

(No Model.)

3 Sheets—Sheet 1.

E. G. SHORTT.

THROTTLE ACTUATING MECHANISM FOR LOCOMOTIVES.

No. 530,905.

Patented Dec. 11, 1894.

Fig. 1

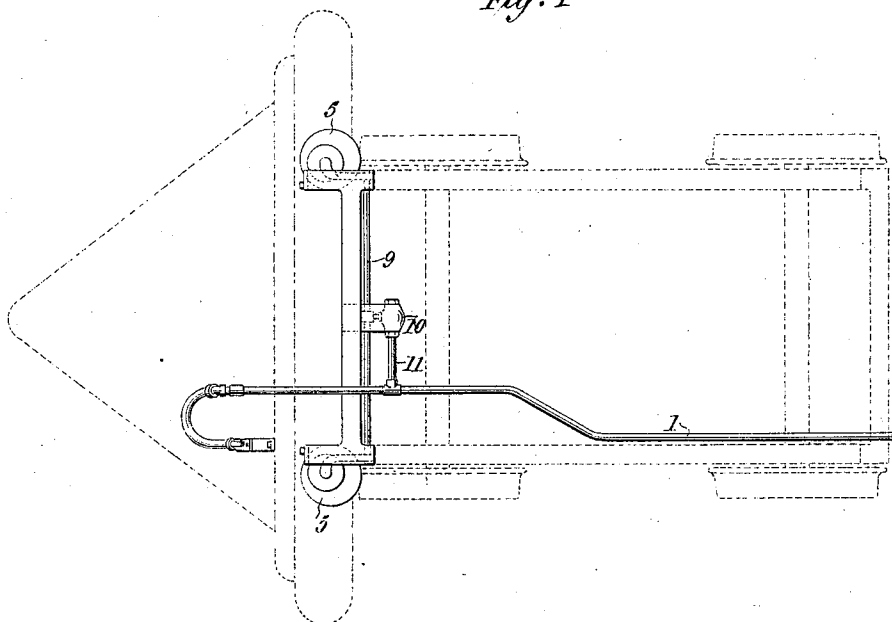
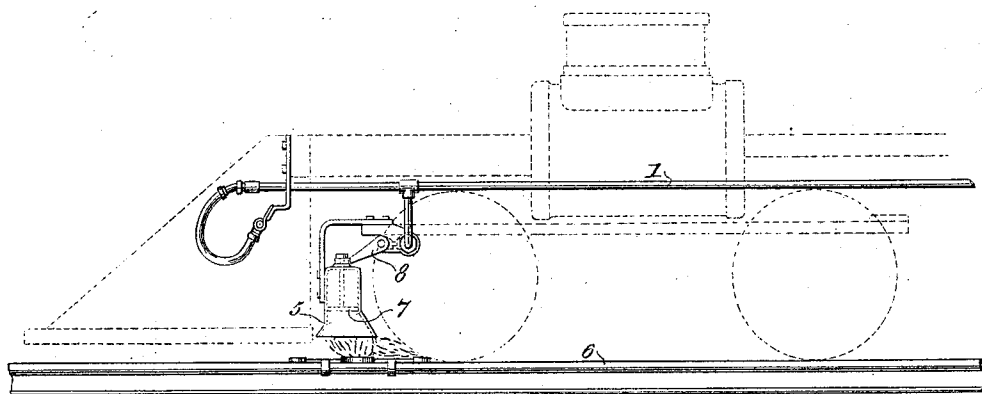


