

M. P. DRUMMEY.

AUXILIARY AIR ACCUMULATOR.

No. 344,571.

Patented June 29, 1886.

Fig. 1.

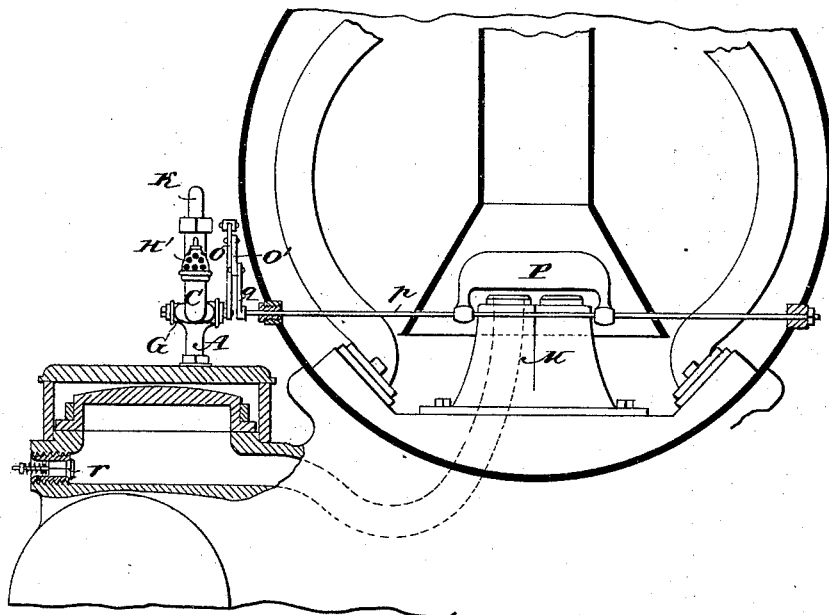
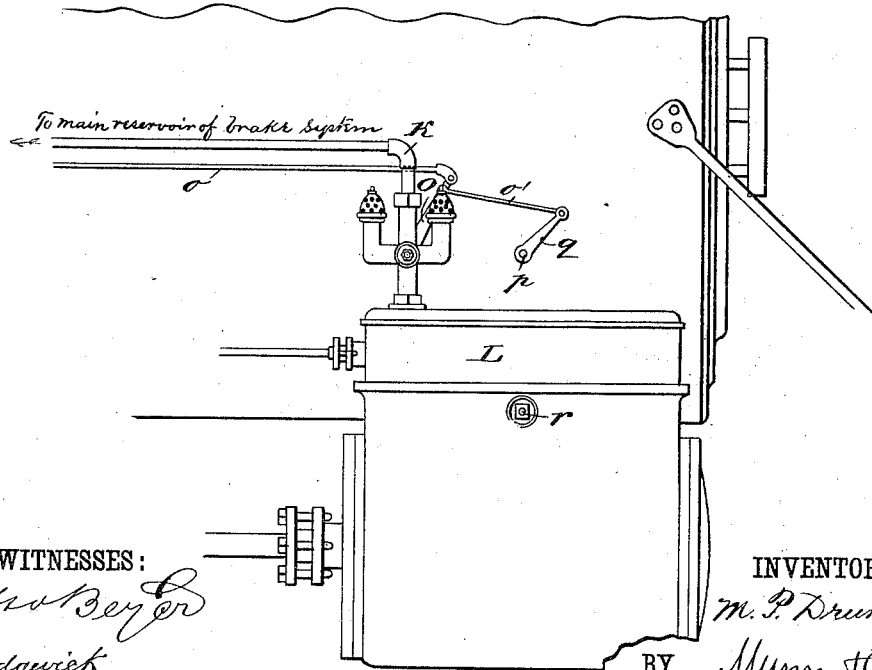


Fig. 2.



WITNESSES:

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INVENTOR:

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BY

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ATTORNEYS.

(No Model.)

