No. 654,189. Patented July 24, 1900.

C. E. TENCH.

AIR BRAKE ATTACHMENT.

(Application filed Sept. 29, 1899.)

(No Model.)

Fig. 1.

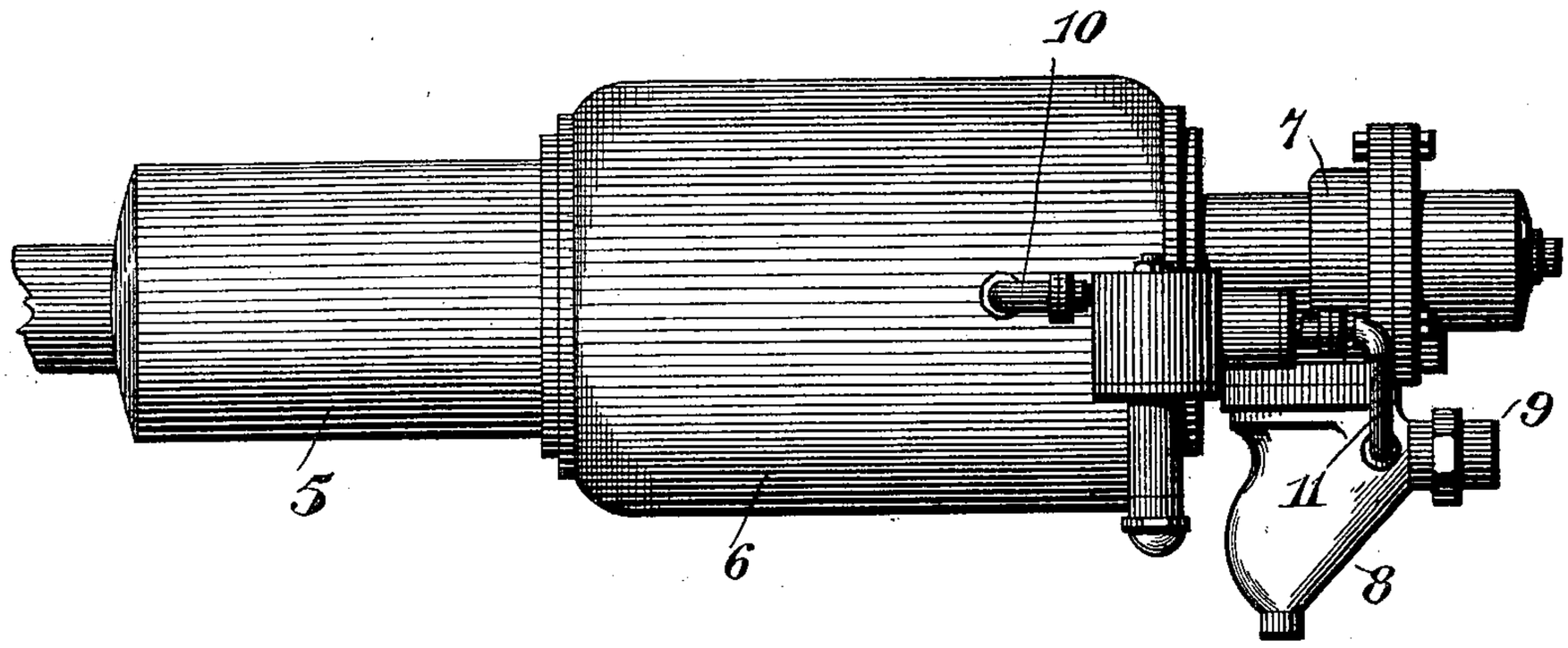
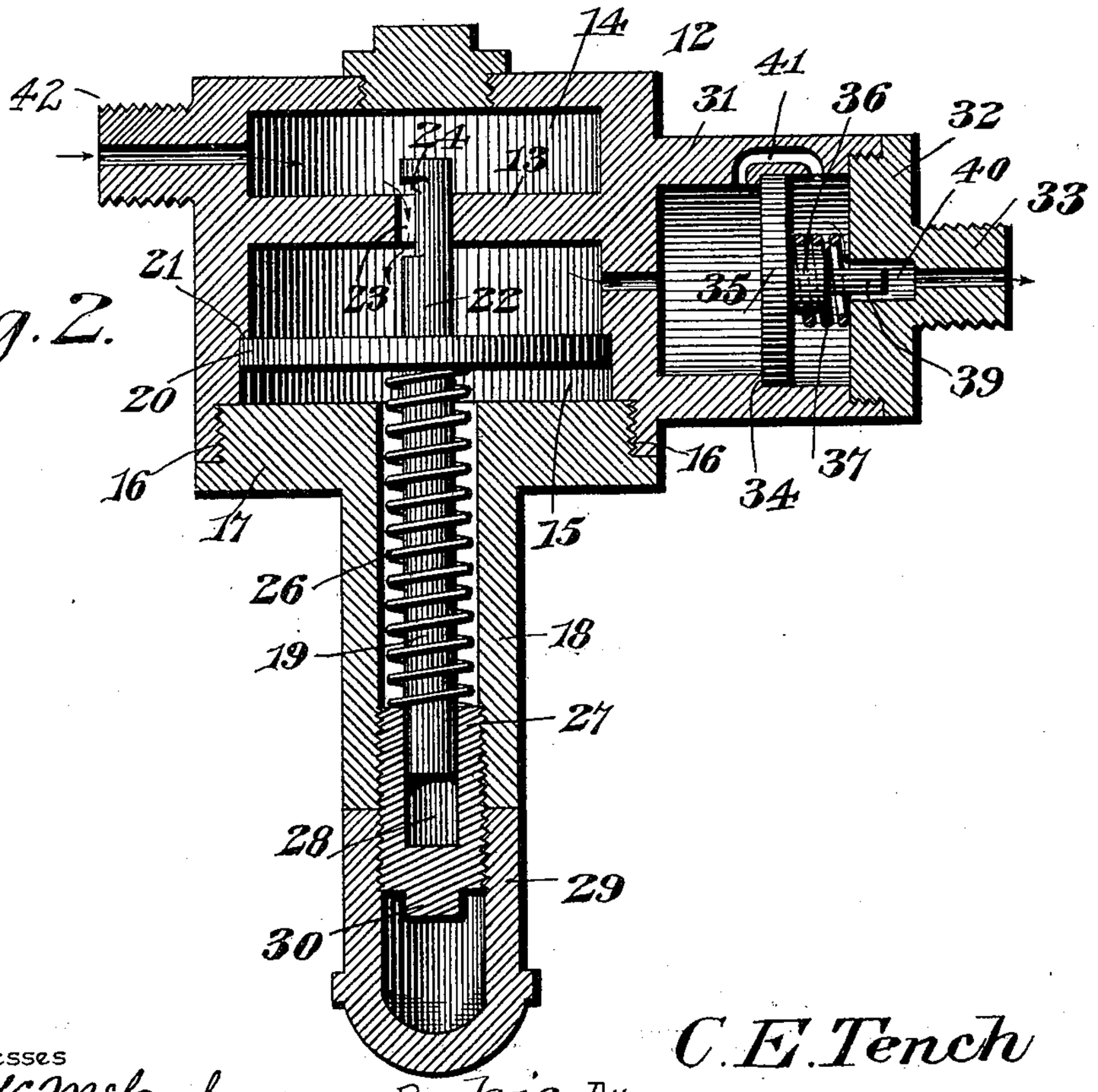


