, a closure device in direct communication with said train-line pipe and adapted to be externally operated, a piston and cylinder for placing said closure device into operative position, a piston and cylinder for closing the throttle of a locomotive on which the apparatus is mounted, and a valve communicating said main-reservoir pipe with one or the other of said cylinders, alternately, substantially as and for the purpose specified.

8. In an apparatus of the class described, a main-reservoir pipe, a train-line pipe, a closure device in direct communication with said train-line pipe and adapted to be externally operated to open said train-line pipe to the outer air, means for moving said closure device out of operative position and a whistle adapted to be sounded when said last-named

means are operated, substantially as and for the purpose specified.

9. In an apparatus of the class described, a closure device in direct communication with the air-brakes of a locomotive, means for moving said closure device out of operative position, said means being adapted to shut off the motive power, when operated, and a time-recorder adapted to register the operation of said last-named means, substantially as and for the purpose specified.

10. In an apparatus of the class described, a valve, comprising a casing, a chamber in the top thereof, a rotatable block beneath said chamber, a segmental slot passing through said block, a segmental recess in the bottom of said block, a feed-pipe in communication with said chamber, a service-pipe normally in communication with said chamber, through said segmental slot, an exhaust-pipe and a supplemental service-pipe normally in communication with each other, through said segmental recess and the rotation of said block being adapted to communicate said first-named service-pipe with said exhaust-pipe through said segmental recess and to communicate said supplemental service-pipe with said chamber through said segmental slot, substantially as shown and described.

11. In a locomotive comprising the usual air-brakes, air-supply pipes and throttle, a frangible member in communication with said pipes, devices for moving said member into and out of operative position and means for closing and locking said throttle when said member is moved out of its operative position, substantially as shown and described.

12. In a locomotive comprising the usual air-brakes, air-supply pipes and throttle, a frangible member in communication with said pipes, devices for moving said frangible member into and out of operative position, means for closing and locking said throttle when said member is moved out of its operative position, and means for releasing said throttle when said member is returned to its operative position, substantially 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 5th day of March, 1904.

JOHN BARBERIE.

Witnesses:

JOSEPH R. DUNN,
EMANUEL H. TUSIC.