Fig. 2



Witnesses

Raphael Netter
Ralt. F. Gaylord

Edward G. Shortt, Inventor

By his Attorneys

Wmcan & Page

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Fig. 3

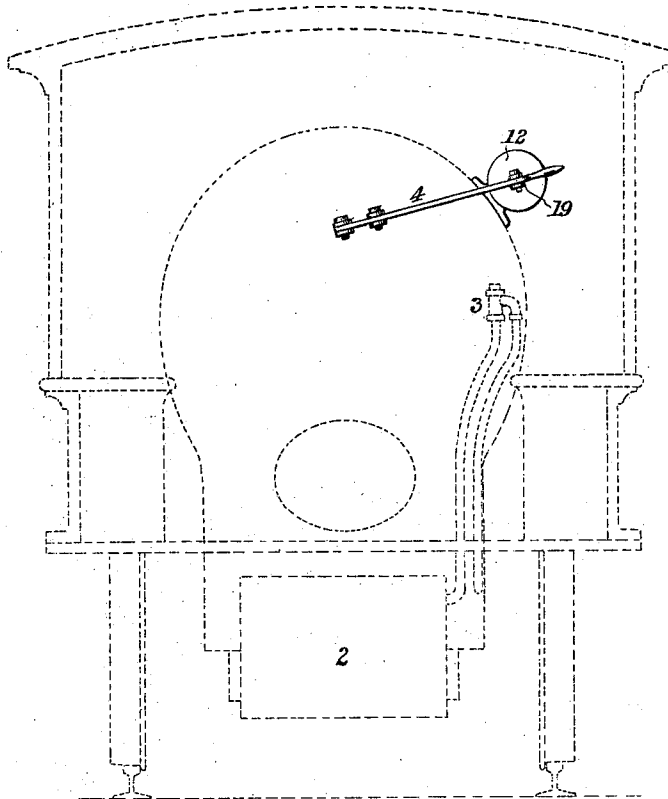
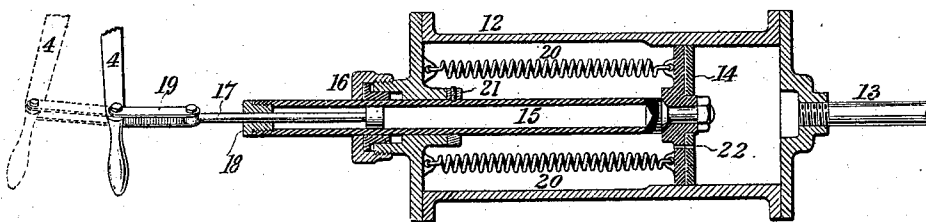


Fig. 4.



Witnesses

Raphael Netter
Robt. F. Gaylord

Edward G. Shortt Inventor

By his Attorneys

is Attorneys
Suncan & Page

(No Model.)

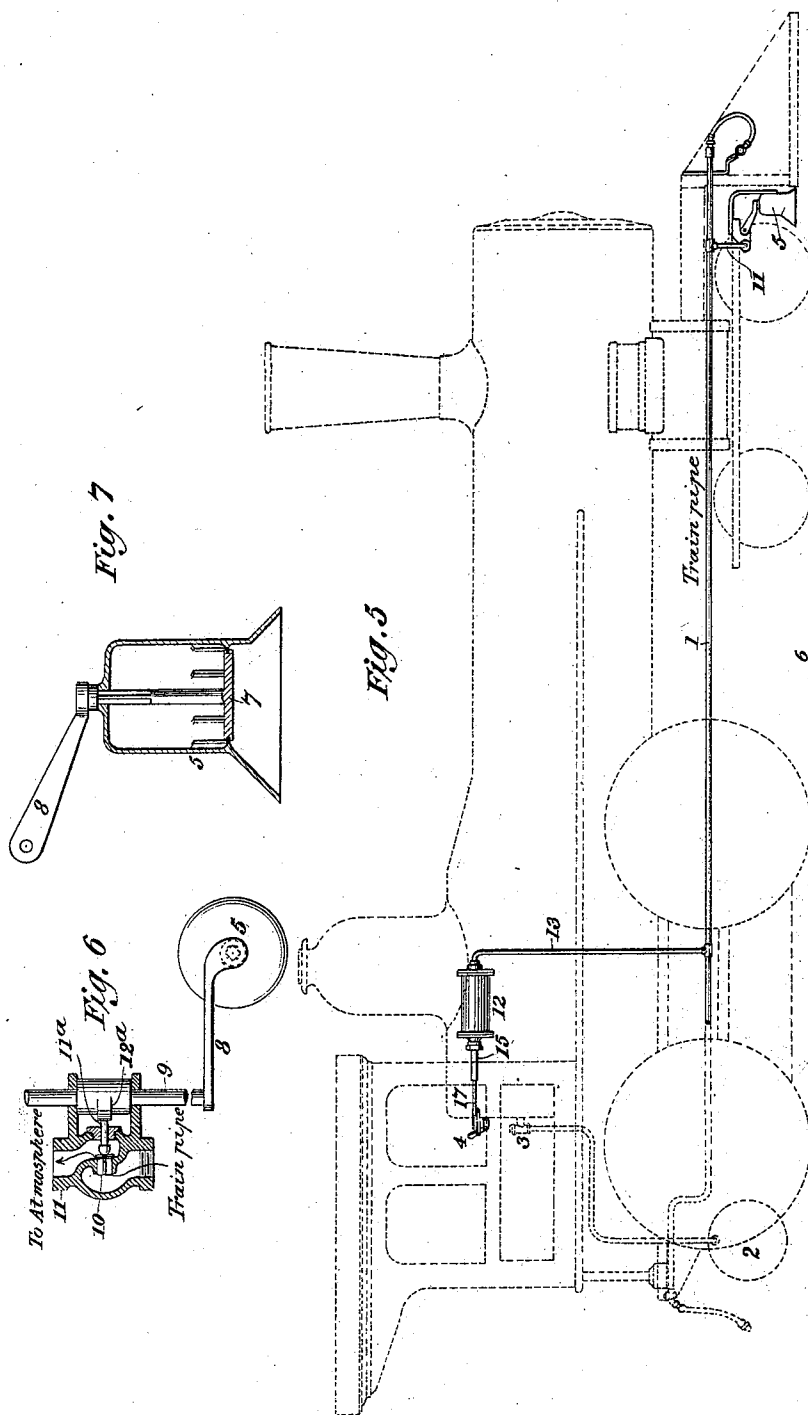
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Patented Dec. 11, 1894.



