

No. 618,478.

Patented Jan. 31, 1899.

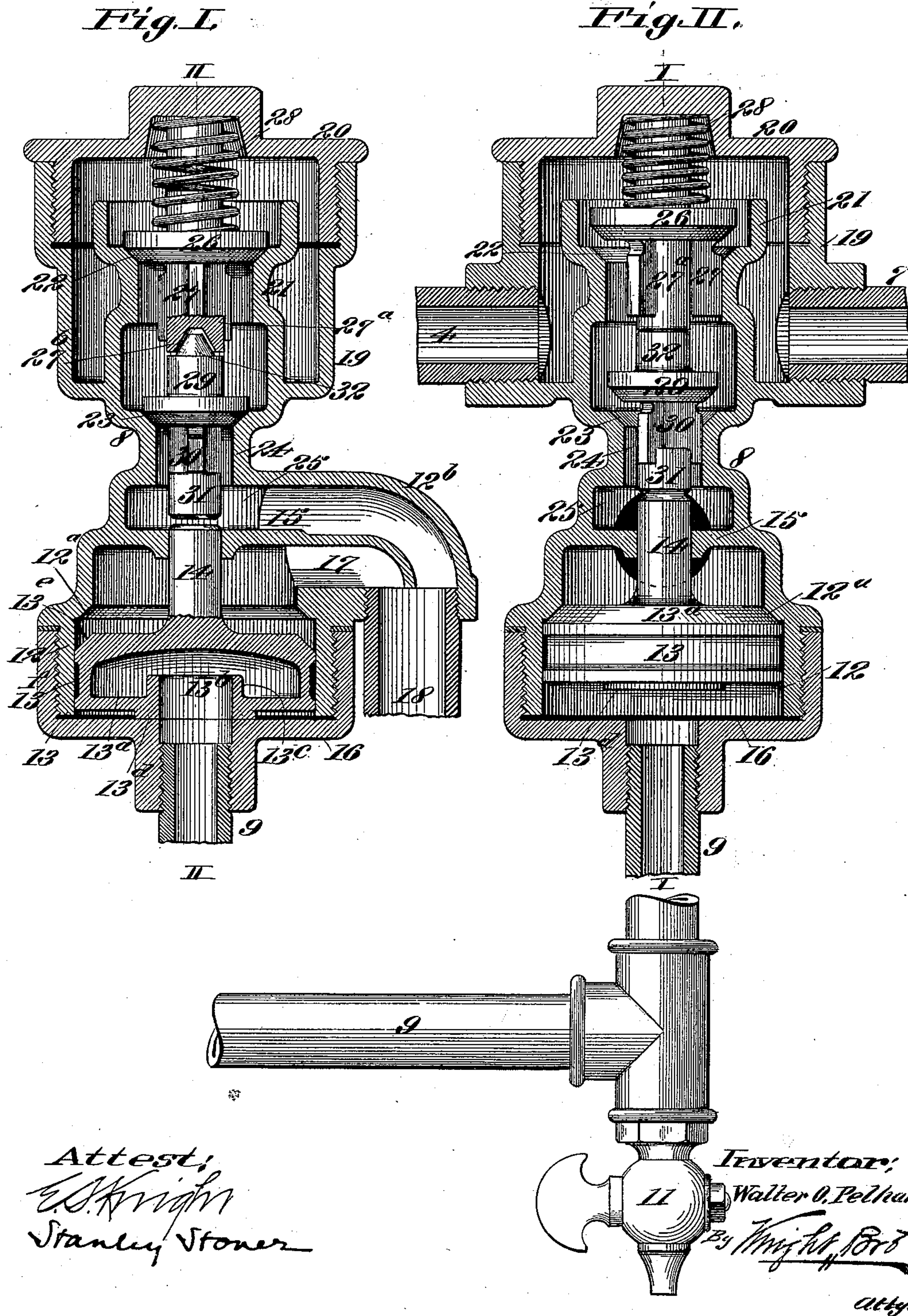
W. O. PELHAM.

RELEASING DEVICE FOR DRIVE WHEEL BRAKES.

