

No. 688,602.

Patented Dec. 10, 1901.

W. S. DE CAMP.
ANGLE COCK ADJUSTER FOR AIR BRAKES.

(Application filed June 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

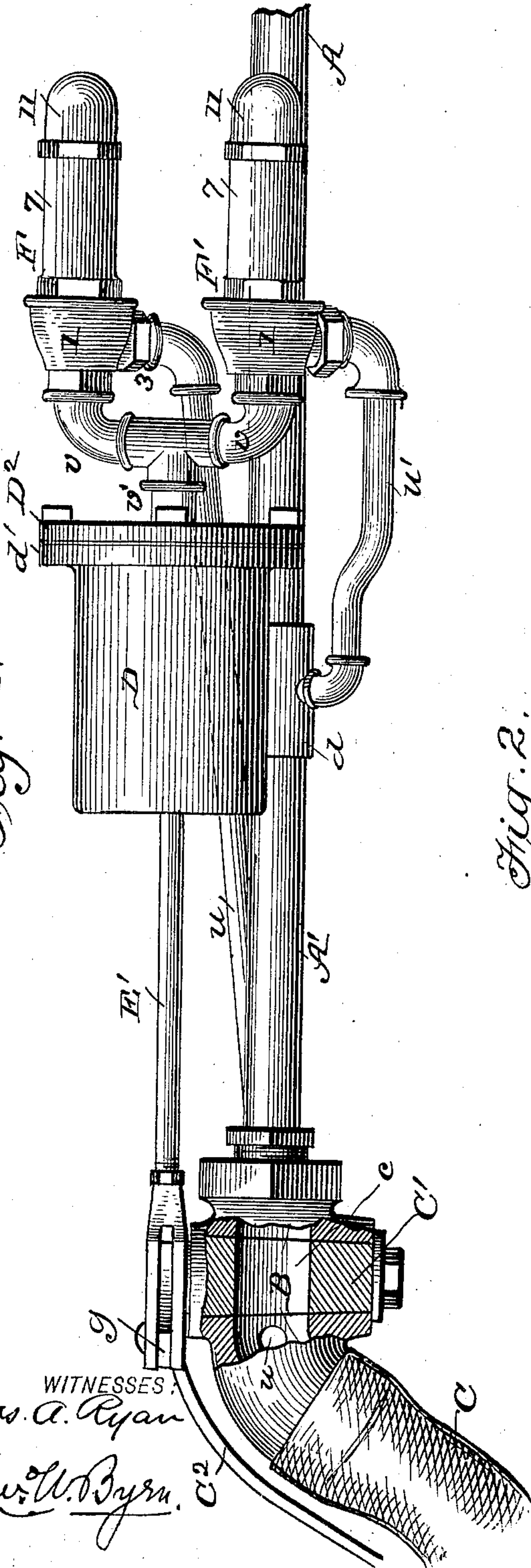
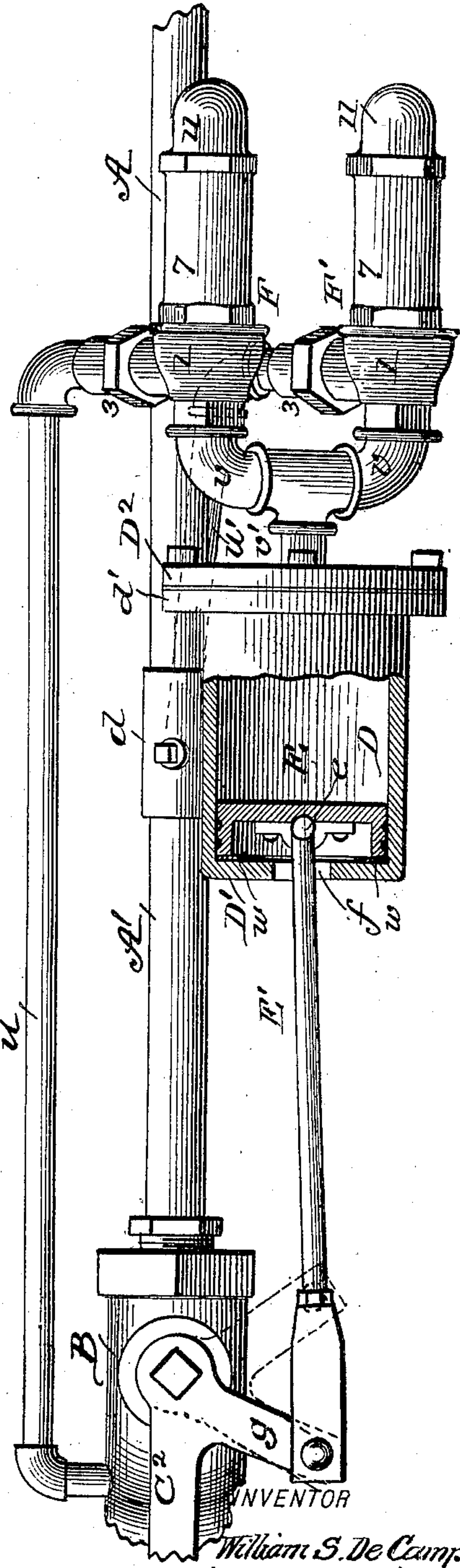


