

(No Model.)

N. J. PRITCHARD & J. S. TEMPLON.

DEVICE FOR APPLYING PRESSURE TO RAILWAY BRAKES.

No. 377,775.

Patented Feb. 14, 1888.

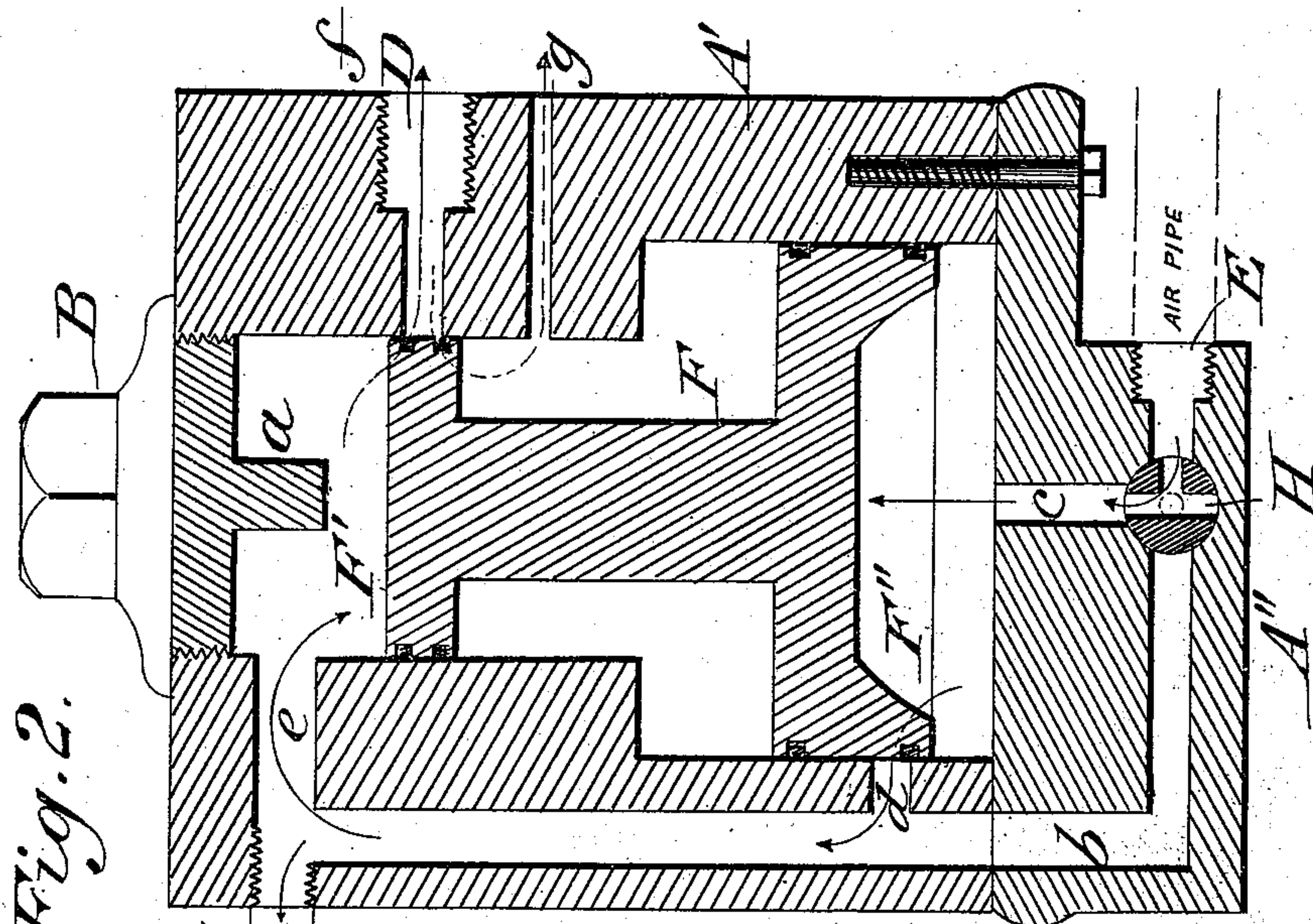


Fig. 2.