Witnesses :

Robert F. Gayford
James E. Catlow

Inventor

By his Attorneys *Edward G. Shortt*
Sumner & Page

UNITED STATES PATENT OFFICE.

EDWARD G. SHORTT, OF CARTHAGE, ASSIGNOR TO CHARLES GOODWIN EMERY, TRUSTEE, OF NEW YORK, N. Y.

THROTTLE-ACTUATING MECHANISM FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 530,905, dated December 11, 1894.

Application filed April 6, 1893. Serial No. 469,266. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. SHORTT, a citizen of the United States, residing at Carthage, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Throttle-Actuating Mechanism for Locomotives, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

This invention relates to mechanism and appliances arranged and operating to stop a locomotive or similar railroad motor, by automatically cutting off the source of power to its engine or working parts, and this independently of the engineer or person controlling or in charge of the same.

Specifically speaking, one object of the invention, and the essential one, is to provide means whereby a person not on the locomotive may cause to be brought into action mechanism on the locomotive that shall close the throttle valve or otherwise cut off the steam supply to the cylinders, and thus stop or tend to stop the advance of the locomotive; that is to say, it is desirable that a signal or switch man, or other person designated to direct the movement of a train, may have it in his power to stop the train, particularly in cases where visual signals cannot be successfully used or fail of being noticed by the engineer or other of the train men, and in cases where the safety of the train may depend upon a quicker stop than could be effected by first signaling the engineer and by his then properly operating the throttle and air-brake mechanism.

The invention consists of mechanism borne on the locomotive and adapted at the proper time to close the throttle or other power controlling device of the locomotive, which mechanism is constructed and arranged to be brought into operation by the explosion of a torpedo attached to the track or track rails and exploded by the advance of the locomotive. It is also designed that this mechanism may be operated, to close the throttle valve, by the full or emergency application of the fluid-brake mechanism of the locomotive or train.

More particularly, the invention consists of a mechanism operated by compressed air or

other fluid under pressure, this mechanism being connected with and adapted to close the throttle of the locomotive upon a proper increase or decrease of the fluid pressure.

Referring to the drawings forming a part of this specification, Figure 1 is a plan view in dotted outlines of the front end of a locomotive, the same being provided with my safety mechanism; this view showing that portion of the safety mechanism that extends to and is located adjacent to the front wheels of the forward truck of the locomotive. Fig. 2 is an elevation view of the same parts. Fig. 3 is a similar view of the rear of the cab of a locomotive, showing the throttle lever and the throttle-actuating cylinder of my mechanism. Fig. 4 is an enlarged view in central longitudinal section of such cylinder and its connected parts. Fig. 5 is an elevation side view of a locomotive, showing in full lines the general features of invention. Fig. 6 is a detailed plan view of the train pipe exhaust-valve mechanism. Fig. 7 is a vertical section of the valve-actuating mechanism.

Referring to the views in detail, 1 represents the train pipe of an air-brake mechanism, or a pipe connected with any suitable source of fluid or like pressure, but for the purposes of this description it is to be considered as the train pipe of an air-brake mechanism acting to apply the brakes by a reduction of pressure in the train pipe.

2 is the air reservoir of the air-brake mechanism. 3 is the engineer's air-brake valve.

4 is the lever of the throttle valve which controls admission of steam to the cylinders of the locomotive.

5 represents two bells or hollow bell-shaped receivers, arranged with their open ends or mouths just above the rails of the tracks. Within these bells are the vertical movable pistons 7, the rods of which are connected by rock arms 8 with the rock shaft 9, hung in suitable bearings on the frame of the locomotive or on the truck frame.

10 is a valve located in a branch 11 of the train pipe, which valve is held to its seat, closing the train pipe, by the plunger 11^a which rests upon the cam 12^a on the rock shaft, the position of these parts as shown being those of normal conditions, and when

the pistons in the explosion bells are down or near the mouths of the same, as seen in Fig. 7. When either of the forward wheels of the locomotive run upon a torpedo fixed to one of the rails, the explosion of the torpedo will take place and the effects thereof will be mainly felt beneath the corresponding bell. The concussion will force the piston upwardly, thus lifting the outer end of the arm 8 and thereby rotating the cam shaft 9, which frees the valve plunger 11^a and permits the valve, under train-pipe pressure, to leave its seat and open the pipe to atmospheric exhaust.

