P. CONNIFF & Y. BURGESS.

BRAKE APPLYING MECHANISM.

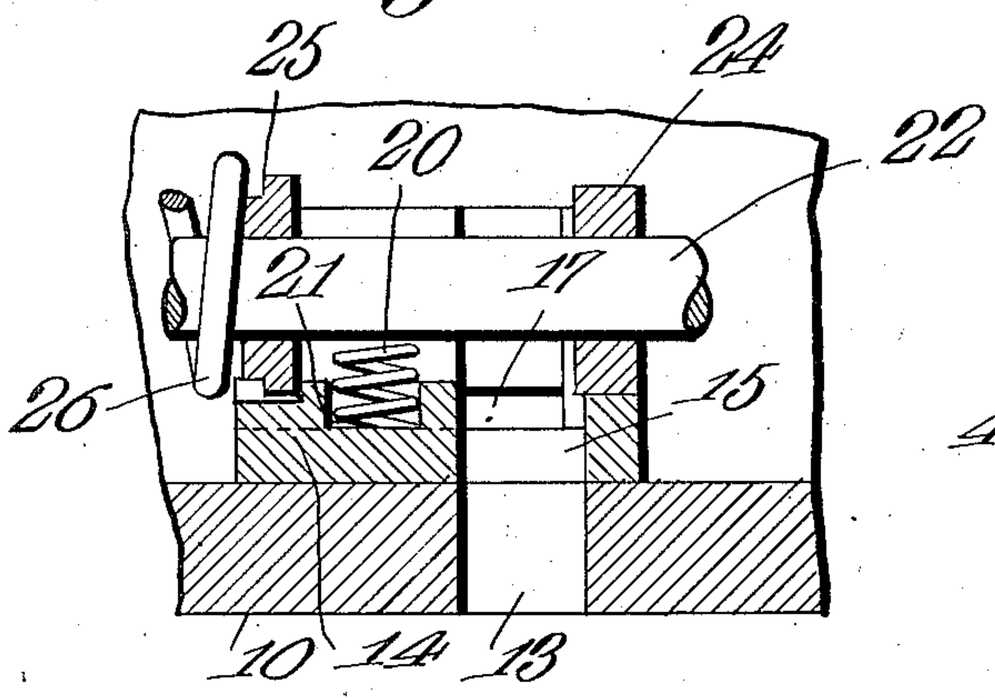
APPLICATION FILED FEB. 11, 1909.

956,293.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

Fig. 2.