(Application filed Apr. 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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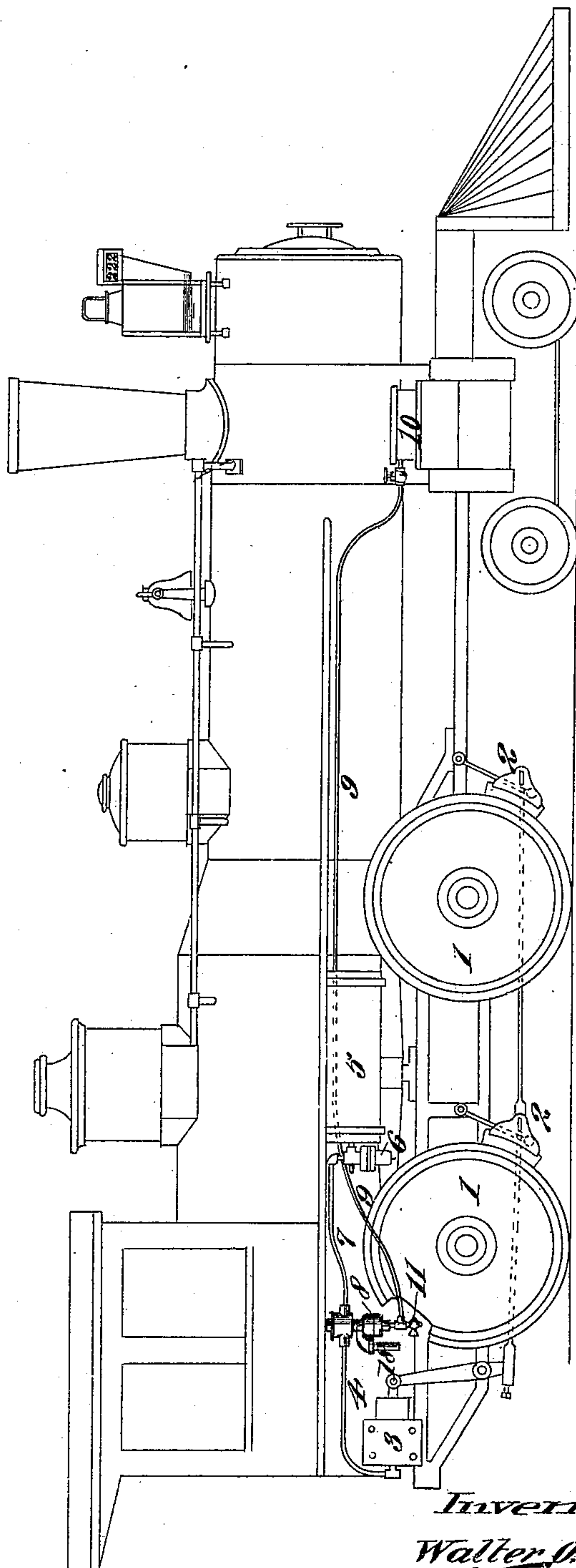
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Fig. III.



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UNITED STATES PATENT OFFICE.

WALTER O. PELHAM, OF ST. LOUIS, MISSOURI.

RELEASING DEVICE FOR DRIVE-WHEEL BRAKES.

SPECIFICATION forming part of Letters Patent No. 618,478, dated January 31, 1899.

Application filed April 7, 1898. Serial No. 676,835. (No model.)

To all whom it may concern:

Be it known that I, WALTER O. PELHAM, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Releasing Devices for Drive-Wheel Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates to an improvement on the device of the same character as that set forth in Letters Patent of the United States No. 586,455, granted to me July 13, 1897.

In this improvement, as in the one shown and described in the patent mentioned, the object is to produce an effective release device for locomotive drive-wheel brakes, through the medium of which the said brakes are instantly released when fluid-pressure is admitted to the steam-chest of the engine-cylinder.

The invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a vertical sectional view taken on the line I I, Fig. II, through my improved device. Fig. II is a vertical sectional view taken on the line II II, Fig. I, a portion of the pipe that conveys the back pressure from the engine-cylinder being shown in elevation. Fig. III is a side view of a locomotive with my improvement applied thereto.

Referring to Fig. III, 1 designates the locomotive drive-wheels, and 2 the brakes designed to operate against said wheels. The brakes are arranged in common manner and are connected to the piston-rod of the brake-cylinder 3.

