

(No Model.)

R. E. MARSHALL.
ENGINEER'S AIR BRAKE VALVE.

No. 441,432.

Patented Nov. 25, 1890.

FIG. 1.

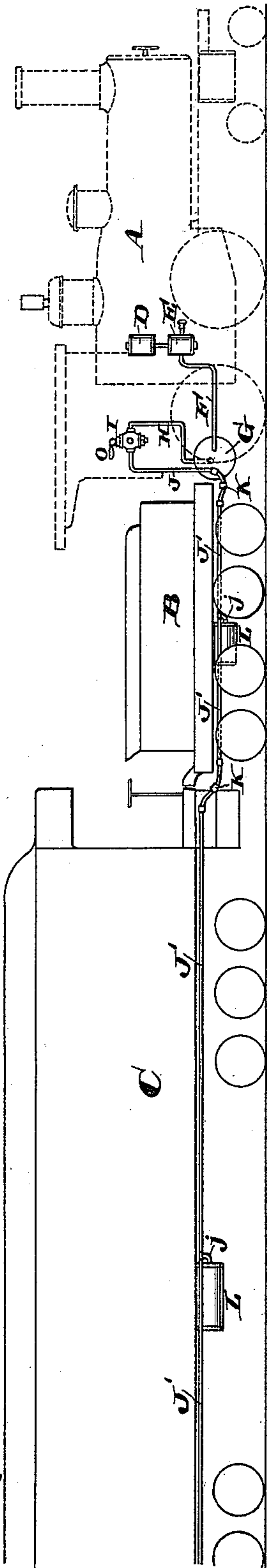


FIG. 2.

