No. 877,531. PATENTED JAN. 28, 1908.

W. V. TURNER.

BRAKE.

APPLICATION FILED APR. 9, 1906. 3 SHEETS—SHEET 1.

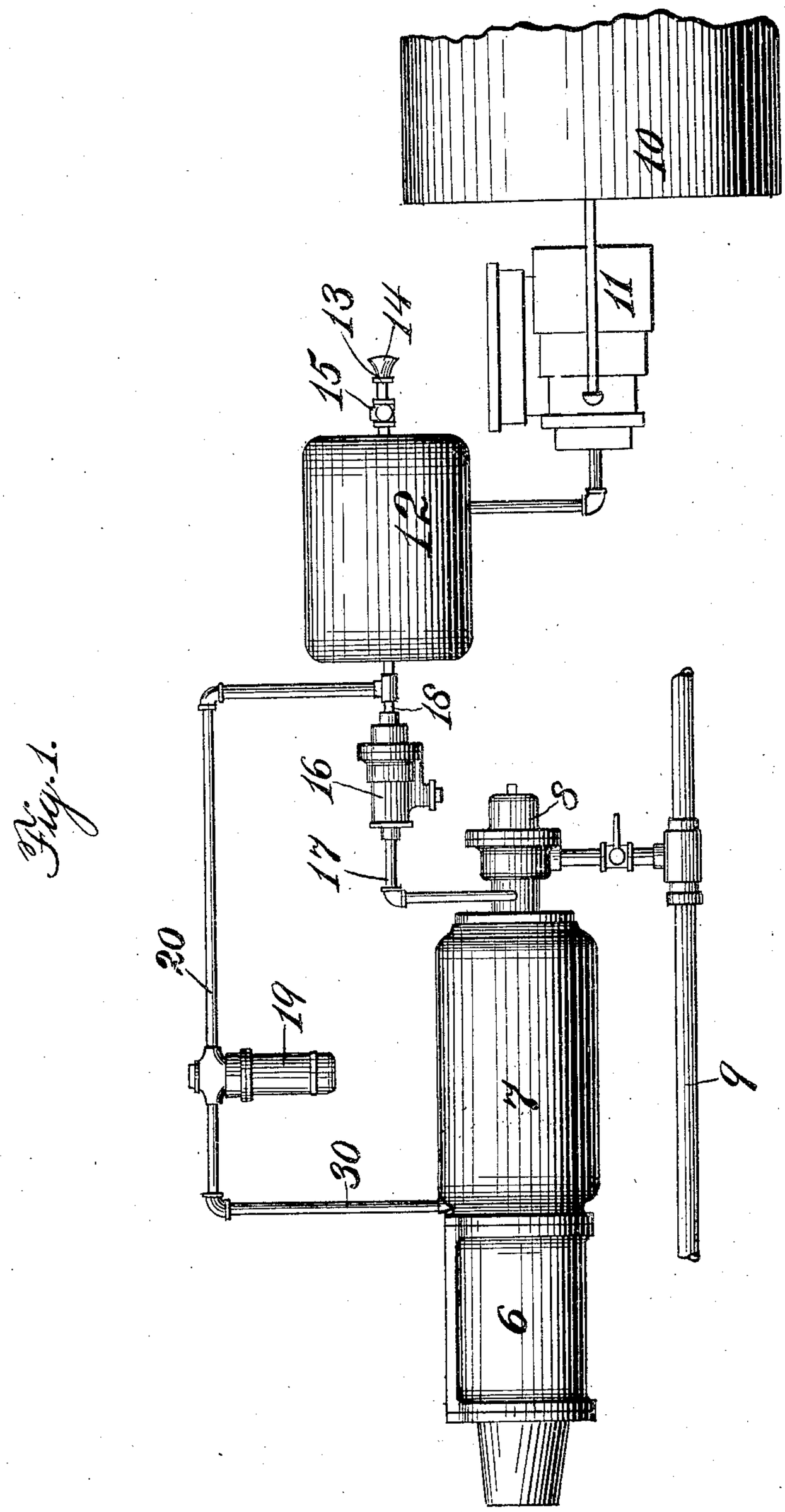

Fig. 1.

WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

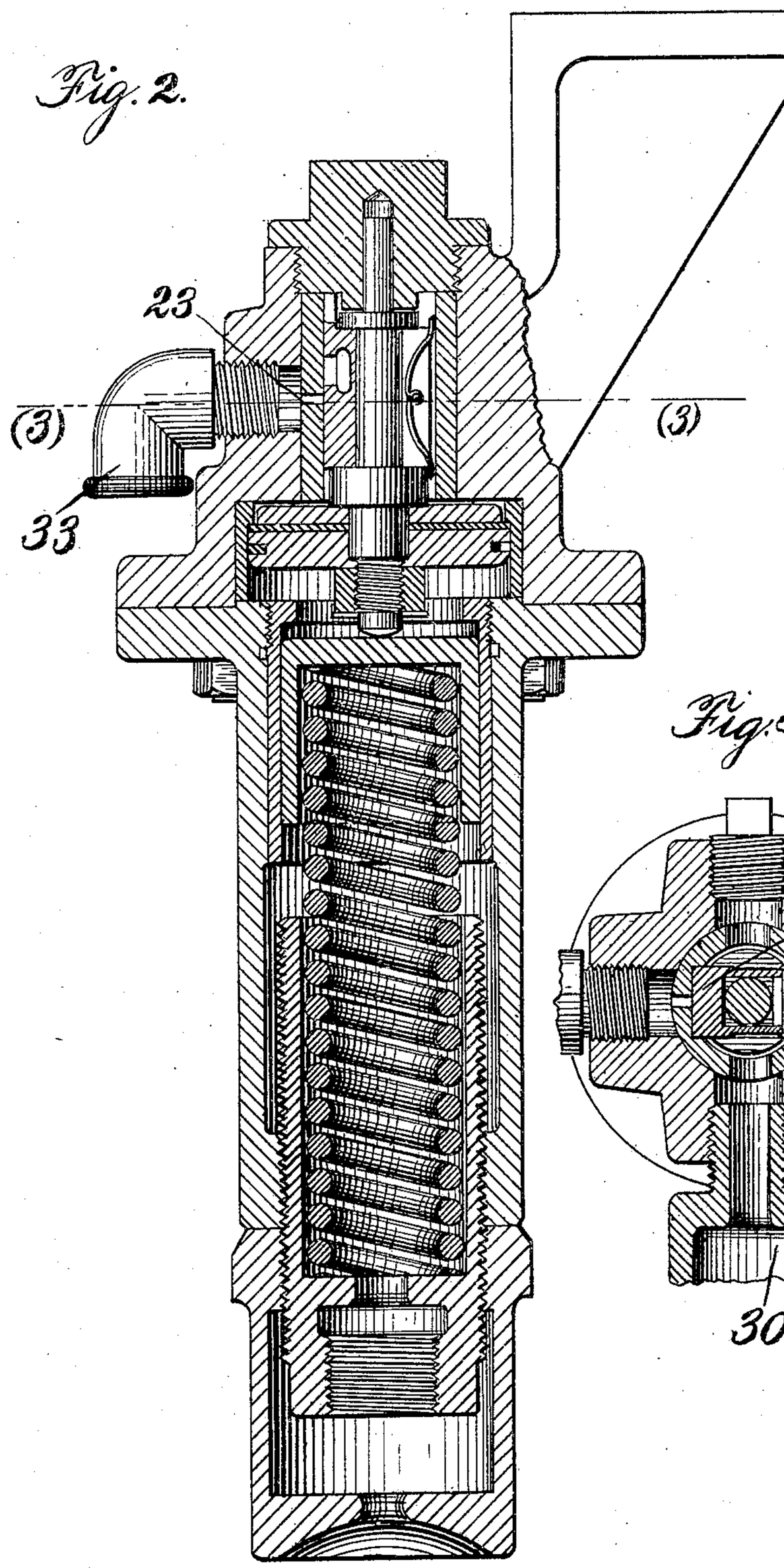
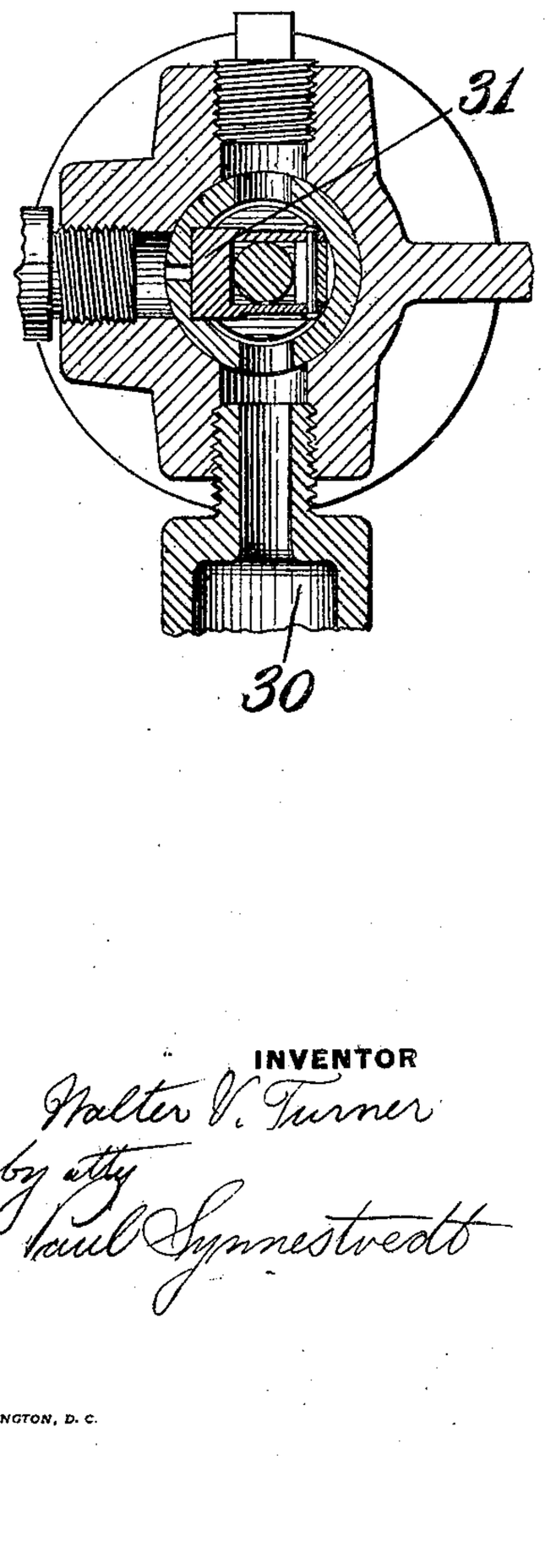


