

(No Model.)

L. D. McDONALD.  
CYLINDER COCK OPERATOR FOR LOCOMOTIVES.

No. 560,915.

Patented May 26, 1896.

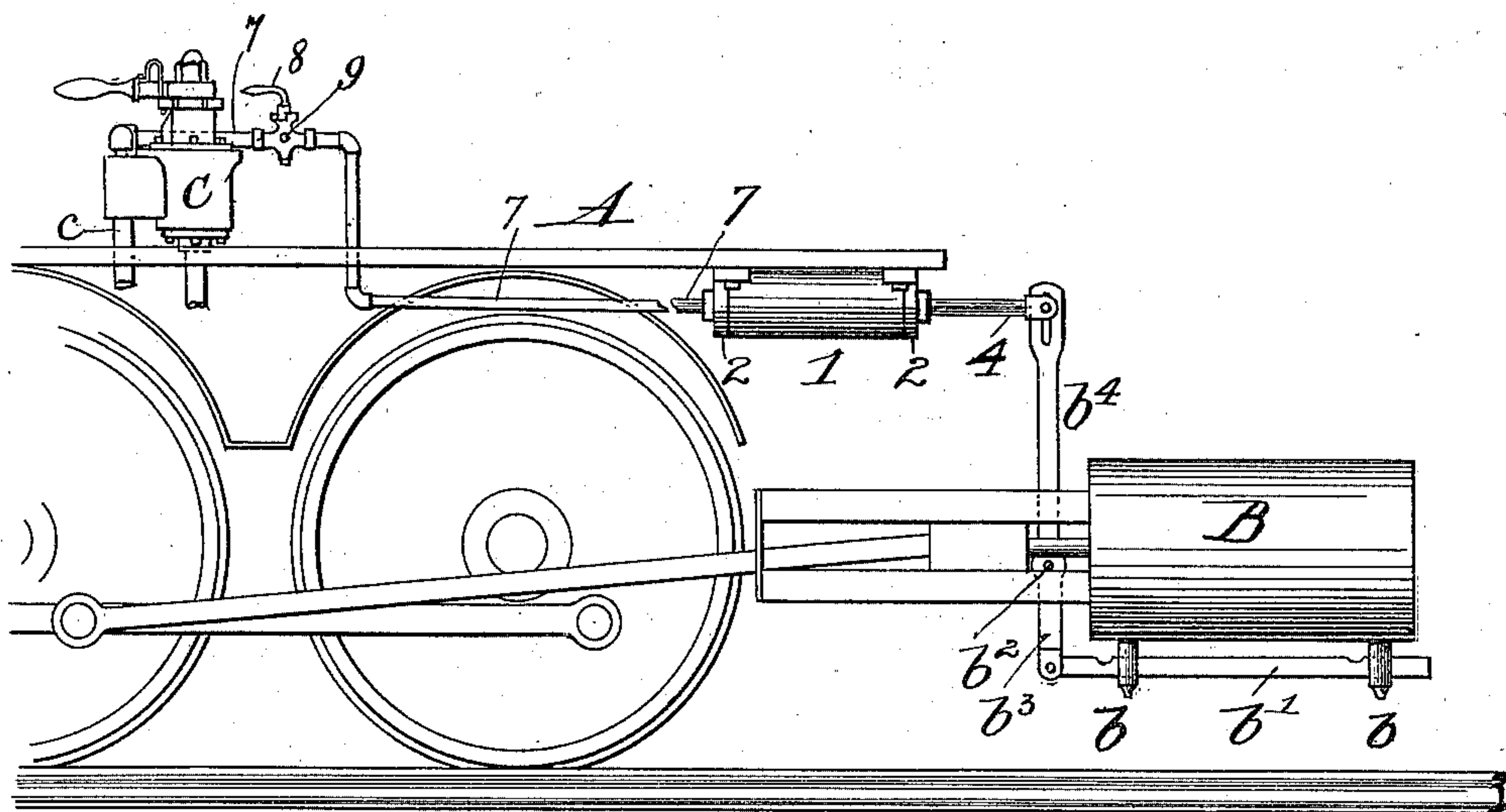


Fig. 1.