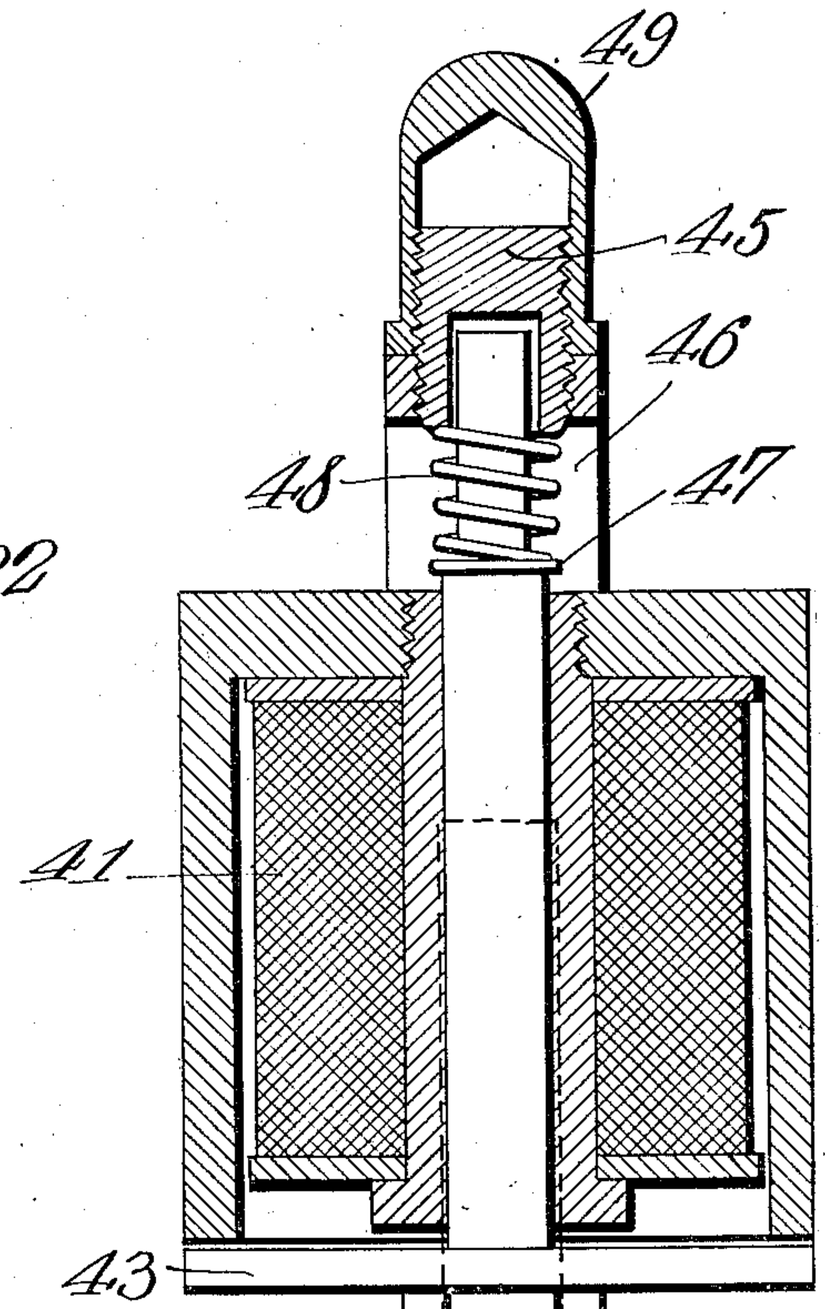
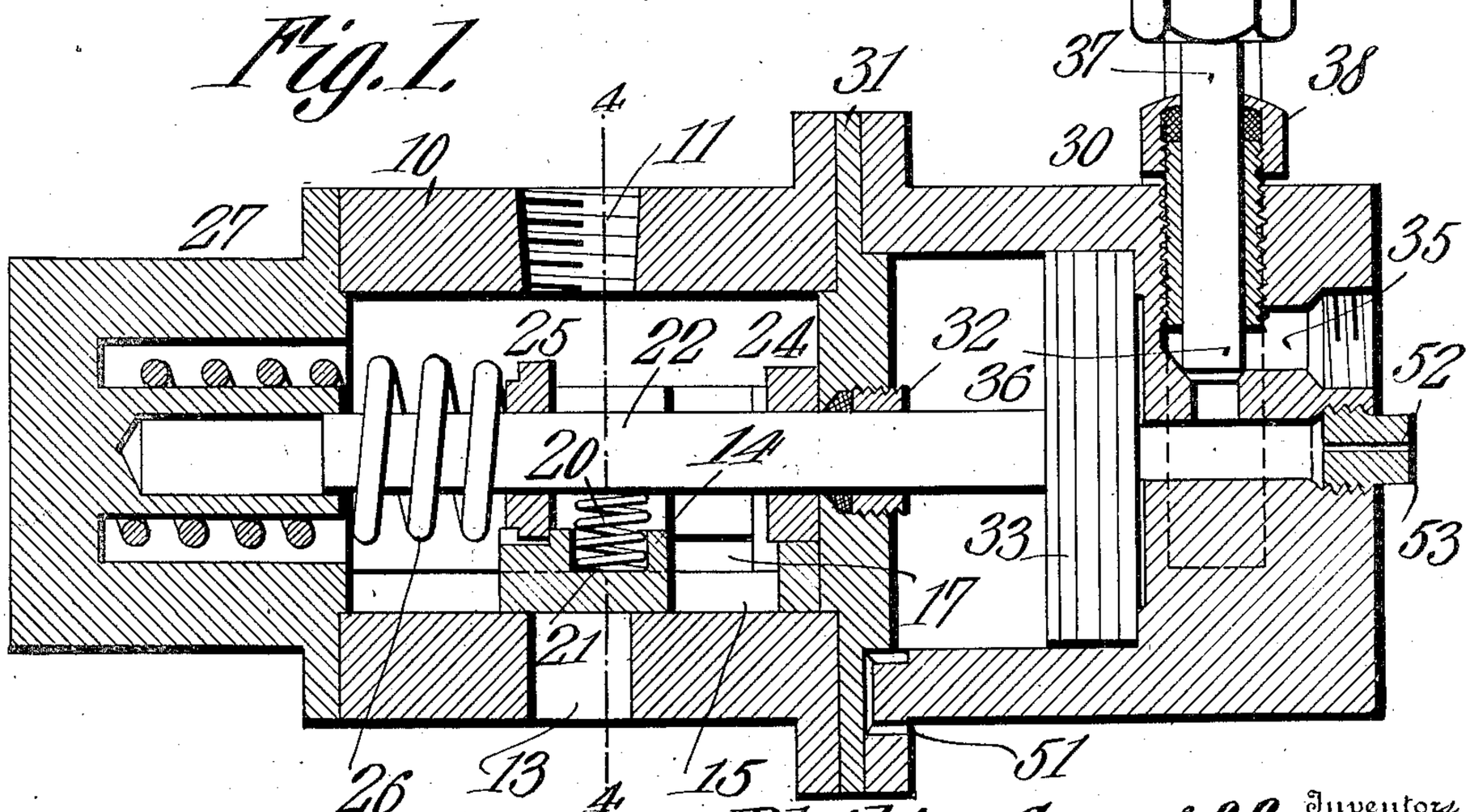


