(No Model.) 2 Sheets—Sheet 1.

L. E. SLOAN.

AIR BRAKE VALVE.

No. 330,164. Patented Nov. 10, 1885.

Fig. 1.

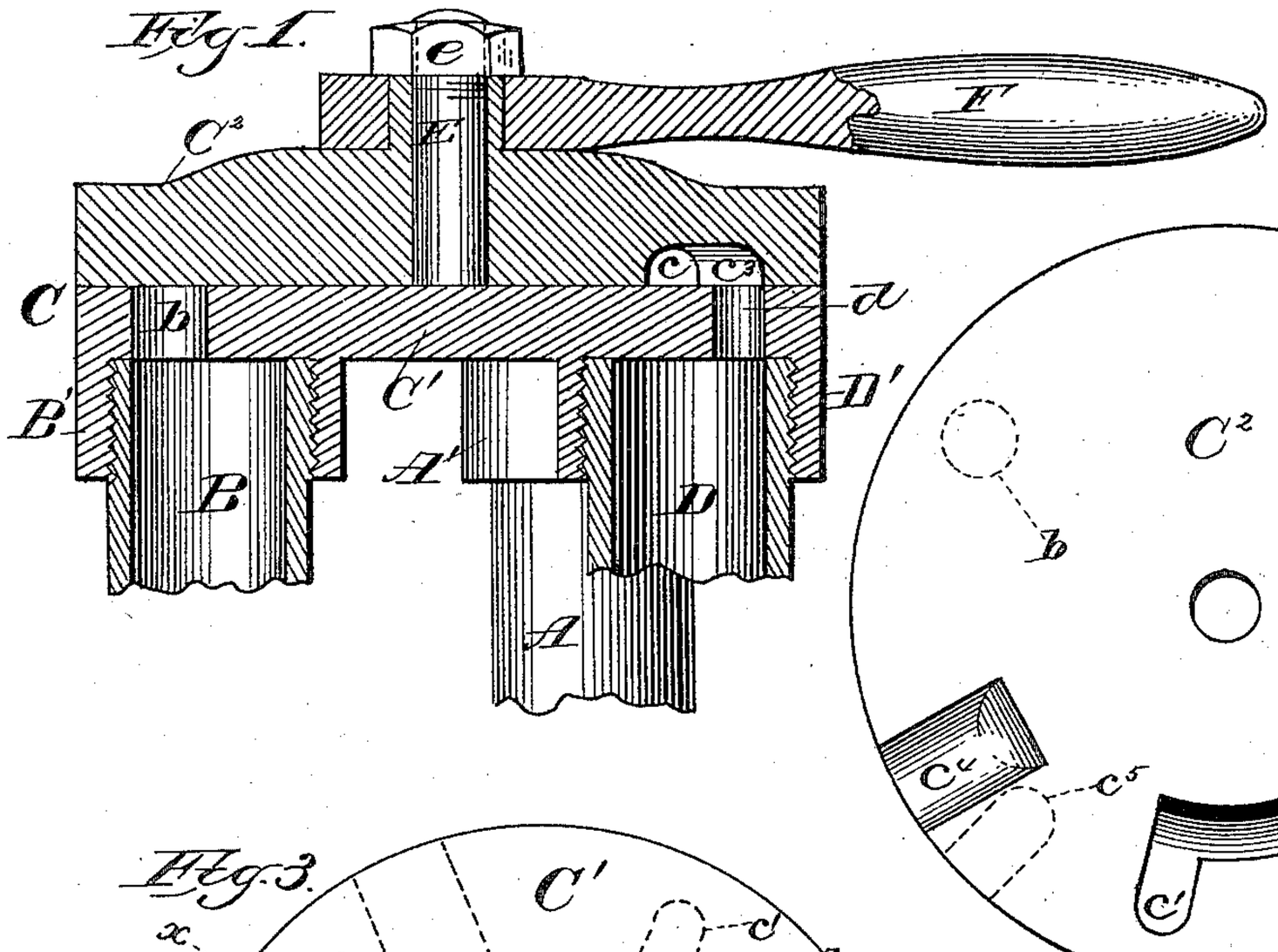


Fig. 2.

Fig. 3.