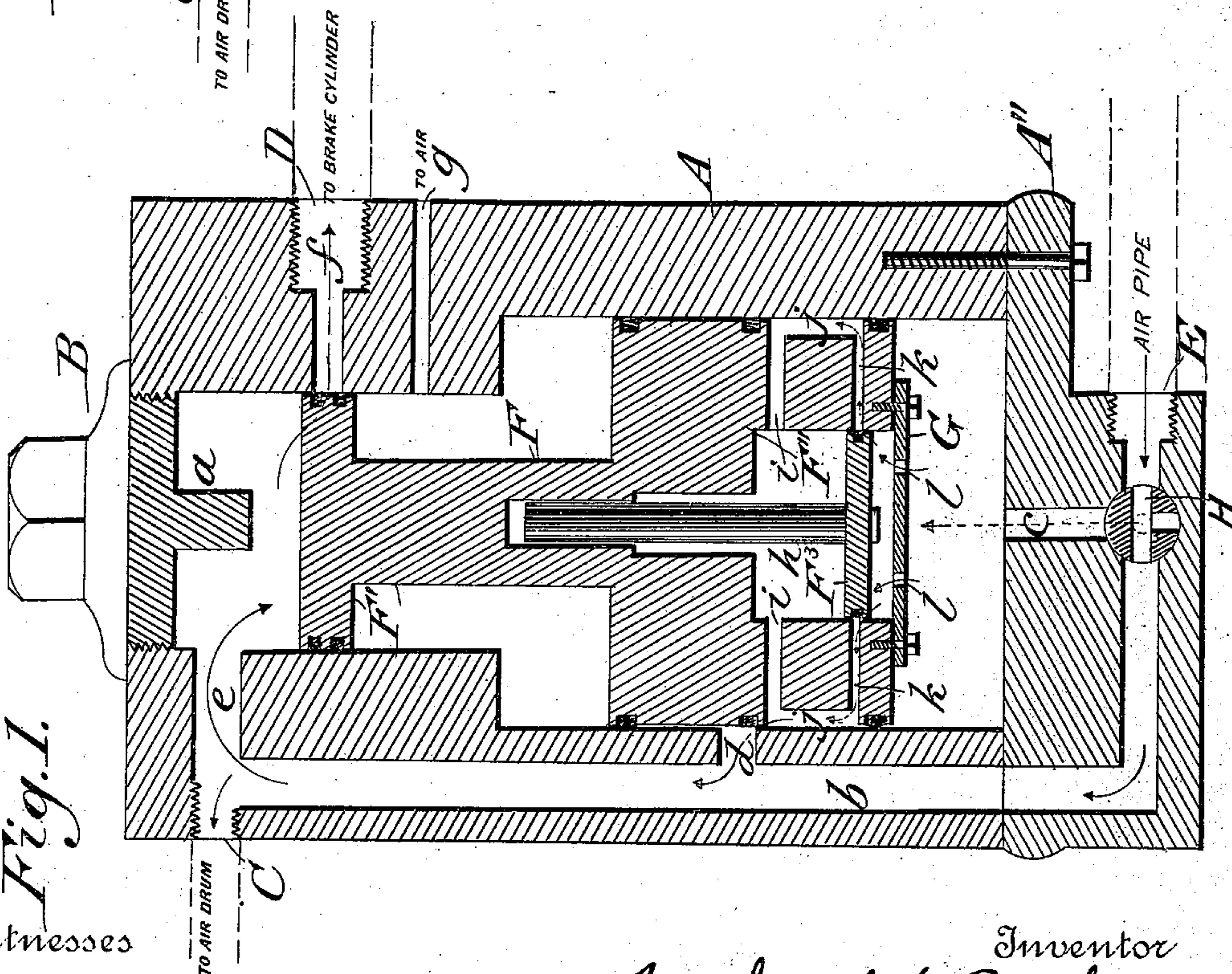


Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

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DEVICE FOR APPLYING PRESSURE TO RAILWAY-BRAKES.

SPECIFICATION forming part of Letters Patent No. 377,775, dated February 14, 1888.

Application filed August 27, 1887. Serial No. 248,058. (No model.)

To all whom it may concern:

Be it known that we, NATHANIEL J. PRITCHARD and JAMES S. TEMPLON, citizens of the United States, residing at Milnes, in the county of Page and State of Virginia, have invented certain new and useful Improvements in Devices for Applying Pressure to Railway-Brakes; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a piston-valve for use in pneumatic railway-brakes for controlling the admission of air to the brake-cylinder; and it consists in the construction, arrangement, and combination of parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating our invention, Figure 1 is a vertical section of our improved automatic air-piston for pneumatic railway-brakes. Fig. 2 is a similar section of a simplified form of the same.

Like letters of reference designate like parts in both figures.

A represents a cylinder of any suitable dimensions and made in any desirable manner, it being adapted to be arranged in an upright position beneath a car. A' denotes a similar cylinder, somewhat smaller, to suit it to the simplified form of the parts within. Said cylinder A or A', as the case may be, can be made in one or more parts.

In the drawings the construction is shown, preferably, to consist of the main portion, to which a bottom portion, A'', is secured by means of bolts; also, the central chamber of the cylinder is closed at the upper end by a screw-plug, B, having an interior downwardly-extending projection, a, which limits the upward movement of the piston within said chamber.

The cylinder A or A' is provided with ports where the several pipes are coupled that constitute the ordinary air-brake, and lead to the parts of the same—as, for instance, the engineer's valve, the brake-cylinder, and the air-drum. Thus C denotes the port where coupling is made to the air-drum; D, the port

where the pipe is connected leading to the brake cylinder; and E, the port to receive the air-pipe from the engineer's operating-valve. A passage, b, extends through the wall of the casing of the cylinder from port E to port C, and is provided with lateral passages, c, d, and e. Passage c extends from the horizontal part of b to the central chamber of the cylinder. Passages d and e pass horizontally into said central chamber from the vertical portion of b, the former being situated at a suitable point between top and bottom of cylinder while the latter is near the top of cylinder. The central chamber also communicates with port D by a passage, f, and with the open air by an exhaust-port g.