Fig. 2.



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CHARLES E. TENCH, OF ABBEVILLE, SOUTH CAROLINA.

AIR-BRAKE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 654,189, dated July 24, 1900.

Application filed September 29, 1899. Serial No. 732,099. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. TENCH, a citizen of the United States, residing at Abbeville, in the county of Abbeville and State of South Carolina, have invented a new and useful Air-Brake Attachment, of which the following is a specification.

This invention relates to air-brakes in general, and more particularly to means for charging the auxiliary reservoir of the Westinghouse system; and the object of the invention is to provide a construction in which the auxiliary reservoirs may be recharged to compensate for use or leakage of air on long grades and without necessitating the release of the brakes, as is customary.

In accordance with the present invention the auxiliary tank is charged from the train-pipe through the new valve mechanism directly to the auxiliary tank instead of through the triple valve, as is usual.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate like and corresponding parts in both views, Figure 1 is a side elevation showing the auxiliary reservoir, the brake-cylinder, and the triple valve and its casing with the present invention applied. Fig. 2 is a central vertical section of the valve-casing with the valves shown in elevation.

Referring now to the drawings, 5 is a brake-cylinder of ordinary construction, connected with which is the auxiliary reservoir 6, which in turn is connected with the casing 7 of the triple valve, the train-pipe 8 being connected with the latter through the medium of the usual depending portions 8. In the present invention the usual connection between the triple valve and the auxiliary reservoir is closed, and in substitution thereof the present valve mechanism is provided and is connected with the triple-valve casing at the point of connection of the train-pipe, the casing of the present invention being also connected directly with the auxiliary reservoir through the pipe connection 10, the supply for the auxiliary reservoir passing through the pipes 10 and 11 and the casing connected therewith.

The valve of the present invention includes a substantially-hollow cylindrical casing 12, having a transverse partition 13, divided into an upper compartment 14 and a lower compartment 15. The lower end of the casing 12 is interiorly threaded, as shown at 16, and engaged therewith are the threads of a plug 17, having a cylindrical depending portion 18, in which is disposed the lower portion 19 of the piston of the valve, having a disk 20 fixed thereto and lying in the compartment 15 of the casing. The disk 20 lies in the lower end of the compartment 15, and which portion is increased in diameter, as shown, to form a shoulder 21, against which the disk 20 lies when at the limit of its upward movement.

The stem of the piston-valve extends above the disk 20, as shown at 22, and snugly fits a perforation 23 in the partition 13. A portion of the upper end 22 of the stem of the valve is cut away, as shown at 24, and this cut-away portion is so positioned that when the valve is at the limit of its upward movement this cut-away portion will lie in the perforation 23 and will project both above and below the partition 13, thus forming a communicating passage between the compartments 14 and 15. When the disk 20 is at the lower limit of its movement, the extremity of the valve-stem will lie in the perforation 23 and will completely close it.

In order to hold the valve yieldably at the upper limit of its movement, a helical spring 26 is disposed thereon and bears at one end against the under face of the disk 20 and at the opposite end against the upper end of the plug 27, in threaded engagement with the lower end of the tubular extension 18 of the plug 17, and which plug 27 has a central cylindrical depression 28, which receives the lower extremity of the valve-stem and acts as a guide therefor. The plug 27 is continuously threaded and projects below the tubular extension 18 for engagement by the interior threads of a cap 29, conforming in outline to the portion 18.

The plug 28 has a squared lower end 30 to enable the application of a wrench to facilitate adjustment of the plug to vary the tension of the spring 26.

Extending laterally from the casing 12 is a cylindrical tubular extension 31, the outer end of which has its interior diameter increased and is provided with interior threads

for the reception of a plug 32, having a tubular extension 33, through the central bore of which communication is had to the interior of the extension 21. The end of the extension 31 adjacent to the plug 32 is also increased in diameter, although to a lesser extent than the portion last named, and results in the formation of a shoulder 34, the inclosure of the extension 31 forming a valve-chamber in which is disposed a piston-valve comprising a head or disk 35, arranged between the shoulder 34 and the plug 32 and closely fitting that portion of the chamber. This head 35 has a stem 36, upon which is disposed a helical spring 37, bearing at one end against the head 35 and at the other end against the inner surface of the plug 32, the extension 36 having a further and diminished extension 39, which operates in the widened portion 40 of the bore of the plug 32 to prevent tilting of the head or disk of the valve.

A passage 41 is formed in one wall of the extension 31, one end of this passage communicating with the piston-chamber at each side of the piston-head when the latter is against the shoulder 34. When the piston-head is moved to the opposite limit of its motion, however, it acts to close this passage 41.