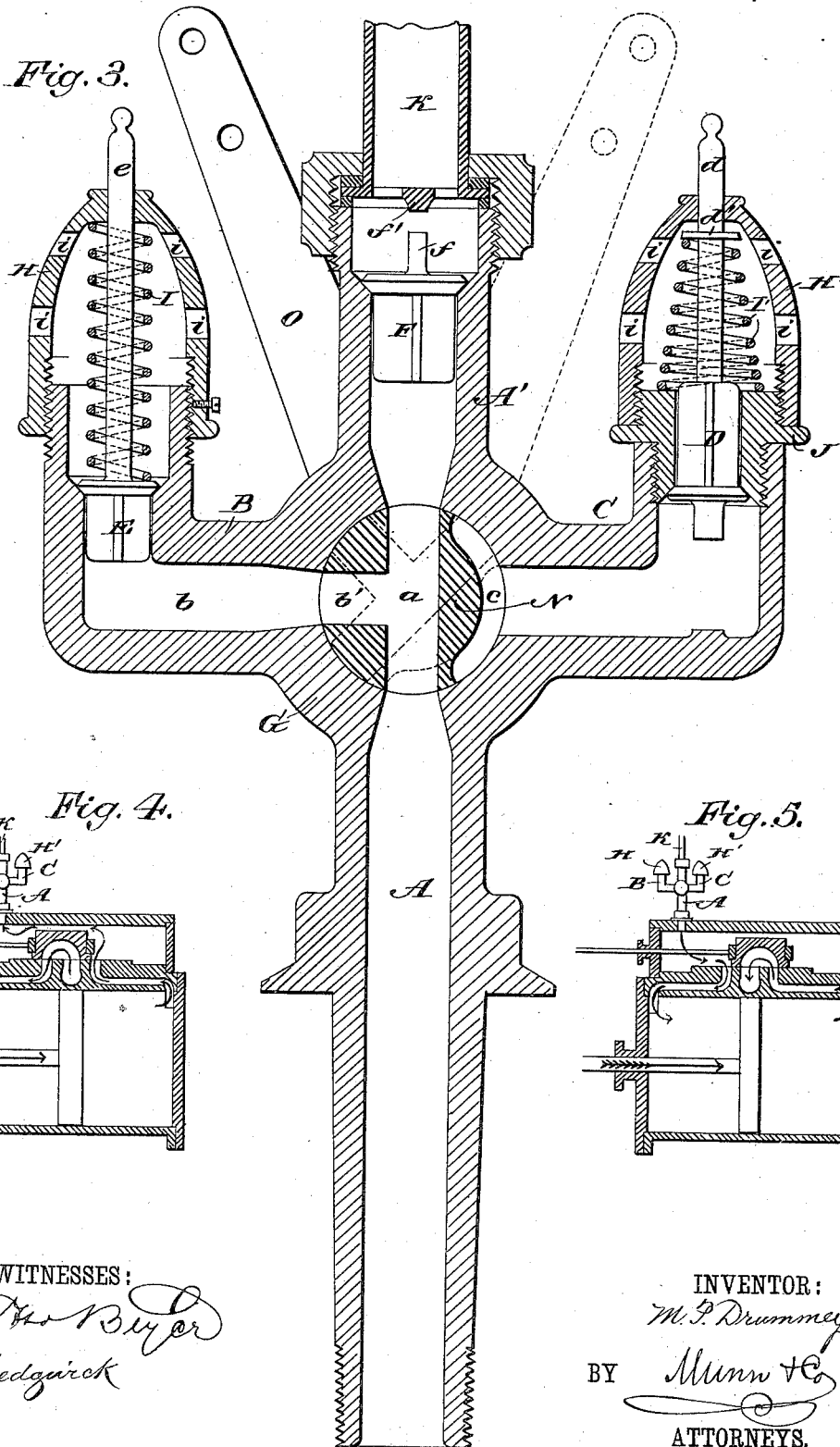
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

MICHAEL P. DRUMMEY, OF GRAND JUNCTION, COLORADO.