4 is one section of the brake-pipe connected to the cylinder 3.

5 is the auxiliary cylinder, and 6 the triple valve connected therewith.

7 is a second section of the brake-pipe connecting the triple valve and the exhaust device 8. The brake-pipe section 4 also communicates with the exhaust device 8, as seen in Figs. II and III.

9 designates a pipe communicating with the steam-chest 10 of the engine-cylinder and with the exhaust device at its lower end.

This pipe is provided with a suitable drain-cock 11. The connections and purpose of the pipe 9 between the cylinder steam-chest and the exhaust device are similar to that set forth in my patent herein referred to.

12 designates a lower-valve chamber of the exhaust device 8, with which chamber the pipe 9 communicates.

13 is a piston-valve located in said chamber and having an upwardly-extending stem 14, that operates in a guide-partition 15. The lower end of the valve-chamber is closed by a cap 16, to which the pipe 9 is connected. The valve 13 is formed with a cavity 13^a and an aperture 13^b, that opens into the cavity 13^a, the said opening being surrounded by an annular rim 13^c, that enables the production of a well around said rim for a purpose to be presently explained. The lower face of the valve 13 is formed with an annular valve-seat 13^d, surrounding the aperture 13^b at the entrance into said valve-chamber 12 from the pipe 9. This valve-seat 13^d holds the outer lower face of the valve 13 away from contact with the cap 16, thereby leaving a recess around said valve-seat 13^d when the valve is in its lowermost position, into which sediment entering the valve-chamber may deposit, so that it will not interfere with the proper seating of the valve against the cap 16 when such valve is in its lowermost position. The well surrounding the rim 13^c also produces a receptacle for the deposit of sediment carried through the opening 13^b into the cavity 13^a. To further provide against sediment or foreign matter interfering with the operation of the piston-valve 13, I form a groove 13^e in the periphery of said valve, into which such matter may enter, if it passes the base of the valve. The upper face of the valve 13 is provided with a ground-seat 13^e, that contacts with a ground-seat 12^a in the valve-chamber when the valve 13 is in its uppermost position.

17 designates a passage-way leading from the valve-chamber 12 from above the valve 13 through a horn 12^b into a pipe 18. This passage-way provides for the exit of any leakage of steam that may escape past the piston-valve 13, and also dispenses with vacuum above the piston-valve when said valve falls to its lower seat.

19 designates an upper valve-chamber, the

upper end of which is closed by a cap 20. The fluid-conveying brake-pipes 4 and 7 are connected to this upper valve-chamber at its lowermost portion, as is clearly illustrated in Fig. II. Within the valve-chamber 19 is a valve-receiving cup 21, extending upwardly to a considerable height above the base of the valve-chamber 19. This valve-receiving cup is provided near its upper end with a valve-seat 22 and at the lower end with a valve-seat 23.

24 is a passage-way leading from the valve-receiving cup into a passage-way 25, that communicates through the horn 12^b with the pipe 18 for the exhaust of pressure medium flowing through the valve-cup 21 past the valves therein when such valves are opened in the manner to be hereinafter explained. The horn 12^b and pipe 18, with the passage-ways leading through said horn, provide a means for the vent of pressure medium without exposing such passage-ways for the entrance of foreign matter that might otherwise enter the exhaust device and render the seating of the valves therein imperfect by clogging the valves or their seats.

26 designates an upper valve located in the valve-receiving cup 21 and arranged to seat against the valve-seat 22 therein. This valve 26 is provided with guide-wings 27, depending therefrom and extending from a stem 27^a, and it is normally held to its seat by a spring 28, arranged between the valve and the cap 20 of the upper valve-chamber.

29 designates an intermediate valve arranged to seat against the valve-seat 23 and provided with depending guide-wings 30, carried by the valve-stem 31. The valve 29 is surmounted by a stem 32, the end of which enters a socket 27^b (see Fig. I) in the stem of the valve 26 to provide a guide to maintain the valves 26 and 29 in proper relation to each other. The valve-receiving cup 21 extends to a considerable distance above the points of connection of the pipes 4 and 7 to the valve-chamber 19, and any sediment entering the valve-chamber 19 falls to the bottom of the valve-chamber, which forms a well surrounding the valve-receiving cup, and the sediment is thereby kept from entering the valve-receiving cup 21 and preventing the proper seating of the valves 26 and 29 therein.