Fig. 2.



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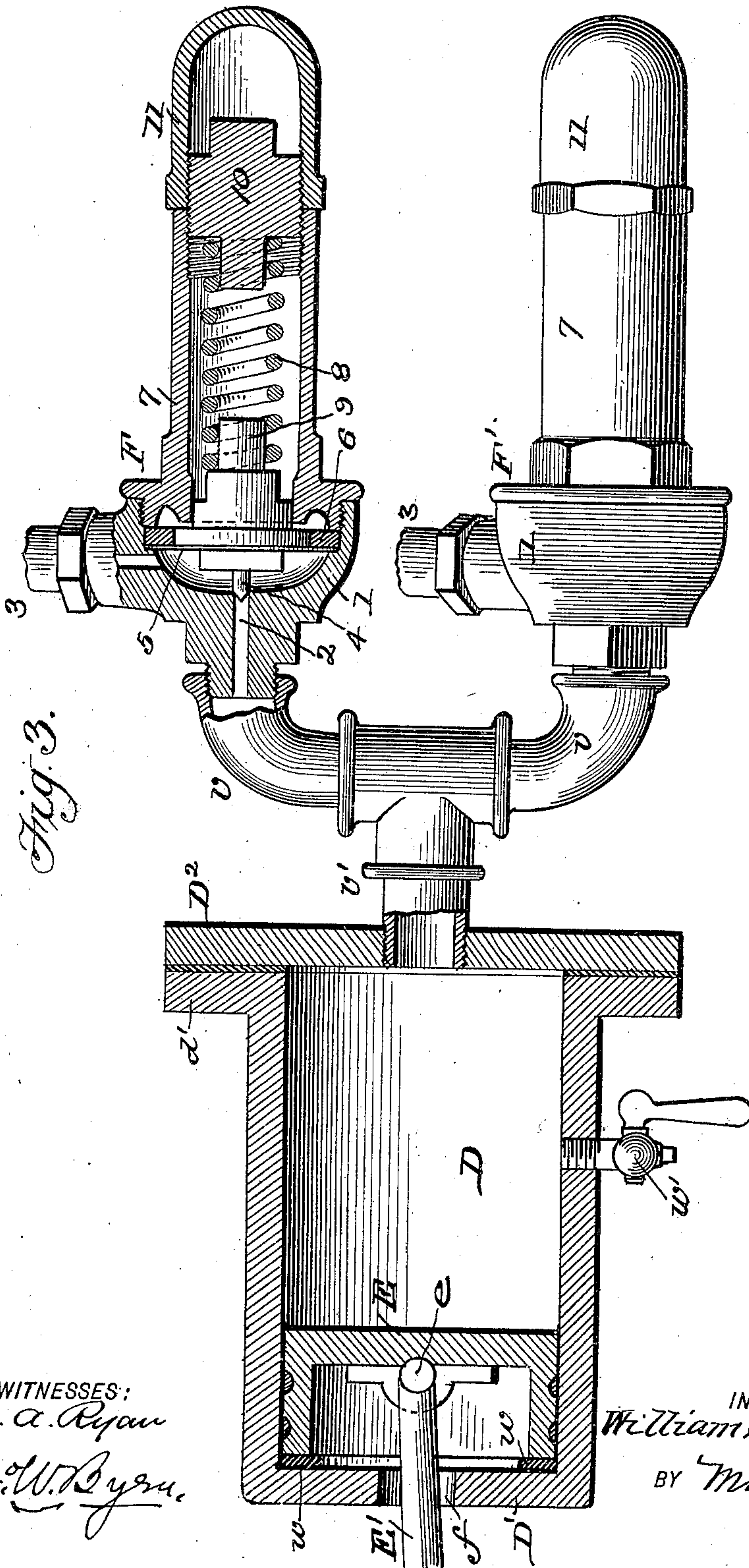
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UNITED STATES PATENT OFFICE.