Within the central chamber is located the piston F, which may be a double piston, as shown in Fig. 2, having the upper head, F', and the lower head, F'', or it may be a triple piston, as shown in Fig. 1, having the upper and lower heads, F' and F'', and the additional third head F'''. Both forms, however, will operate equally well in the practical use of our device.

The piston has a vertical movement up and down within the central chamber, and in said movement comes into proper relation to the several ports and their passages to accomplish the results hereinafter specified. When the triple piston is employed, it will be seen that the third head, F''', is within the head F'' of the double piston, and has a rod, h, that works in a recess or chamber in the body of the double piston. Said body of the double piston is also provided with horizontal passages i i, vertical passages j j between it and the wall of the chamber, and horizontal passages k k, and the end of the chamber in head F'', which contains head F''', is covered with a plate, G, bolted thereto and provided with apertures l l.

The operation of our improved piston arrangement thus constructed is as follows: At the junction of passage b and its offshoot c is a plug, H. This may be turned to occupy the position shown in Fig. 2, when there will be a passage direct from port E up into the central chamber, the communication through b being cut off and diverted through c. The valve may also be turned to occupy the position shown in

Fig. 1, where the passage through *c* is cut off and communication is established through passage *b*. When the valve is in the former position, the device operates automatically, and is said to be used with "automatic air." When the valve is in the latter position, "straight air" may be used. Suppose, now, we take the device as shown in Fig. 2. It is now arranged for automatic air. When the double piston is at its upper limit, (the brakes now being relieved so that air from the brake-cylinder comes into port *D* and around through *f* into the exhaust *g*,) if the engineer wants to set the brakes, he will operate his valve to remove the air from port *E* and from beneath the double piston. The pressure from the air-drum, which is exerted now upon the upper head of piston *F'*, will act to force down the piston below passage *f*, so that air can go through into the brake cylinder and set brakes. By admitting air now beneath the piston it may be caused to rise to its upper limit and relieve the brake by allowing the air to pass through *D* to the exhaust.

In Fig. 1 the device is shown having the triple piston and arranged for straight air. In this case air will be admitted to the device by the engineer when it is wished to set the brakes. This air will pass through channel *b* up to the space above the piston, and with the air from the air-drum press on said piston, force it down, and pass out to brake-cylinder. With straight air, when the piston has once descended, it will remain down until the device is changed for automatic air, and air is admitted below the piston to raise it. Suppose, now, that plug *H* be changed to occupy the position shown in Fig. 2. Air may now be admitted below the piston. It will be admitted through apertures *l l* into the space below head *F'''* and force upward said head, and thus the entire triple piston will be driven upward to its upper limit, so that air may pass from port *D* through the exhaust and the brakes be relieved. When the piston has ascended sufficiently to bring space *j* opposite passage *d*, the air-pressure will enter passage *i* and above the piston-head *F'''*. When, now, it is desired again to set the brakes by the use of automatic air, and the engineer exhausts air from below the piston, the third head will descend first and then the entire device. By the use of this third head less air need be exhausted to cause the piston to descend, because the third piston being balanced but little exhaustion is necessary to cause it to descend, and there being a pressure upon it, as well as upon the upper head, not as much air need be exhausted to cause the entire piston to descend.

I am aware that heretofore in certain devices of a similar character to ours there has been used a double-headed piston located within an inclosing-case having suitably-arranged ports and passages. This arrangement of ports, therefore, we do not broadly claim as new, but restrict our invention to what is hereinafter claimed.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an automatic device for applying and relieving the air-pressure to air-brakes, a double-headed piston, and a third piston-head arranged within the double-headed piston, in combination with an inclosing-case provided with properly-located ports, all arranged and adapted to operate substantially as set forth.
2. In an automatic device for applying and relieving the air-pressure to air-brakes, the combination, with a cylinder having ports leading to the air-drum, main pipe, and brake-cylinder, and suitable passages, located as described, connecting these ports with the interior chamber of the cylinder, and also an exhaust-passage, of a piston having two heads located and operating within said chamber, all the parts being combined and arranged for joint operation, substantially as and for the purpose set forth.
3. The combination of a piston having two heads, as stem *F*, with heads *F'* and *F''*, with an inclosing-case, as *A'*, having ports *C*, *D*, and *E*, passage *b* between ports *C* and *E*, having offshoot passages *c d e*, communicating with the central chamber, passage *f*, and exhaust *g*, all arranged to operate substantially as described.
4. The combination, with the cylinder having ports *C*, *D*, and *E*, passage *b*, with offshoot passages *c d e*, passage *f*, exhaust *g*, and valve-plug *H*, of a piston operating within the central chamber of the cylinder to accomplish the results specified, substantially as set forth.
5. The piston *F*, having heads *F'* and *F''*, and head *F'''*, operating within head *F''*, together with suitable ports and passages, in combination with cylinder having ports *C*, *D*, and *E*, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

NATHANIEL J. PRITCHARD.

JAMES S. TEMPLON.

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