AUXILIARY AIR-ACCUMULATOR.

SPECIFICATION forming part of Letters Patent No. 344,571, dated June 29, 1886.

Application filed December 23, 1885. Serial No. 156,547. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL P. DRUMMEY, of Grand Junction, in the county of Mesa and State of Colorado, have invented a new and Improved Auxiliary Air - Accumulator, of which the following is a full, clear, and exact description.

It often happens that the supply of air employed to operate the air-brakes of a railway-train becomes exhausted either because of the defective action of the compressing mechanism or because such mechanism is inadequate to furnish the amount of air required, and, consequently, the train gets beyond the control of the engineer and train-men.

The object of this invention is to provide an auxiliary attachment whereby the air may be quickly accumulated for use in such an emergency as has been mentioned.

The invention consists of certain novel constructions and combinations, which will be hereinafter explained, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a view of a portion of the forward end of an engine with my improved accumulator, the steam-chest and boiler-casing being shown in section to disclose the construction. Fig. 2 is a side view of the engine, the accumulator being shown in its position on the steam-chest. Fig. 3 is a central vertical sectional view of the accumulator. Fig. 4 is a diagram illustrating the course of the currents of air when the accumulator is in operation, and Fig. 5 is a diagram illustrating the course of the currents when the engine is running with the throttle closed.

Referring now more particularly to the construction illustrated in Fig. 3, A is the centrally connecting and supporting pipe or tube of the accumulator. This tube A is arranged so that it may be secured or coupled to the steam-chest of the locomotive. Branching out from either side of the tube A are the pipes B and C, the pipe B being provided with a safety-valve, E, the purpose of which will be hereinafter explained, while the pipe C is provided with a vacuum-valve, D. Above the point from which the pipes B and C extend there is

a vertical extension, A', which carries a valve, F, as shown best in Fig. 3. The pipe A is formed with an elongated transverse valve-chamber, within which there is arranged a plug-valve, N, the bores of the pipes A' A' being contracted in one direction and broadened in the other direction as they approach the circular chamber within which the plug N is seated. This plug N is formed with a central passage arranged so as to establish communication between the bores of the pipes A A' when the parts are in position shown in Fig. 3, at which time a side passage, b', is in conjunction with the bore b of the pipe B. Upon the face of the plug N, opposite to that through which the port b' is formed, there is a recess, c, so arranged and proportioned that when the plug N is turned to the position shown in dotted lines in Fig. 3 there will be an open way between the pipes A and C.

The valve E is seated within the upper end of the pipe B, said pipe being covered by a perforated cap, H, through which the valve-stem e of the valve E passes, the valve being held to its seat by a spiral spring, I, which is arranged about the stem e and abuts against the upper face of the valve and the underside of the top of the cap H, the tension on the spring being regulated by the position of the cap, which is threaded to engage with the threaded end of the pipe, the connection being such that by simply turning the cap the tension of the spring I may be varied.

It may be here stated that the valve E acts as a safety or relief valve in order to prevent any undue pressure upon the reservoir or air-pipes, for, as before stated, the cap H is perforated, as shown at i, so that when the valve is raised the confined air may escape through the apertures named. The valve D, on the other hand, is designed to prevent the formation of a vacuum at the time when the throttle is closed and the engine is running with the steam shut off, and this valve is seated upon a coupling-sleeve, J, which is connected to the pipe C, as clearly shown, the valve being held against its seat by a spiral spring, I', which abuts against the upper face of the sleeve J and the underside of a collar, d', which is carried by a stem, d, the stem being guided by the perforated cap H', through which it passes. The pipe K, which leads to the reservoir or train-pipes, is coupled

to the upper end of the extension A', just above the valve F, which valve is formed with an upwardly-extending stem, *f*, which, when the valve rises, abuts against a guard or stop, *f'*, that is carried by a perforated web formed at the bottom of the pipe K.