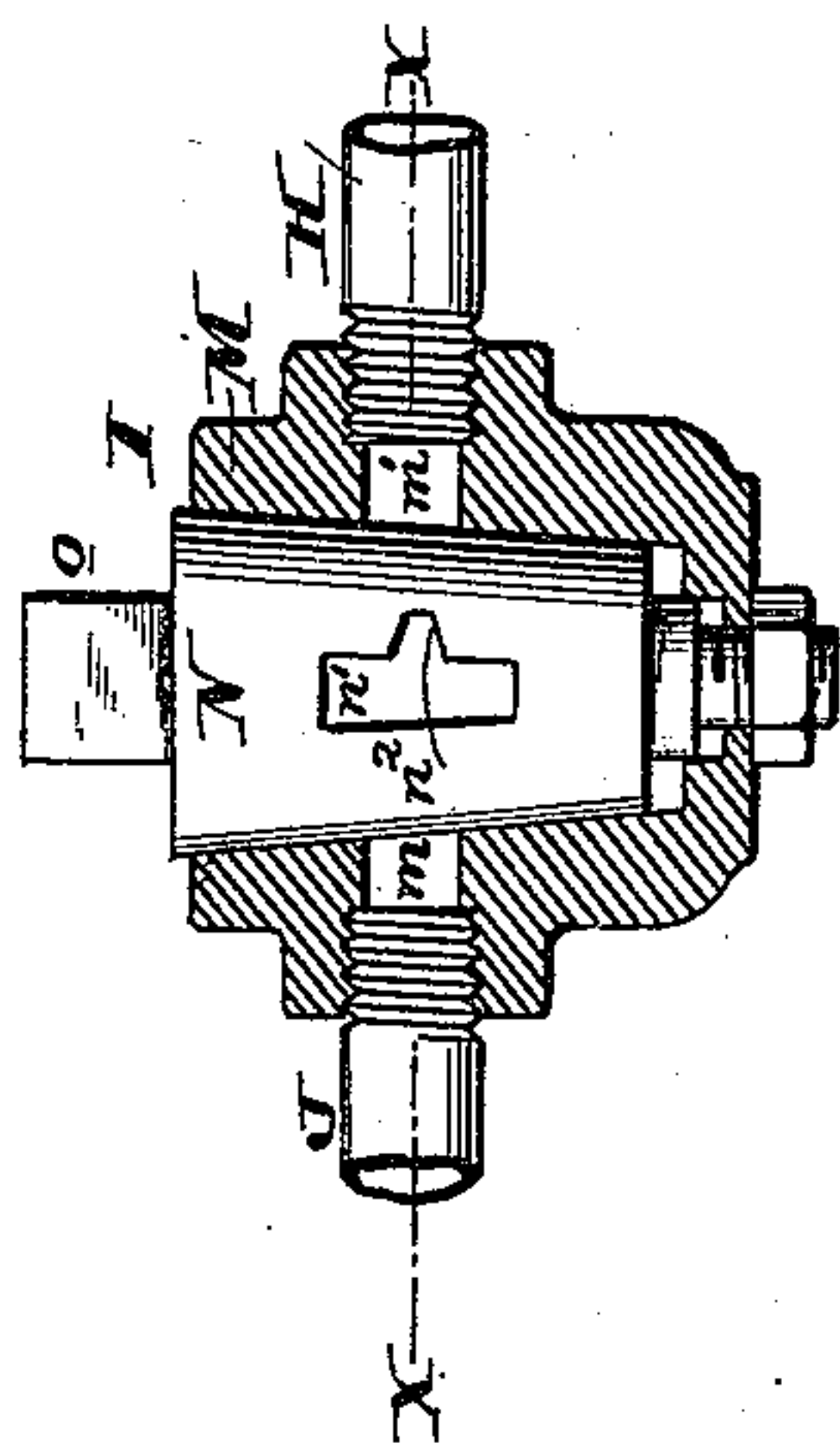


FIG. 3.