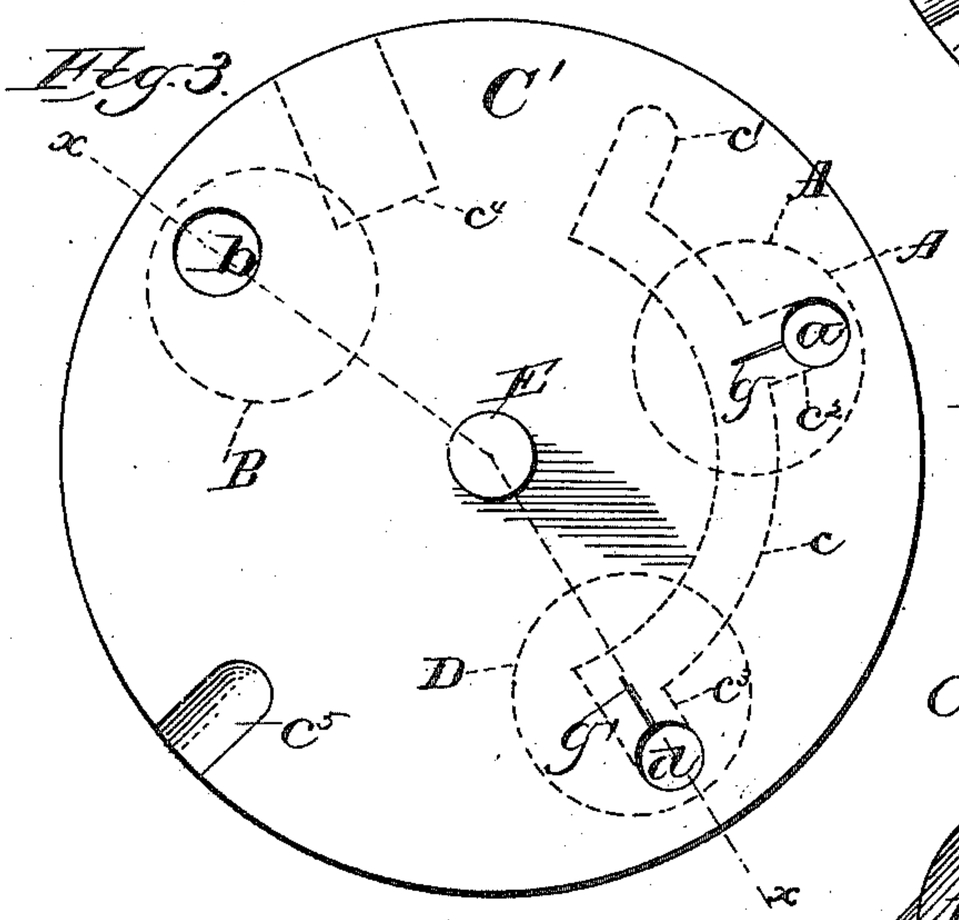
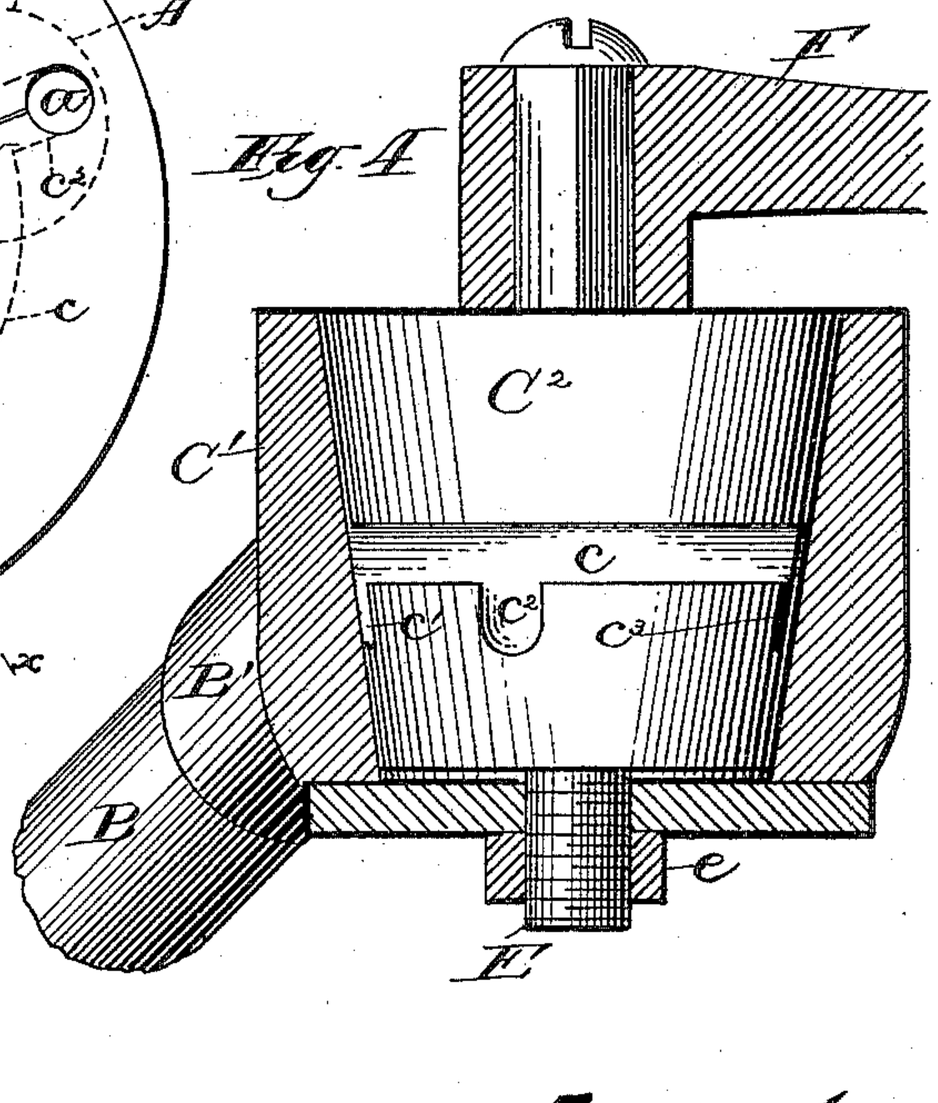