Fig. 3



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3 SHEETS—SHEET 3.

Fig. 4

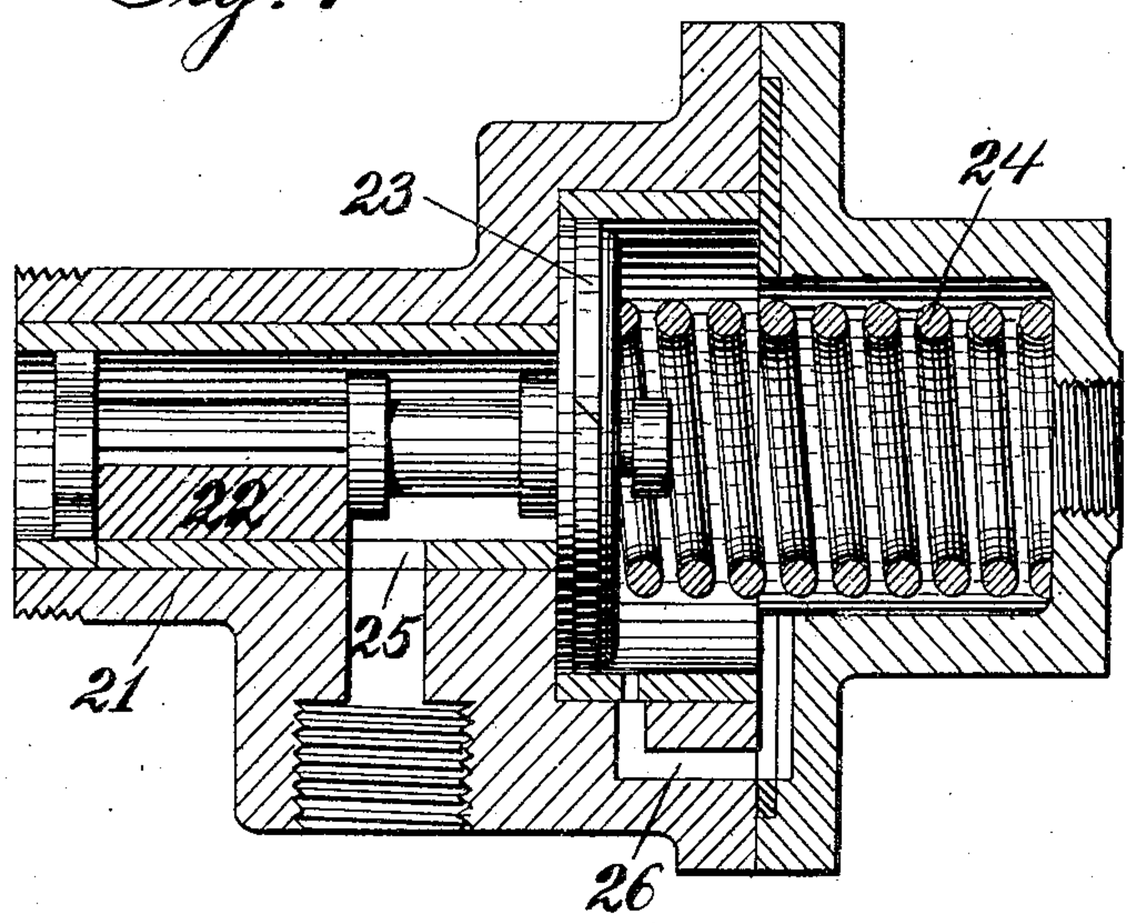
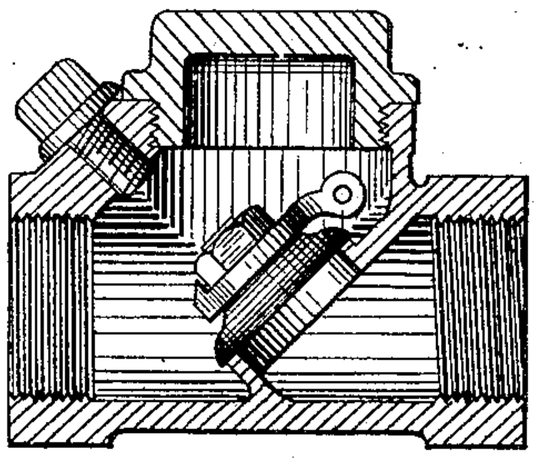


Fig. 5



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER V. TURNER, OF WILMERDING, PENNSYLVANIA, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF WILMERDING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BRAKE.

No. 877,531. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed April 9, 1906. Serial No. 310,808.

To all whom it may concern:

Be it known that I, WALTER V. TURNER, a citizen of the United States, residing at Wilmerding, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Brakes, of which the following is a specification.

This invention has reference to an improvement in air brake devices which is primarily designed for the purpose of saving a portion of the air which ordinarily is wasted, and thereby reducing the service and consequent wear of the pump or compressing apparatus, and also in consequence effecting a saving where such compressing apparatus is operated by electricity as is the case in traction lines, in the amount of electricity required to do the work of the train.

A further object of this present invention is the provision of means whereby the air ordinarily vented from a high speed reducing valve and commonly lost to the atmosphere is utilized in a suction reservoir, in combination with a compression device, for supplying air at a pressure above that of the atmosphere, to the inlet or suction opening of the compressor device, thus increasing the efficiency and capacity of such compressing apparatus without interfering in other respects with the action of the brakes.