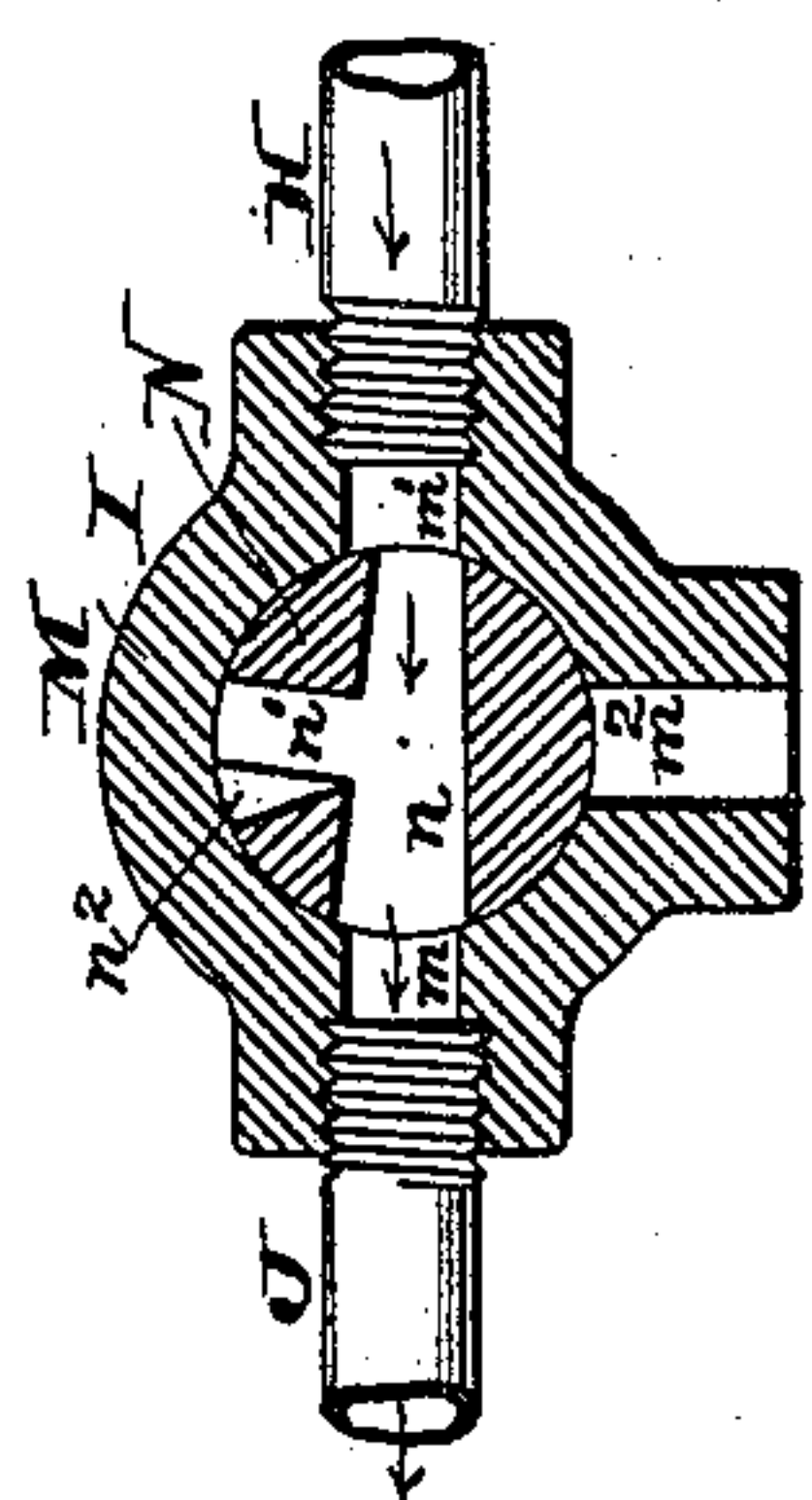
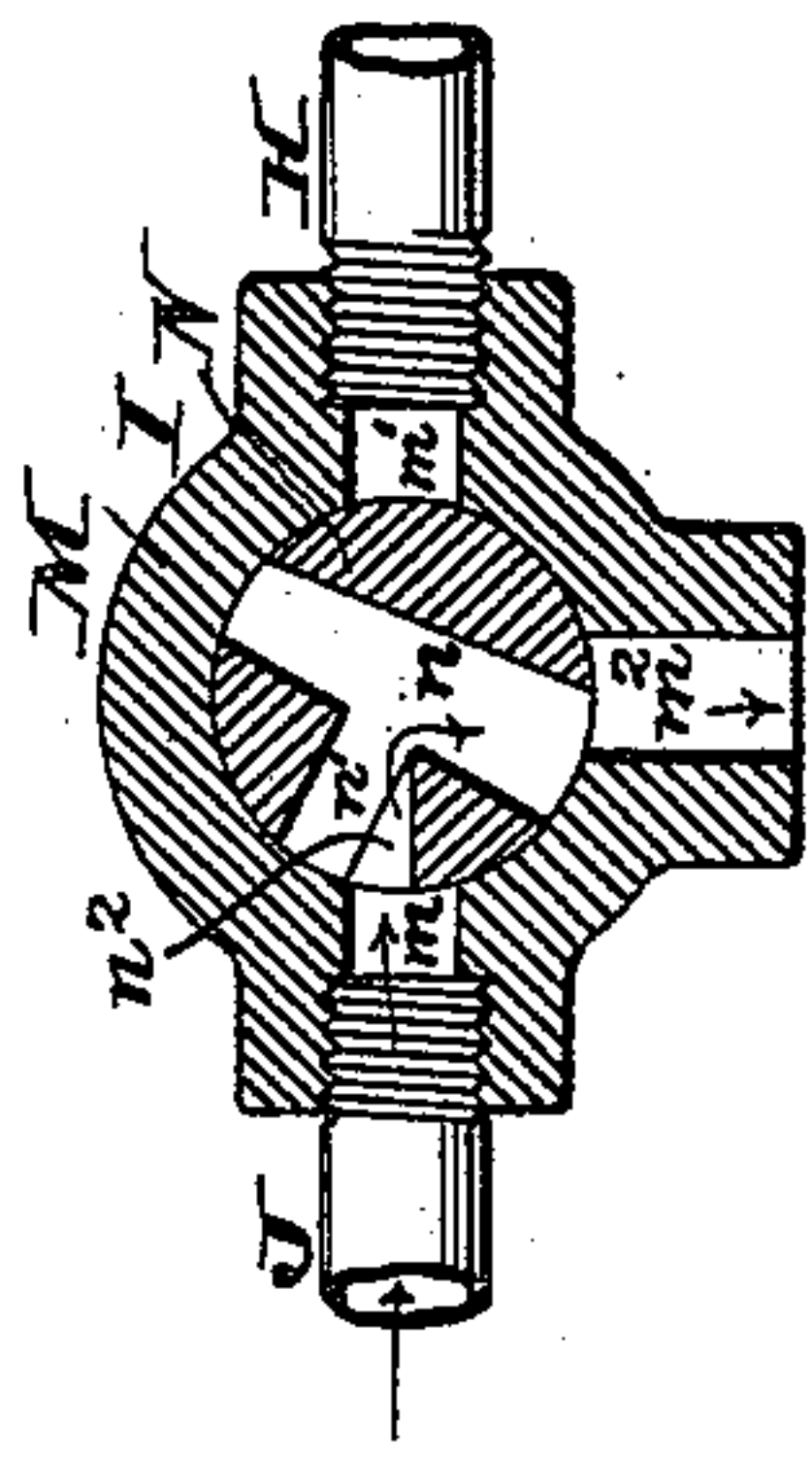


FIG. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

ROBERT E. MARSHALL, OF WILMINGTON, DELAWARE.

ENGINEER'S AIR-BRAKE VALVE.

SPECIFICATION forming part of Letters Patent No. 441,432, dated November 25, 1890.