12 is a cylinder mounted upon the boiler of the locomotive or upon other suitable support and positioned adjacent to the free end of the throttle lever 4. This cylinder is at one end connected by pipe 13 with the train pipe 1 of the air-brake system. Within this cylinder is located piston 14, the rod 15 of which is a hollow tube having an air-tight bearing 16, in one end of the cylinder. Within this hollow piston rod is located the headed stem 17 which passes loosely through a plug 18 in the outer end of the piston rod. This stem is attached by link 19 to the handle end of the throttle lever.

The throttle lever is shown by the full lines of Fig. 4 as at its closed position, or in that position indicating that the steam is cut off from the engine cylinders, and the dotted lines of this figure show the lever in its running position, or in that position indicating that steam is being admitted to the engine cylinders. Springs 20, attached to the piston 14 and to the opposite end of the cylinder, act to hold the piston in normal position, as shown, the collar 21 on the piston rod preventing the piston moving farther toward the left-hand end of the cylinder; also these springs serve to return the piston to normal position after it has been forced to the right hand of the cylinder. A small duct or perforation 22 pierces the piston, this being of such size as to permit a somewhat slow feed of air from in front of to behind the piston.

It will now be plain, that under normal conditions the throttle piston will not be acted upon to move the throttle. While the piston is thus in its normal condition, the throttle may be moved in and out freely, the stem 17 connecting it with the piston rod sliding freely in the latter. Assuming the throttle to be in running position, and that the locomotive encounters and explode a torpedo fixed to one of the rails, then the force of such explosion will act upon the valve mechanism at the front of the locomotive and cause the train pipe to be opened, thus, in the ordinary air-brake system, effecting the emergency application of the train brakes. At the same time, the exhaust of air from the train pipe will suddenly lower the pressure upon the right-hand side of the throttle piston, whereupon, by the expansion of the air upon the other side of this piston, the piston will be driven to the right-hand end of the cylinder, causing the piston

rod to engage the throttle lever stem and draw the lever to a closed position, thus cutting off the steam from the cylinders of the locomotive. Immediately following this action, the air in the left-hand end of the throttle cylinder will escape through the piston, and in a short time the piston, under the stress of its springs, will be drawn back to normal position, thus freeing its hold on the throttle lever and leaving the latter in condition to be operated by hand. It will also appear, that, upon making the emergency application of the air-brakes, the throttle valve will be closed simultaneously with effecting such application, should the lever at such time be in the running position. In like manner, the throttle lever will be closed, upon the train pipe being ruptured or otherwise opened suddenly to the exterior atmosphere.

I prefer to operate the throttle piston by pressure derived from an air-brake system. This, however, is not an essential of the invention, since the mechanism to be operated upon by the explosion of the torpedo may control or bring into action other fluid pressure designed to operate such piston; nor is the special form of devices for the torpedo to act upon essential to the invention, as any suitable mechanism may be employed that is adapted to properly receive the force of an explosion and thereby operate the air mechanism controlling the steam valves.

What is claimed as new is—

1. In combination with the throttle lever of a locomotive or the mechanism whereby the valve supplying the cylinders is operated, fluid-pressure apparatus connected with said lever and adapted to operate the same, and mechanism controlling said fluid pressure apparatus and operating by the force of an explosion to set the same in action, for the purpose set forth.

2. In combination with the throttle valve of a locomotive, mechanism located near a wheel of the locomotive and adapted to be brought into action by an explosion effected thereby, and throttle valve mechanism controlled by said explosion mechanism whereby the former is operated by the latter, substantially as described.

3. In combination with the throttle valve actuating mechanism of a locomotive, a fluid pressure apparatus operatively connected thereto, and a torpedo apparatus located adjacent one of the wheels of the locomotive and adapted under the force of an explosion to bring said fluid pressure apparatus into action, substantially as described.

4. In combination with the throttle lever or valve of a locomotive, a cylinder and piston for operating the same which is connected with a fluid-brake system, a torpedo apparatus also connected with said brake system and adapted under the force of an explosion to bring the same into operation, substantially as described.

5. In combination, in a mechanism for op-

erating the throttle valve of a locomotive, a lever connected to and for actuating said valve, a fluid-pressure cylinder and piston connected to said lever and for operating said valve through said lever, and connections between the said piston and the said lever permitting the independent opening and closing of the lever and the throttle valve, but adapted to engage said lever and close the valve by a movement of the said piston, substantially as is described.

EDWARD G. SHORTT.

Witnesses:

R. F. GAYLORD,
ERNEST HOPKINSON.