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

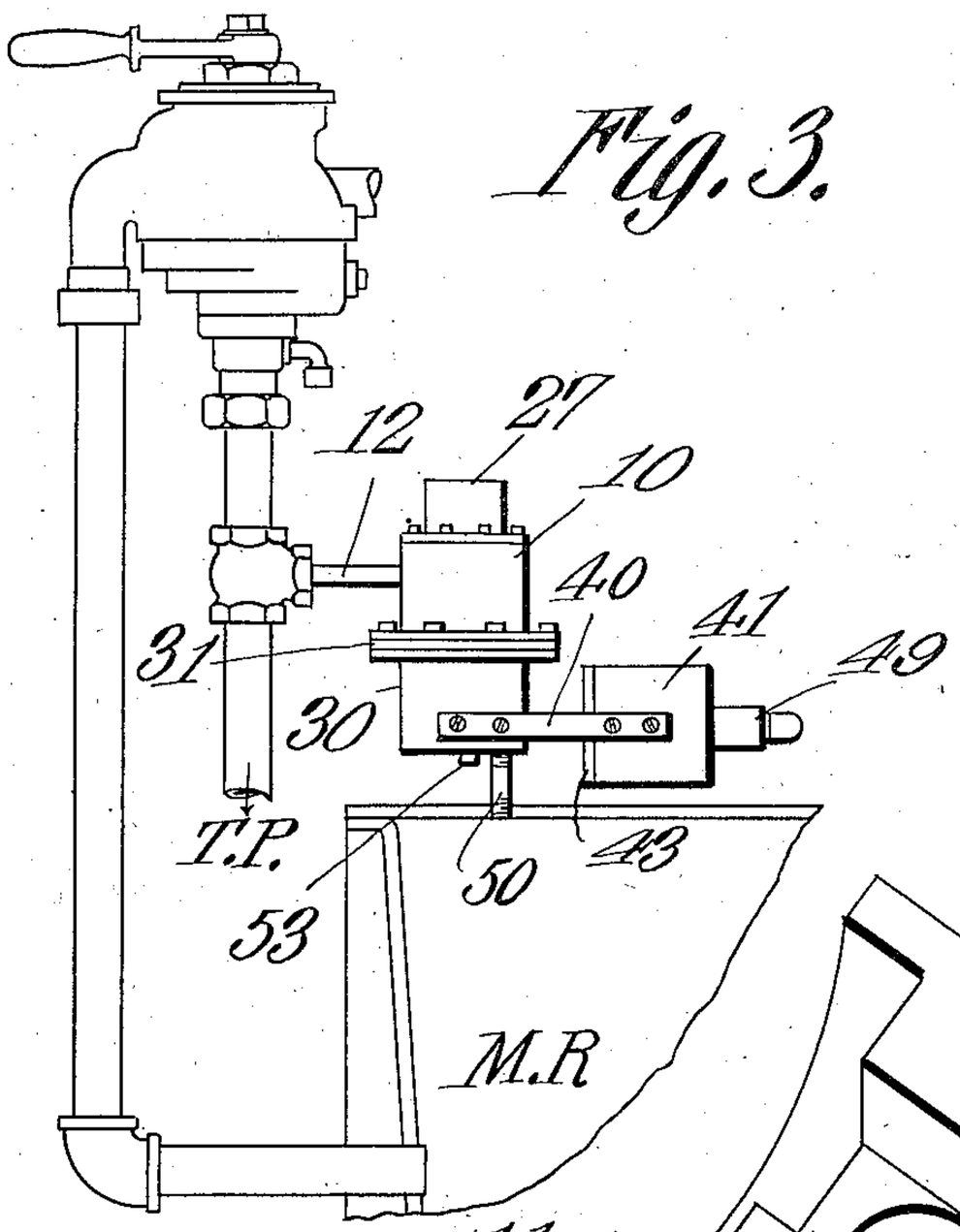


Fig. 4.