WILLIAM S. DE CAMP, OF CHILLICOTHE, OHIO.

ANGLE-COCK ADJUSTER FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 688,602, dated December 10, 1901.

Application filed June 18, 1901. Serial No. 65,037. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. DE CAMP, of Chillicothe, in the county of Ross and State of Ohio, have invented a new and useful Improvement in Angle-Cock Adjusters for Air-Brakes, of which the following is a specification.

In the ordinary air-brake system a train-pipe runs from end to end of the car and terminates at each end in an angle-cock the mouth of whose casing dips down at an angle to connect with the flexible hose that connects the train-pipe between the cars. Through this train-pipe, its hose-couplings, and angle-cocks the air passes from the locomotive to operate the brakes, which, as usual, are put into action by a reduction of pressure. In coupling up the cars the angle-cocks are ordinarily operated by hand through a handle by the brakeman in order to give free passage of air through the train. This act is one that is dependent upon the memory of the brakeman, and if he should forget to so "cut in" the angle-cocks, and thus preclude continuity in the air-passage through the train-pipe, all the air-brakes in the rear of this closed angle-cock are inoperative and useless and serious danger and delay may arise therefrom.

The object of my invention is to provide a means whereby the engineer may from his locomotive adjust any or all the angle-cocks to the open or cut-in position in case of such over; sight and to that end it consists in the construction and arrangement of a pneumatic angle-cock adjuster designed to be operated by an increase of air-pressure in the train-pipe over and above the normal pressure of seventy pounds, as will be hereinafter fully described with reference to the drawings, in which—

Figure 1 is a side view, partly in section, and Fig. 2 a plan view, of my angle-cock adjuster applied to the train-pipe; and Fig. 3 is a longitudinal section, on an enlarged scale, through the operating-cylinder, its piston, and the two pressure-valves.

In the drawings, A A' represent the train-pipe, which runs from end to end of the car and at each end has the ordinary angle-cock B, which comprehends a casing with one of its mouths connecting with the section A' of

the train-pipe and its other mouth turned down at an angle to connect with the flexible hose C, that connects the train-pipe between cars. In this casing is arranged a turning-plug C', having a transverse passage-way c through it, with a crank-handle C² on the end of the same outside the case. This crank-handle is turned ordinarily by hand, and when turned into a position in the plane of the train-pipe the passage-way c in its plug opens communication between the train-pipe and the flexible hose, and when said crank-handle is turned to a position at right angles to the train-pipe communication in the latter is cut off.

My invention provides means for adjusting the angle-cock plug to the open position in a pneumatic manner by the engineer from the locomotive at will, which I will now proceed to describe.

The train-pipe near each end of the car is cut in two to form the two sections A A', and between them is fitted a tubular coupling d, whose ends are screw-threaded to receive the screw-threaded ends of the train-pipe sections A A', by which it is supported and which thus forms a continuation of the train-pipe. Cast in one piece with this coupling d is a cylinder D of about three inches internal diameter, one end of which is cast with a closed head D' and provided with leather gasket w and the other end formed with a flange d' and a detachable head D², bolted or otherwise secured to said flange. Within this cylinder there is arranged a piston E, whose sliding surfaces are packed air-tight. A piston-rod E' has a rocking connection e with the piston, which latter is preferably made bell-shaped, with long sides to hold it in true alinement during its reciprocation. This piston-rod extends through an opening f in one head of the cylinder, and its outer end is jointed to an arm g on the crank-handle C² of the angle-cock plug, so that when the piston moves outwardly or toward the cast head of the cylinder this piston-rod will force the crank-handle of the angle-cock plug to the cut-in position or the position in which the passage-way in the plug opens a continuous communication through the train-pipe. To give the necessary movement to the piston to produce this result, I employ two valves F F' of exactly