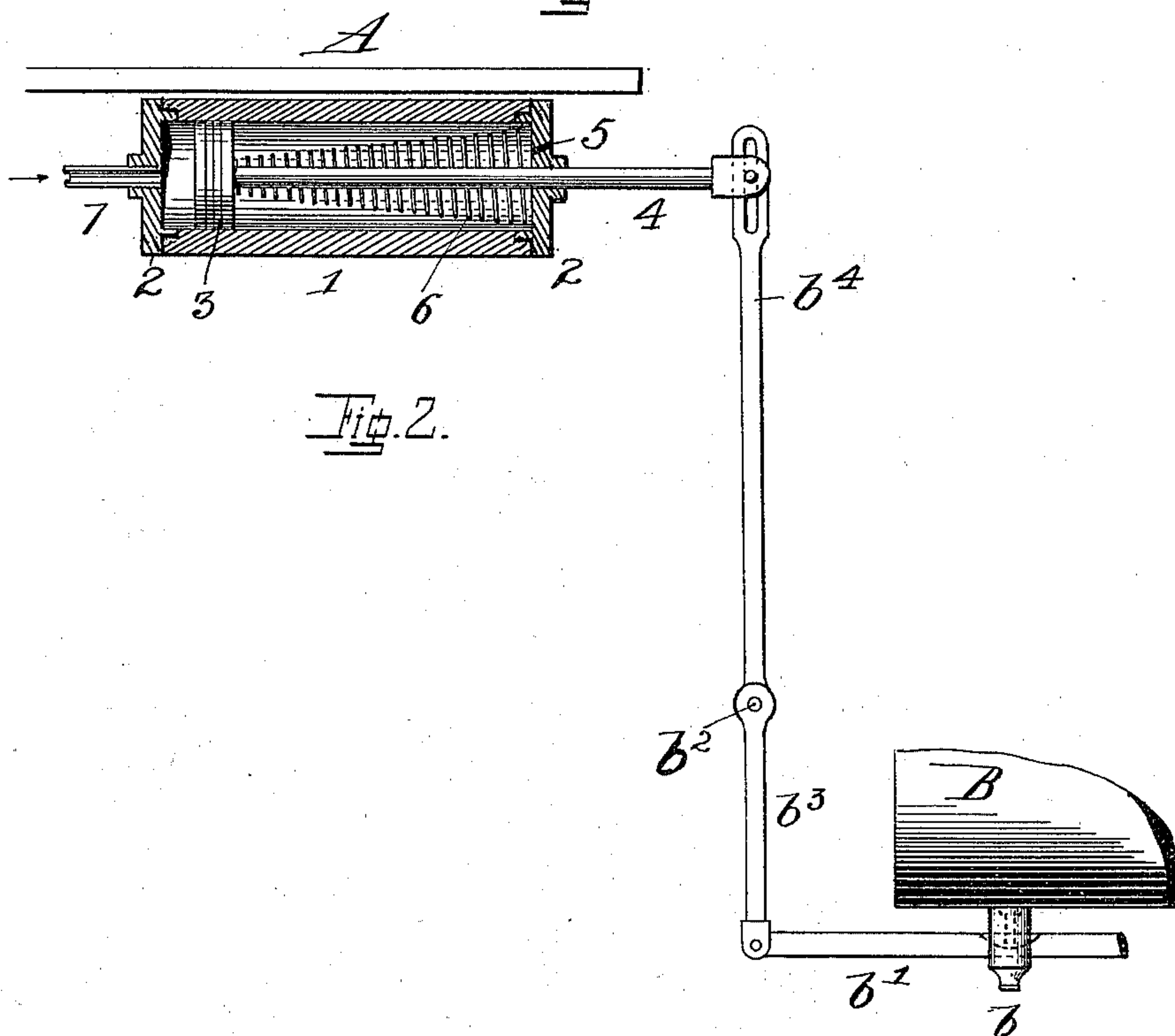


Fig. 2.

Witnesses  
L. F. Haydon.  
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# UNITED STATES PATENT OFFICE.

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## CYLINDER-COCK OPERATOR FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 560,915, dated May 26, 1896.