Fig. 4.



Witnesses:
E. G. Simmons
N. E. Oliphant

Inventor:
Leander E. Sloan
By Stout & Underwood
Attorneys.

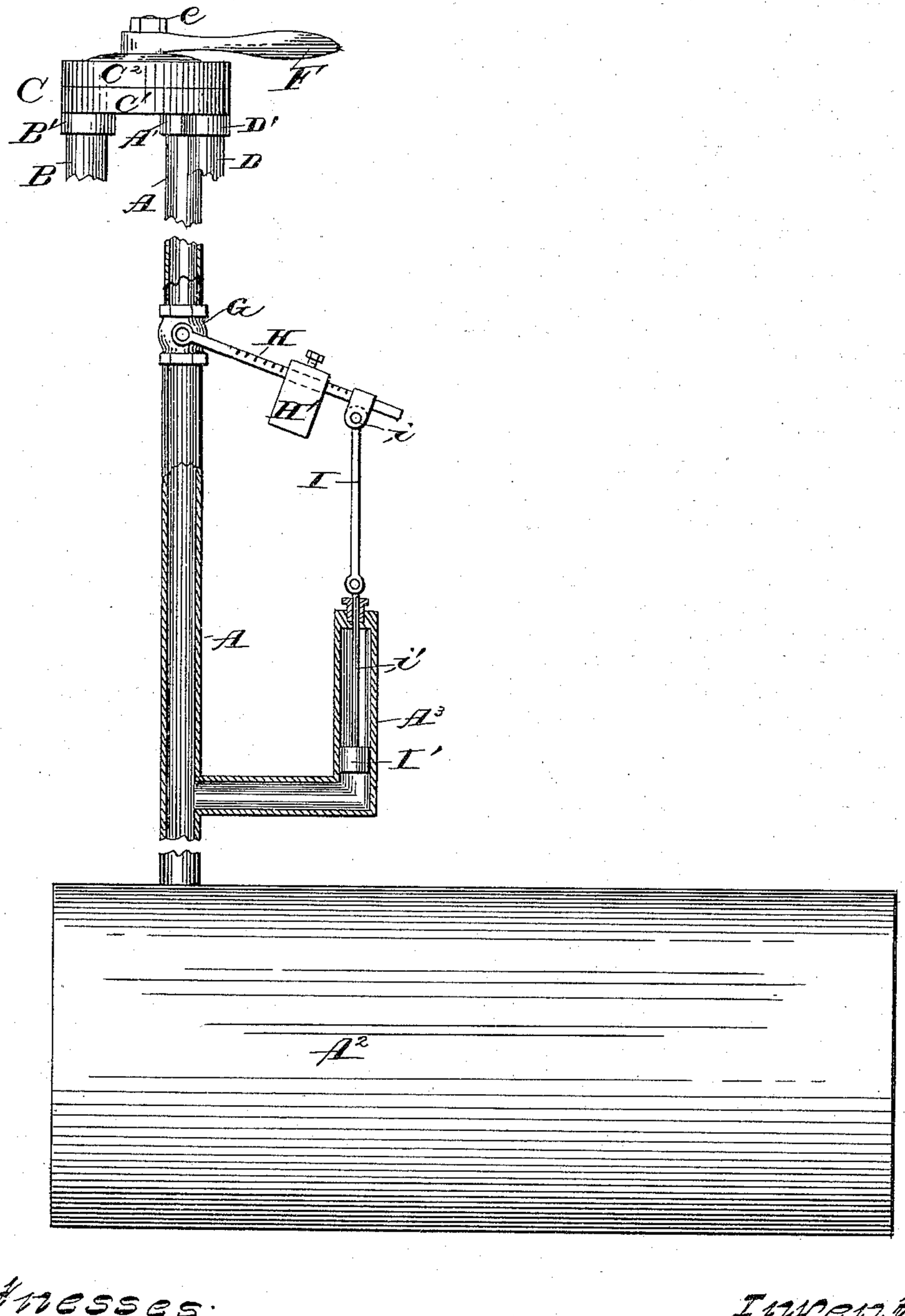
(No Model.) 2 Sheets—Sheet 2.