This accumulator, constructed as described, is mounted on the steam-chest L, as shown in Figs. 1 and 2, the plug N being provided with a lever-arm, O, by means of which it is turned to the required position, connection with the cap being obtained by means of a rod, *o*. In the smoke-arch I arrange a flap or cover, P, which is carried by a shaft, *p*, that is mounted in bearings fixed in the boiler-casing, as clearly shown. Upon the end of this shaft *p* there is a lever, *q*, connected by a link, *o'*, with the lever O of the plug N, so that when the lever O is turned to the position shown in Fig. 3 the flap P will be drawn down over the exhaust-nozzle, thereby preventing cinders, &c., from being drawn into the exhaust-pipes.

When the parts have been moved to the position indicated, and when the steam is shut off and the valve-motion reversed, the pistons of the engine will act as powerful air-pumps, air being drawn in behind the piston through an induction-port, *r*, formed in the steam-chest and arranged to open inward. Upon the return-stroke of the piston the air is forced out through the steam-ports into the steam-chest, up through the tube A, through the central passage in the plug N, past the valve F, and into the pipe K, to be led to the train-pipes or reservoir, this course of the currents being indicated in Fig. 4. If at this time there should be any undue pressure or a pressure likely to injure the steam-chest, the reservoir, or the train-pipes, the valve E would rise and thus relieve the parts from excessive strain. This is the position to which the parts are moved when required for use as an auxiliary accumulator; but the normal position of the parts is that shown in dotted lines in Fig. 3, wherein the pipe A is represented as leading into the pipe C through the passage *c*. At this time, when the steam is turned off, the valve D will prevent the formation of a vacuum in the steam-chest, the air being drawn in behind the piston through the valve D, pipes C and A, into the steam-chest, as indicated in Fig. 5, the air in advance of the piston being forced out through the exhaust.

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

1. An attachment for the steam-chest of a

locomotive, comprising the pipe A, having an extension, A', having an upward-opening valve, a branch, B, having an upward-opening valve, a valve-seat at the juncture of said pipes, and a valve therein, the extension A' being adapted to be connected with an air-brake system, substantially as set forth.

2. As a new article of manufacture, an attachment for the steam-chest of a locomotive, which consists of a pipe, A, a valve, N, having ways *a*, *b'*, and *c*, branches B and C, having valves E and D, and an extension, A', having a valve, F, and adapted to be connected to an air-brake system, substantially as described.

3. In an air-accumulator, the combination, with a locomotive steam-chest provided with a valve, *r*, a cylinder, piston, and a slide-valve, of a pipe, A, having a branch, B, in which there is a valve, E, controlled by a spring, an extension, A', provided with a valve, F, and the pipe K, connected with the air-brake system, and a three-way plug, N, substantially as described.

4. In an air-accumulator, the combination, with a cylinder, piston, slide-valve, and locomotive steam-chest provided with a valve, *r*, of an attachment consisting of a pipe, A, provided with a branch, B, in which there is a valve, E, controlled by a spring, I, the tension of which may be varied, said pipe A being also provided with a valve-seat in which there is arranged a valve, N, formed with the ways *a* and *b'*, the way *a* leading into an extension, A', in which there is a valve, F, said extension having a pipe, K, adapted to be connected with an air-brake system, while the way *b'* connects with the bore *b* of the pipe B, substantially as described.

5. The combination, with a locomotive steam-chest and its connections, of the following elements, viz: pipe A, provided with valve N, and extension A', having a valve, F, and the pipe K, connected with the air-brake system, a branch, B, having a valve, E, a lever, O, connecting-rod *o'*, lever *q*, shaft *p*, and flap or cover P, substantially as described.

6. The combination, with a locomotive steam-chest and its connections, of the following-named elements: pipe A, having a valve, N, formed with the ways *a*, *b'*, and *c*, and having branches B and C, provided with valves E and D, and extension A', and a valve, F, and the pipe K, connected with the air-brake system, substantially as described.

MICHAEL P. DRUMMEY.

Witnesses:

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HENRY DOBBIE.