The features of improvement herein relate to the construction of the exhaust device, in which the prime features are the employment of the two upper valves 26 and 29 instead of the single valve shown in my patent heretofore mentioned, whereby I am enabled to obtain greater surety in the proper operation of the device, for in the event of one of the valves failing to seat properly the other valve going to its seat prevents the passage of any leakage that may have escaped past the first valve.

A further material improvement lies in the peculiar construction of the parts whereby the entrance of sediment into the valve de-

vice is prevented by reason of the construction of the parts from interfering with the proper working of the valves; also, the horn 12^b and pipe 18, through which the leakage and exhaust escape from the exhaust device.

The operation of this improvement is substantially the same as that described in the patent to which I have herein referred. On reversing the engine or on admitting steam to the chest of the engine-cylinder after it has been turned off when the brakes are applied the back pressure from the chest of the engine-cylinder is conveyed through the pipe 9 to the exhaust device and operates against the piston-valve 13, raising said valve from the position shown in Fig. I to that shown in Fig. III, and carries the valves 26 and 29 in an upward direction. On the unseating of the valves 26 and 29 the fluid-pressure medium in the brake-pipe section 7 and the brake-cylinder 3 enters the upper valve-chamber 19, flows past the valves 26 and 29, and exhausts through the passage-way 25 through the horn 12^b into the pipe 18, and any leakage of steam past the piston-valve 13 finds an outlet into the pipe 18 through the passage-way 17 of the horn 12^b. By this means the pressure medium is exhausted from the brake-cylinder 3, thereby instantly releasing the brakes from the drive-wheels 1.

I claim as my invention—

1. In a releasing device for the brakes of drive-wheels, the combination with the brake-pipe, of an exhaust device located in said brake-pipe, and a pipe providing communication between said exhaust device, and the steam-chest of the engine-cylinder; said exhaust device having an outlet for the escape of pressure fluid, and containing an upper valve, a lower intermediate valve, adapted, when moved, to open said upper valve, and a lower valve arranged to move said intermediate valve, substantially as set forth.

2. In a releasing device for brakes of drive-wheels, the combination with the brake-pipe, of an exhaust device located in said brake-pipe, and a pipe providing communication between said exhaust device and the steam-chest of the engine-cylinder; said exhaust device containing a lower piston-valve, an upper valve, a lower intermediate valve, and a horn extending from said exhaust device having passage-ways for the escape of pressure medium flowing past said valves, substantially as and for the purpose set forth.

3. In a releasing device for the brakes of drive-wheels, the combination with the brake-pipe, of an exhaust device located in said brake-pipe, and a pipe providing communication between said exhaust device and the steam-chest of the engine-cylinder; said exhaust device comprising a lower valve-chamber, a piston-valve in said chamber, an upper valve-chamber, a valve-receiving cup in said upper chamber, an upper valve and a lower intermediate valve in said cup, and a horn

having passage-ways for the vent of pressure medium from said valve-chambers, substantially as described.

4. In a releasing device for the brakes of drive-wheels, the combination with the brake-pipe, of an exhaust device located in said brake-pipe, and a pipe providing communication between said exhaust device and the steam-chest of the engine-cylinder; said exhaust having a lower piston-valve, an upper valve, and a lower intermediate valve; said piston-valve being provided with a cavity and an opening leading into said cavity, and a rim in said cavity, substantially as described.

5. In a releasing device for the brakes of drive-wheels, the combination with the brake-pipe, of an exhaust device located in said pipe, and a pipe providing communication between said exhaust device and the steam-chest of the engine-cylinder; said exhaust device containing an upper valve, a lower in-

intermediate valve adapted, when moved, to open said upper valve, and a lower valve arranged to move said intermediate valve, and having a centrally-located valve-seat, substantially as set forth.

6. In a releasing device for the brakes of drive-wheels the combination with the brake-pipe, of an exhaust device located in said brake-pipe, and a pipe providing communication between said exhaust device and the steam-chest of the engine-cylinder; said exhaust having a lower piston-valve, an upper valve, and a lower intermediate valve; said piston-valve having a groove in its periphery for the deposit of sediment, substantially as described.

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In presence of—

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