Application filed May 1, 1890. Serial No. 350,134. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. MARSHALL, of Wilmington, county of New Castle, State of Delaware, have invented a certain new and useful Improvement in Engineers' Air-Brake Valves, of which the following is a true and accurate description, reference being had to the drawings, which form a part of this specification.

My invention relates to the air-brake system of railway-trains, and especially to what is generally known as the "engineer's brake-valve," my object being to provide a simple and inexpensive brake-valve by which a gradual escape of air from the train-pipe will take place in making service stops and a rapid escape in making emergency stops.

The nature of my invention will be best understood as described in connection with the drawings, in which it is illustrated, and the novel features which I desire to protect by Letters Patent are hereinafter pointed out in the claim.

In the drawings, Figure 1 is a side view of part of a train equipped with the air-brake system; Fig. 2, an elevation of my improved valve with the casing shown in section; Fig. 3, a transverse section through my valve on the line X X of Fig. 2, and Fig. 4 a similar section showing the plug turned in the proper position for making service stops.

A is the locomotive; B, the tender; C, a car. D is the pump of the air-compressor; E, the air-compressor; F, a pipe leading from the compressor to the main reservoir, which is marked G; H, a pipe leading from the main reservoir to the engineer's brake-valve I; J, a pipe leading from the brake-valve to the train or brake pipes, (indicated by the letters J' J'.) K K indicate couplings in the train-pipe. j j are branches connecting the train-pipe with the auxiliary cylinders L L. All these parts, with the exception of the engineer's brake-valve, are of ordinary and well-known construction and are used with the ordinary auxiliary mechanism, brake-cylinders, &c., which are not shown in the drawings, as they form no essential part of my present invention, and I may here state that my device is as well adapted for use with what is known as the "Westinghouse quick-acting brake" as with

the older and better known types of brake mechanism.

Referring now to the engineer's brake-valve, it consists, as shown, of a casing M, in which are formed ports m m' , connecting, respectively, with the train-pipe or a pipe leading to it and with the pipe leading from the main reservoir. A third port m^2 is formed in the casing for the exhaust. In the casing a plug N is secured in any convenient way. This plug is provided with a port n , adapted to connect the ports m and m' in the casing, as shown in Fig. 3. A third port n' is formed in the plug and leads into the port n at such an angle that when the plug is turned so that one end of port n will fully register with port m^2 the port n' will register with the port m , leading to the train-pipe. On the inside of port n' , I form a small auxiliary port n^2 . Said port, which when compared with the port n' may be called a "notch," is arranged so that it will register with the port m leading to the train-pipe, when the end of port n has partially passed the edge of port m^2 . (See Fig. 4.) The top of the plug N, as shown in the drawings, is square at o , and a handle O is connected with it, as shown in the drawings.

The operation of my device will be at once understood: The normal position of the plug is that shown in Fig. 3. The main reservoir and train-pipe being thus connected together, when it is desired to make a service stop the engineer turns the plug N to the position indicated in Fig. 4, causing the auxiliary port n^2 to register with the port n and open a passage from the train-pipe to the exhaust-port m^2 , while at the same time all connection with the main reservoir is cut off. The size of the auxiliary port is such as will permit a properly-graduated escape of air from the train-pipe to effect an application of the brakes with the ordinary promptness required for service stops. When for any reason it is desired to make a very quick stop, the engineer turns the plug so that its port n' will fully register with the port m , while at the same time the exhaust-port m^2 is fully opened. The air then escapes with great rapidity from the train-pipe, and the brakes are applied with the requisite promptness.

The proper positions of the valve will of

course be indicated to the engineer by any of the usual means—notches, a pointer, a latch, or any other convenient device.

5 The chief merit which I claim for my invention is its exceeding simplicity of construction, whereby it is at once cheap and less likely to get out of order than the more complicated devices heretofore used to effect similar results.

10 Having now described my invention, what I claim as new, and desire to protect by Letters Patent, is—

15 In combination with the pipes or conduits leading from the main reservoir of an air-brake apparatus to the train or brake pipe, an engineer's brake-valve I, consisting of a

casing M, having ports m m' , connecting, respectively, with the train-pipe and a pipe from the main reservoir, and an exhaust-port m^2 , and a plug N, having a port n , adapted to 20 connect ports m and m' , a port n' connecting with port n , as described, and a supplemental or auxiliary port n^2 at the side of port n' , all substantially as specified and for the purpose of permitting a gradual escape of air from 25 the train-pipe for service stops and a rapid escape for emergency stops.

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Witnesses:

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