In practice the extension 33 is connected by means of the pipe 11 to the triple-valve casing adjacent the train-pipe, so as to receive pressure directly from the latter. The upper compartment 13 of the casing 12 is also provided with a tubular threaded extension 42, having the pipe connection 10 with the side of the auxiliary reservoir 6.

The construction just described and which is termed a "recharge-valve" is adapted to convey the pressure from the train-pipe directly to the auxiliary reservoir instead of to allow it to pass through the triple valve as is now done.

With the construction above described when a reduction of pressure is made to apply the brakes the excess of pressure in the auxiliary reservoir will act to move the piston-head 35 against the tendency of the spring 37 and will close the passage 41, thus practically maintaining the pressure in the auxiliary reservoir. At this time the triple valve has operated to communicate the auxiliary reservoir with the brake-cylinder, and this condition will remain so long as pressure is maintained in the auxiliary reservoir and brake-cylinder. It will of course be understood that the normal pressure in the auxiliary reservoir and the train-pipe is seventy pounds.

When communication has been closed between the auxiliary reservoir and the air-brake cylinder by an equalization of the air in the auxiliary reservoir and the train-pipe, the spring 37 will move the head 35 of the piston-valve to uncover the passage 41, so that the auxiliary reservoir will be in direct communication with the train-pipe, and the communication between the auxiliary reservoir and the brake-cylinder will be cut off in the usual manner by the graduating-valve, the brake mechanism being still applied. The brakes having been thus applied and adjusted by means of the engineer's brake-valve being in what is termed the "lap" position, the engineer's valve will be placed into position between the present lap position and running position, at which time the present feed-port in the engineer's brake-valve will be opened to a position that will govern and gradually feed the air to the train-pipe. The train-pipe being in open communication with the auxiliary reservoir, the pressure in the auxiliary reservoir will gradually rise until the desired pressure has been restored.

The helical spring 16 of the piston-valve in the casing 12 is set so that the head of the valve will balance a pressure of seventy-one or seventy-two pounds. The pressure in the auxiliary reservoir and the train-pipe being normally seventy pounds, the piston-valve will not be operated and communication between the compartments 14 and 15 will be opened. If it is then desired to release the brake, the engineer's brake-valve is set at full release, acting to increase the pressure in the auxiliary reservoir, and when this pressure reaches a point above the resistance of the spring 26 said spring will be compressed and communication through the casing 12 will be shut off. Further increase of pressure in the train-pipe will act to operate the triple valve to release the brakes. When the brakes have been released and the pressure in the train-pipe fallen below the resistance of the spring 26, the piston-valve connected therewith will operate to open the passage between the compartments 14 and 15.

It will of course be understood that in practice the specific construction herein shown may be varied and that any desired proportions and materials may be employed without departing from the spirit of the invention.

What is claimed is—

1. A recharging-valve comprising a casing adapted for communication with a train-pipe and an auxiliary reservoir, said casing comprising two valve-chambers, a valve-seat in one of the valve-chambers, a valve comprising a stem having an operating-diaphragm, said valve lying in operative relation with the seat to engage the latter in opposite directions, a passage leading from the second valve-chamber to the first valve-chamber to communicate with the latter at a point between said valve-seat and the operating-diaphragm, and a valve in the second chamber adapted for movement under the influence of auxiliary-reservoir pressure against the train-pipe pressure to close communication between the casing and the train-pipe.

2. A recharging-valve comprising a casing including two valve-chambers, means for connecting one of the valve-chambers with the auxiliary reservoir, means for connecting the second chamber with the train-pipe, a spring-

pressed valve in the second chamber adapted to stand normally open and to close under the influence of auxiliary-reservoir pressure and against the train-pipe pressure, a valve-seat, a valve comprising a stem and adapted for movement in opposite directions to engage the seat and close communication between its chamber and the auxiliary reservoir, a diaphragm upon the valve-stem, and a passage connecting the chambers and communicating with the first chamber between the diaphragm and the valve-seat.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES E. TENCH.

Witnesses:
S. M. JONES,
M. H. WACHTEL.