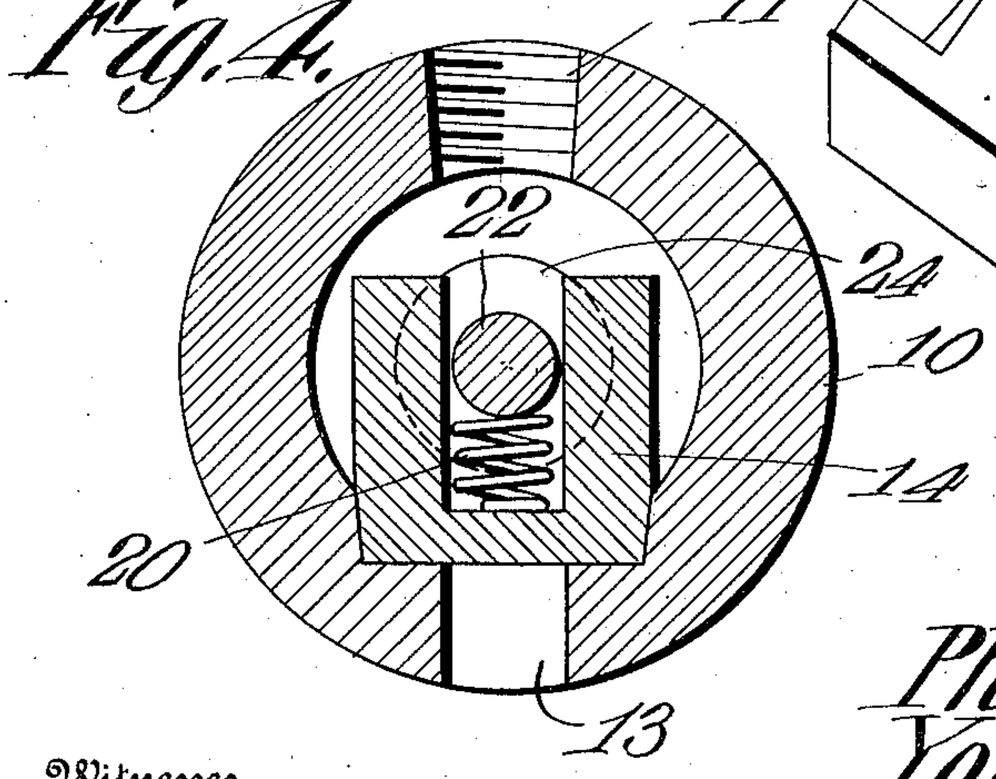
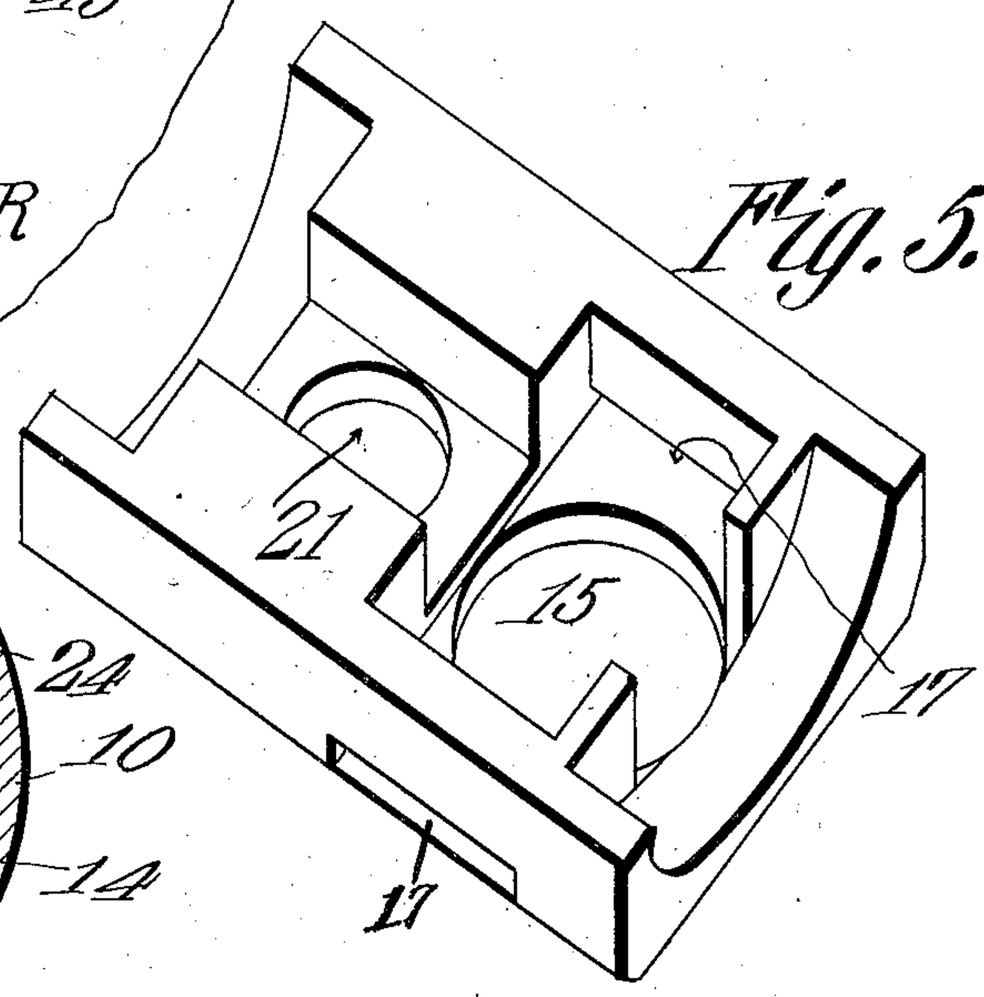


Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILIP CONNIFF AND YORKE BURGESS, OF WASHINGTON, DISTRICT OF COLUMBIA; SAID BURGESS ASSIGNOR TO C. HIRAM CARSON, OF KANSAS CITY, MISSOURI.

BRAKE-APPLYING MECHANISM.

956,293. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed February 11, 1909. Serial No. 477,332.

To all whom it may concern:

Be it known that we, PHILIP CONNIFF and YORKE BURGESS, citizens of the United States, residing at Washington, District of Columbia, have invented a new and useful Brake-Applying Mechanism, of which the following is a specification.

This invention relates to automatic air brake systems and has for its principal object to provide means for automatically opening the train pipe for the purpose of reducing train pipe pressure and making an emergency application of the brake.

A further object of the invention is to provide an apparatus of this type which may be mounted on the engine so as to be under the direct control of the engineer, or may be placed at any point in the length of the train to be operated by the engineer or train crew or by any automatic means operating from the road bed or other point so that if the train is in danger of collision the brakes may be applied in emergency and the train brought to a stand-still.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a sectional elevation of an automatic brake applying device constructed in accordance with the invention, the controlling valve being shown in closed position. Fig. 2 is a similar view of a portion of the device showing the valve in open position. Fig. 3 is a side elevation partly in the nature of a diagram, illustrating the manner in which the connections may be made in the engine cab. Fig. 4 is a transverse section on the line 4—4 of Fig. 1. Fig. 5 is a detail perspective view of the controlling valve detached.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

Arranged at any suitable point on the train, preferably in the cab of the engine, is a cylinder or valve casing 10 having an inlet port 11 which may be connected by a pipe 12 to the train pipe TP. The lower portion of the casing is cut away to form a flat valve seat through which extends an exhaust port 13 opening to the atmosphere. Slidably mounted on the valve seat is a valve 14 having a large port 15 extending directly therethrough and arranged to be placed in communication with the exhaust port 13 so that the train pipe pressure may flow directly through the valve casing and the exhaust port for the purpose of suddenly reducing the train pipe pressure and effecting an emergency application of the brakes.

The valve is of approximately U-shape in cross section for the passage of a piston rod 22, and its side walls are provided with lateral ports 17 through which the air may freely pass on the way to the port 15. The valve is held to its seat by train pipe pressure and in addition to this a spring 20 is employed in order to prevent accidental dislodgment of the valve, while the train is running. The lower end of the spring fits in a small recess 21 formed in the valve proper and the upper end of the spring bears against the piston rod 22 through which movement is imparted to the valve. The opposite ends of the valve are provided with circular recesses for the reception of a pair of collars 24 and 25, the collar 24 being pinned or otherwise secured to the piston rod, while the collar 25 is held against the outer end of the valve by a heavy spring 26. The outer end of the spring 26 is guided in a recess formed in a cap 27 that closes the end of the valve chamber and this cap is also provided with an opening which receives and guides the free end of the piston rod 22.