Application filed July 1, 1895. Serial No. 554,645. (No model.)

*To all whom it may concern:*

Be it known that I, LORENZO D. McDONALD, a citizen of the United States of America, and a resident of Atlanta, in the county of Fulton and State of Georgia, have made a certain new and useful Improvement in Cylinder-Cock Operators for Locomotives; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This device is illustrated in the accompanying drawings as follows, to wit:

Figure 1 is a side elevation of the device and the contiguous parts of the locomotive, showing the position of the device thereon. Fig. 2 is a section through the air-cylinder, showing the spring-actuated piston and its connection.

Similar reference-characters designate the same parts in both figures.

A is the running-board, and B the cylinder (steam) of a locomotive as now commonly employed.

$b$  are cylinder-cocks for venting the said cylinder, and  $b'$  is a slide-bar having notches or other means for operating the valves of said cocks.

$b^2$  is a transverse shaft, upon each end of which is a downwardly-projecting arm or lever  $b^3$ , adapted to swing with said shaft in its partial rotations, the lower end of each arm being connected with the slide-bar  $b'$  of the correlative side of the locomotive, by means of which the said slide-bars are moved, so as to operate the cocks upon the revolution to the desired extent of the said shaft  $b^2$ . Projecting upwardly from the said shaft is an arm  $b^4$ , which is slotted in its upper end preferably and extends to a point near the running-board on one side of the boiler. A cylinder 1 is secured to the under side of the running-board and is provided with heads 2, which preferably screw therein, being then more easy of removal. In said cylinder is a piston 3, and a rod 4 is connected thereto and extends outwardly and is connected with the

upper end of the arm  $b^4$ , so that by its reciprocation said arm moves and imparts a partial rotary movement to the shaft  $b^2$ . A vent 5 is made through the front head of the cylinder, whereby the air may escape from in front of the piston as same is forced forwardly, and on that side of the piston is a spring 6, which, in the construction shown, forces the piston in a direction to open the cylinder-cocks. This spring should be made conical in order to compress freely and to the requisite extent.

7 is an air-pipe which connects with the pipe  $c$  of the engineer's valve C and leads from there outwardly of the cab, then downwardly to a point under the running-board, along the under side of which it extends to and connects with the cylinder 1 at its back end, thereby admitting air to the cylinder on the side of the piston opposite the spring, and is controlled by a suitable valve within reach of the engineer, whereby he may turn on the air and withdraw same when it is desired to open the cylinder-cocks. In the event of the withdrawal said cylinder-cocks are opened by the action of the spring and will remain open until the air is again applied. While not in use the air is simply exhausted and the cylinder-cocks allowed to stand open as required by roundhouse practice. An ordinary three-way or stop and waste cock will answer in the air-pipe, but it should be of a quick-opening variety. Such a valve is shown in the drawings and marked 8, being provided with a passage straight through and a vent 9, whereby air may be kept on the back end of the piston when it is desired to hold the cylinder-cock closed, and by a quarter-turn of the lever said cylinder may be bled, the air passing backwardly through the pipe 7 and outwardly through the vent 9.

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

In a locomotive, the combination of the cylinders and vent-cocks thereon, a rotatable shaft mounted on the frame a lever on each end of said shaft operatively connected by their free ends to the correlative vent-cocks, an upwardly-projecting lever secured to said shaft, an air-cylinder secured to the under

side of the running-board, a piston therein,  
its rod connected to the free end of said up-  
wardly-projecting lever, a spring acting to  
press the piston in a direction to open the  
5 said vent-cocks, a pipe leading into the air-  
cylinder on the side of said piston opposite  
said spring, and connected at its opposite end  
to the main reservoir-pipe of the air-brake  
system and a three-way cock incorporated  
10 in said pipe within the locomotive-cab and so  
set as to allow air to enter said cylinder

through said pipe and to bleed said cylinder  
by way of said pipe, all combined, arranged  
and operating substantially as and for the  
purpose specified.

In testimony whereof I hereunto affix my  
signature in presence of two witnesses.

LORENZO D. McDONALD.

Witnesses:

ALBERT P. WOOD,  
HARDIE L. KEITH.