L. E. SLOAN.

AIR BRAKE VALVE.

No. 330,164. Patented Nov. 10, 1885.

Fig. 5.



Witnesses:
E. G. Siggers
N. E. Hiphant

Inventor:
Leander E. Sloan
By Stuart & Underwood
Attorneys.

UNITED STATES PATENT OFFICE.

LEANDER E. SLOAN, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO WALLACE G. COLLINS, OF SAME PLACE.

AIR-BRAKE VALVE.

SPECIFICATION forming part of Letters Patent No. 330,164, dated November 10, 1885.

Application filed August 31, 1885. Serial No. 175,735. (No model.)

To all whom it may concern:

Be it known that I, LEANDER E. SLOAN, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Air-Brake Valves; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to air-brake valves; and it consists in certain peculiarities of construction of the engineer's brake-valve, as will be fully set forth hereinafter.

In the drawings, Figure 1 is a central vertical section of the upper part of my improved device. Fig. 2 is an inverted plan view of the upper plate. Fig. 3 is a plan view of the lower plate. Fig. 4 is a central vertical section of a modified form of my device. Fig. 5 is an elevation of my device, partly in section.

My present invention is intended for use in a railway air-brake system—such, for instance, as that described in my application for patent filed October 18, 1884, Serial No. 145,861, and allowed March 5, 1885.

A^2 is the main reservoir, from whence leads pipe A to a coupling, A′, on the under side of the plate C′ of the engineer's valve C. The said plate has two other couplings, B′ and D′, from which extend, respectively, pipe B, known as the "straight air" or "release" pipe, and pipe D, called the "automatic train" pipe, the former serving to set the holes by straight air—that is, air direct from the main reservoir or "drum" A, as well as to release the brake, (whether set by straight air or automatically,) while the pipe D extends the entire length of the train and sets all the brakes automatically, the straight-air pipe likewise running the whole length of the train, all just as in my former application, hereinbefore referred to. In my said former device I represented the engineer's brake-valve as consisting of three plates, but I now preferably show it as composed of two plates only, although I do not limit myself thereto, and may use either form of valve as found desirable in any particular case.

In Fig. 1, C^2 represents the upper plate, a bottom view of which is shown in Fig. 2. This plate has a semicircular channel, *c*, in its under surface, provided with three branches, c' c^2 c^3, and an escape-port, c^4, not connected with said channel.

C′ is the lower plate, and this plate has three vertical passages, *a*, *b*, and *d*, just above the respective couplings A′, B′, and D′, and connecting with the pipes A, B, and D, and this plate has also an escape-port, c^5. The adjacent faces of the plates C′ and C^2 are perfectly smooth and lie so closely together that no air can escape between them, and the plate C′ has a central pin, E, which is received by and passes up through a central perforation in the upper plate, C^2, (which plate is fitted with a handle, F, for operating the valve,) above which the pin E receives a nut, *e*, (as well as a jam-nut, if necessary.)