In order that my improvement may be better understood, I have illustrated the same in preferred form in the accompanying drawings, wherein—

Figure 1 is a diagrammatic view of an apparatus as ordinarily constructed, with my improvement applied thereto;

Figure 2 is a sectional view of the high speed reducing valve employed in conjunction with my novel mechanism;

Figure 3 is a horizontal transverse section through the reducing valve taken on the line (3) (3) of Figure 2, and

Figure 4 is a vertical sectional view of another valvular device employed in conjunction with this mechanism, for operating under pressure from the cylinder exhaust, as will be hereinafter more particularly described, and Figure 5 is a sectional view of the check valve device employed in conjunction with the suction reservoir forming a portion of my improved mechanism.

Referring more particularly to Figure 1, it will be seen that I have there indicated a brake cylinder 6, an auxiliary reservoir 7, a triple valve 8, a train-pipe 9, and a main reservoir 10; a pump 11, or electrical compressor, all of which are in common use in apparatus of this class.

In conjunction with the mechanism above referred to, I provide a suction reservoir 12 having an inlet pipe 13 for supplying atmospheric pressure therethrough to the strainer nozzle 14, such inlet pipe being provided also with a check valve 15 adapted to permit air to be drawn inward when required, but to close against an outward flow of pressure from the suction reservoir 12.

In conjunction with the apparatus last described I also employ in carrying out my invention a valvular device 16 connected by pipe 17 to the triple valve exhaust, and by another pipe 18 to the suction reservoir 12, and a high speed reducing valve 19 of ordinary construction but provided with a pipe connection 20 arranged as shown, to carry the escape of air from the reducing valve down to the pipe 18 and thence to the suction reservoir 12.

The valve device 16 is as shown in section in Figure 4, and comprises essentially a casing 21, the slide valve 22 and the piston 23, arranged with the spring 24 in such manner that when the air pressure from the triple valve exhaust enters at the left of the piston it will push the latter open against the spring and close the opening 25 leading to the atmosphere. The piston in the position last mentioned will then uncover the passage 26 and allow air from the triple exhaust to pass around the piston into the suction reservoir, affording a supply above atmospheric pressure for the pump to use. Thus far the apparatus just described forms the subject-matter of a patent issued jointly to E. A. Wright and myself, October 30, 1906, No. 834,343. The feature particularly added in connection with this case has reference to the combination with the mechanism last mentioned of the high speed reducing valve 19 and the connection 20 therefrom leading to the suction reservoir so as to utilize the pressure ordinarily wasted by the high speed reducing valve in conjunction with the pressure ordinarily wasted from the triple valve exhaust, in the suction reservoir as a supply for the pump, thereby effecting a saving in wear and tear of the pump, and increasing the efficiency of the apparatus as a whole.

It will be observed from examination of

Figures 2 and 3 that the pipe connection 30 coming from the cylinder allows air to surround the slide valve 31 of the high speed reducing valve, and when the pressure is sufficient to push down the slide valve until an outlet is arranged through passage 23, pressure from the cylinder will escape therethrough and out of the elbow 33 connecting with the pipe 20 which leads to the suction reservoir. Thus the air admitted by the high speed reducing valve is carried into the suction reservoir and utilized in conjunction with air saved from the discharge from the triple valve through the valve mechanism 16.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. An air brake apparatus comprising in combination, a brake cylinder, a cylinder reducing valve, a compressor, and a connection from said cylinder reducing valve to the inlet or suction pipe to supply the compressor with pressure, substantially as described.

2. An air brake apparatus comprising in combination a brake cylinder, mechanism for venting pressure from said cylinder, a compressor, and a connection from said venting mechanism to said compressor for utilizing the air vented from the cylinder, supplying pressure above the atmospheric pressure to the said compressor.

3. An air brake apparatus comprising in combination, a cylinder, means for venting pressure therefrom, a triple valve, an exhaust from said triple valve, a device for collecting pressure vented from said triple exhaust and from said cylinder venting valve and for supplying the same to a compressor, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of the two subscribing witnesses.

WALTER V. TURNER.

Witnesses:
J. C. BRADLEY,
F. E. GAITHER.