similar construction which open at a predetermined pressure and allow air to pass to the air-tight side of the cylinder. These valves (see Fig. 3) are intended to take air from the train-pipe and at a predetermined pressure in excess of the ordinary train-pressure to open the train-pipe into the cylinder to actuate the piston. These valves consist each, Fig. 3, of a cup 1, having a central hole 2 in its bottom and an inlet-pipe connection 3 at the side. Within the cup 1 there is held a conical point 4, mounted upon a metal diaphragm 5, which point enters and opens or closes the hole 2, according to the pressure of air coming in from the inlet connection 3. The diaphragm is clamped in the cup by a washer 6 and an external casing 7, which is flanged and screw-threaded, so as to be turned into the cup 1. A helical spring 8 is contained in the case 7 and is seated at one end upon a center pin 9 on a lug attached to the diaphragm and at the other end is held by an adjustable plug 10, which is screwed into the top of the case and may be turned in or out to vary the tension of the spring. An external cap 11 incloses this plug and screws onto the threads of the plug, so as to protect the same and complete the inclosure of the case. This form of pressure-valve is not new in itself, but is a convenient and practical form of valve for admitting air to the cylinder only when the air-pressure exceeds the tension of the spring. The outlet-hole 2 of each valve opens through a pipe-coupling v and common pipe v' into the head of the cylinder. The inlet side of these valves connect, the one, F, through a pipe u , Fig. 2, with the train-pipe on one side of the angle-cock plug and the other, F', Fig. 1, through pipe u' with the train-pipe on the other side of the angle-cock plug. For convenience one of the pipes u is tapped into the casing of the angle-cock and the other into the coupling-sleeve d . The object in having the two valves F F' and the two pipes $u u'$ is merely to permit my devices to be operated when either end of the car is next to the locomotive—that is to say, if the right-hand end of the device is next to the locomotive then the air from the locomotive to operate the angle-cock shown comes through the pipe u' , which takes air at a point between the shut-off angle-cock and the locomotive, and if the left-hand end of the device is next to the locomotive then the pipe u and valve F, which still take air from a point between the angle-cock to be adjusted and the locomotive, are the ones that are effective. In either case the result of adjusting the angle-cock to the open or cut-in position (shown in Figs. 1 and 2) is effected by the engineer from the locomotive by merely throwing into the train-pipe a pressure greater than the normal of seventy pounds. The diaphragm pressure-valves F F' are adjusted so as to remain closed at seventy pounds, but open at an increased pressure, and they thus automatically when the pressure is increased

drive the piston to the end of the cylinder and turn the angle-cock so as to open it or cut in the the train-pipe.

In the side of the cylinder D there is tapped a waste-cock w' , which when opened allows the air in the cylinder to escape, so that the piston can easily be moved back again when it is desired to turn by hand the angle-cock handle back to a closed position. When the air escapes through this waste-cock, the diaphragm-valve closes automatically.

At the rear end of a train having my invention the train-pipe must be provided with a "back-up hose" or dummy coupling, which permanently holds that end of the train-pipe closed.

It will be understood that the normal train-pipe pressure is not to be limited to seventy pounds, but may be sixty-five pounds for low-speed brakes and eighty-five for high-speed brakes.

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

1. A pneumatic angle-cock adjuster comprising a cylinder and piston, means connecting the piston to the angle-cock plug, and an automatic pressure-valve connecting the train-pipe to the cylinder and arranged to be automatically opened by an increase of pressure substantially as described.

2. A pneumatic angle-cock adjuster comprising a cylinder and piston, means connecting the piston to the angle-cock plug, and two automatic pressure-valves with pipes, one of them connecting one valve with the train-pipe on one side of the angle-cock, and the other connecting the other valve to the train-pipe on the other side of the angle-cock, and both valves being constructed to open automatically by an increase of pressure in the train-pipe substantially as described.

3. The combination with a train-pipe made in sections; of an angle-cock adjuster comprising a cylinder and piston, said cylinder being formed with a coupling along its side adapted to connect with the ends of the train-pipe sections and give continuity to the same, an angle-cock with its plug connected to the piston, and a pressure-valve connected to the train-pipe and also with the cylinder and adapted to be opened by an increase of pressure on the train-pipe substantially as described.

4. A pneumatic angle-cock adjuster comprising a cylinder and piston, means connecting the piston to the angle-cock plug, an automatic pressure-valve connecting the train-pipe to the cylinder and adapted to be opened by an increase pressure in the train-pipe, and a waste-cock tapped in the cylinder to discharge its air after automatic operation and permit the connecting mechanism of the angle-cock plug to be thrown back by hand substantially as and for the purpose described.

5. The combination of the train-pipe, the angle-cock and means connected with the an-

gle-cock and arranged for operation by the pressure in the train-pipe whereby the angle-cock may be operated by pressure in the train-pipe, substantially as set forth.

5 6. The combination with the angle-cock and the train-pipe of means connected with the angle-cock for operating the same and arranged for operation by the pressure in the train-pipe, and connections on opposite sides
10 of the angle-cock for the passage of pressure to the means for operating the angle-cock, substantially as set forth.

7. The combination of the train-pipe, the angle-cock, the cylinder, the piston in said cylinder and connected with the angle-cock, 15 connections between the cylinder and the train-pipe for the passage of pressure from the train-pipe to the cylinder, and means for controlling such passage of pressure, substantially as set forth.

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Witnesses:

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EDWIN C. BRANT.