Between the main reservoir and the engineer's brake-valve the pipe A is fitted with a valve or cock, G, the handle of which is provided with a lever, H, graduated to a scale, and the outer end of this lever is connected at *i* to a rod, I, and below this point a branch pipe, A^3, extends out at or about a right angle from the pipe A, and the vertical arm of this branch pipe is in effect a cylinder, within which moves a piston-head, I′, the rod i' of which is connected to the rod I, above described, all as shown in Fig. 5, and the lever H carries an adjustable weight, H′, which may be set at any given point on the scale-lever to regulate and determine the pressure of the air between the main reservoir and the train pipe.

The operation of my device is as follows: When the valve C is adjusted so that the passage *a* in plate C′ communicates with the branch c^2 in the plate C^2, and the passage *d* with the branch c^3, air from the main reservoir A^2 will enter the valve C through pipe A, and thence pass along the channel *c* and out into and through the pipe D, filling the auxiliary reservoirs under each car at the pressure determined by the position of the weight H′ on the lever H, which is accomplished automatically, it being only necessary to set the weight in order to obtain the exact degree of pressure required. Now, to set the brakes automatically, the valve-plate C^2 is turned until the branch c^2 matches with the passage *d* in the lower plate, and the branch c^3 is over the exhaust-port c^5. This serves to release the air from the "train" pipe D, and sets the brakes

automatically. To release the brakes automatically, turn the plate C^2 back to the position first described—that is, the position illustrated in the drawings by the dotted lines in Fig. 3. If I wish to release the brakes automatically by means of the straight-air pipe B, turn the plate C^2 until its exhaust-port c^4 is over the passage *b*. To set the brakes with straight air, turn the plate C^2 until the branch c^3 is over the passage *a* in the plate C′, and branch *c′* is over the passage *b*, which lets the air from the main reservoir A^2 through pipe A, channel *c*, and pipe B, (and the passages and branches named,) to the brake-cylinders under each car, (the straight-air pipe B connecting with the brake-cylinders just as in my former application.) To release the brakes when set in this fashion, proceed as above described—that is, through the passage *b* and exhaust-port c^4, brought together as above described.

To overcome any possible leak anywhere in the train, I have provided two small channels in the plate C′—one, *g*, leading from the passage *a*, and the other, *g′*, from the passage *d* to a point beneath the channel, when the plates are in the positions indicated in full and dotted lines in Figs. 2 and 3, and thus the loss of air occasioned by such leak will be compensated for and the pressure maintained.

In case it is desired to decrease the pressure from the main reservoir, the plate C^2 is turned until the exhaust-port c^4 is over the passage *a*, and then air will flow out through the said passage and port until the pressure is reduced to the desired degree.

In Fig. 4 I have shown a modified construction where the lower plate, C′, is transformed into a socket, and the upper plate, C^2, into a plug working within said socket; but otherwise the construction is substantially the same, (the pin E and nut *e* being shown preferably below instead of above,) excepting that the various passages, ports, &c., are shown as horizontal or nearly horizontal, instead of extending vertically; but their operation is exactly the same in both instances.

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

1. In an air-brake system, an engineer's brake-valve consisting of two parts, the lower or outer part having passages *a*, *b*, and *d* and exhaust-port c^5, and the upper or inner part having channel *c*, with branches *c′* c^2 c^3, and exhaust-port c^4, in combination with an operating-lever, and pipes connecting with the main air-reservoir and with the auxiliary reservoirs and brake-cylinders of a train, substantially as set forth.

2. The combination, in an air-brake system, of the straight-air, automatic train, and main reservoir or drum pipes with the engineer's brake-valve C, consisting of the part C^2, having channel *c*, with branches *c′* c^2 c^3, and exhaust-port c^4, and part C′, having passages *a* *b* *d* and exhaust-port c^5, main reservoir A^2, and branch pipe A^3, located on the drum-pipe between the engineer's brake-valve and the main-reservoir valve, a cock, G, with graduated scale-lever H, attached to its handle, rod I, piston I′, piston-rod *i′*, and weight H′, all combined and adapted to operate substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

LEANDER E. SLOAN.

Witnesses:

H. G. UNDERWOOD,

MAURICE F. FREAR.