Connected to the valve chamber 10 is a cylinder 30 that is separated from the chamber by a division plate 31, the latter being provided with a centrally located stuffing box 32 that surrounds the piston rod and prevents leakage of air. On the piston rod 22 is secured a piston 33 which is operated upon by air pressure entering through the port 35 and when this pressure is allowed to act on the piston the valve will be shifted from the closed position shown in Fig. 1 to the open position shown in Fig. 2. In the port 35 is formed a seat for a valve 36 ar-

ranged at one end of a stem 37, said stem passing through a suitable stuffing box 38. To the opposite sides of the cylinder 30 are secured straps 40 carrying an iron-clad electromagnet 41 in the form of a solenoid, of which the stem 37 forms the core and said stem carries a suitable armature 43. The upper end of the stem is reduced in diameter and fits within a recess formed in a plug 45 that screws into a threaded opening formed in a bracket or yoke 46 carried by the electromagnet. Around the stem, between the plug 45 and a washer 47 supported by an annular shoulder on the stem, is coiled a spring 48, as clearly shown in Fig. 1. By turning the plug 45 so that it will extend more or less through the bracket or yoke 46, the tension of the spring may be varied so that it will exert more or less stress upon the stem and consequently hold the valve 36 more or less forcibly against its seat, as will be readily understood upon reference to Fig. 1. A lock nut 49 is threaded upon the plug 45 which is turned home against the yoke or bracket to hold the plug in the position to which it may be adjusted.

The port 35 is connected by a pipe 50 to a source of air under pressure which may be the main reservoir MR. shown in Fig. 3, or the train pipe at any point somewhat distant from the pipe 12.

When the electromagnet is energized by the closing of its circuit either by the engineer or other member of the train crew or by any automatic circuit closing mechanism, the armature 43 will be attracted and the stem 37 with the valve 36 thereon will be moved to open position allowing air under pressure to enter the cylinder 30 to the rear of the piston 33, and move the same to the left. This movement is transmitted through the rod 22 to the valve 14 so that the latter will be shifted from the closed to the open position and the train pipe will be placed in communication with the exhaust port 13, whereupon the train pipe pressure will be at once reduced and an emergency application of the brake will result.

In order to permit free movement of the piston under the pressure of air entering at port 35 a small leakage port 51 is formed in the forward end of the cylinder 30, and to allow return of the piston by the spring 26 after the closing of the valve 36 another leakage port 52 is formed in a plug 53 that closes the horizontal portion of the port 35.

What is claimed is:—

1. In brake applying mechanism, a ported valve casing connected to the train pipe, a slidable valve in said casing, a cylinder, a separating plate between the cylinder and casing; a piston arranged within the cylinder, a rod extending from the piston through the plate, a pair of disks carried by the rod and engaging against the opposite ends of the valve, a spring encircling the rod and bearing against one of the disks to maintain the valve in closed position, a spring disposed between the valve and rod and tending to hold the valve down against its seat, a connection between the cylinder and a source of fluid pressure supply, and a valve in said connection.

2. In brake applying mechanism, a valve casing connected to the train pipe, a valve arranged within said casing, a cylinder, a piston disposed within the cylinder and connected to the valve, a supply port leading to the cylinder and provided with a valve seat, a spindle arranged to bear against the seat and forming a valve, an electromagnet of which said spindle forms a movable core, an armature carried by the spindle, a spring acting against said spindle and tending to force the valve against its seat, an adjustable plug bearing against a spring, and a cap-nut for locking said plug is adjusted position.

3. In automatic emergency brake-applying mechanism, a valve casing connected to the train pipe and having an exhaust open to the atmosphere, a valve slidably mounted on one side of the casing and having a large opening adapted to register with said exhaust, a spring within the casing acting on the valve to hold the body of the same normally over the said exhaust, a cylinder, a piston in the cylinder having its rod secured to the valve, a division plate between the cylinder and the valve casing preventing communication between the cylinder and the casing, and automatic means for admitting fluid pressure to the piston to move the same and the valve in opposition to the spring bearing on the valve.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

PHILIP CONNIFF.
YORKE BURGESS.

Witnesses:
E. HUME TALBERT,
E. DANIELS.