

J. WALTHER.

Automatic Vent-Openers for Air-Springs.

No. 139,346.

Patented May 27, 1873.

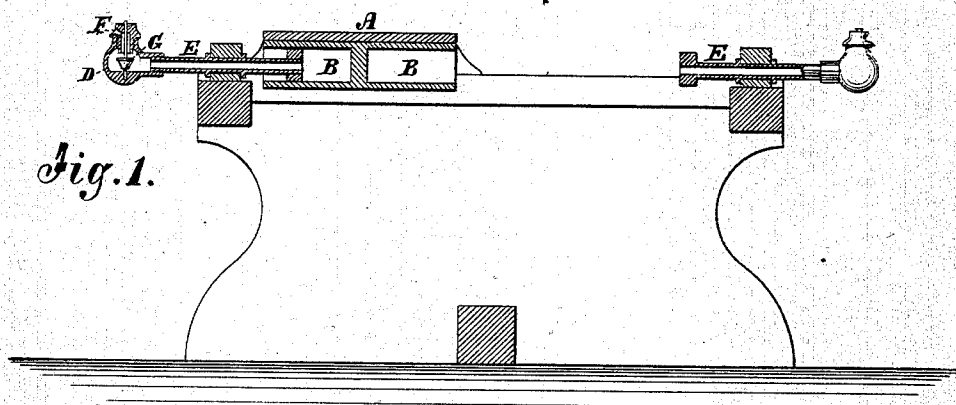


Fig. 1.

Fig. 2.

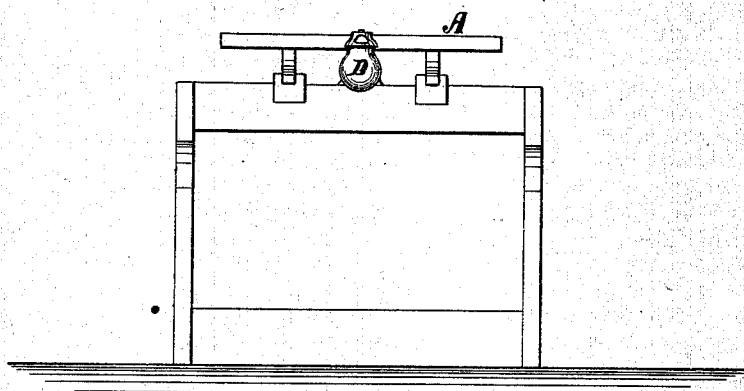
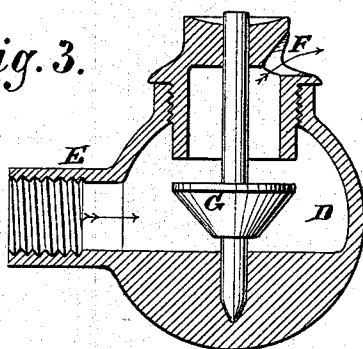


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN AUTOMATIC VENT-OPENERS FOR AIR-SPRINGS.

Specification forming part of Letters Patent No. **139,346**, dated May 27, 1873; application filed
February 8, 1873.

To all whom it may concern:

Be it known that I, JOHN WALTHER, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and Improved Automatic Vent-Opener for Air-Springs, of which the following is a specification:

It is desirable to have a vent, in connection with the air-springs used on printing-presses, to stop the table, by which the air may be allowed to escape from and enter the cylinder freely when the press is running slow at starting and stopping; also when it is being turned over by hand for adjusting, cleaning, or any other purpose; so that the moving of the press will not be obstructed by the compression of the air in front of the pistons in entering the cylinders, or by the partial vacuum formed behind in withdrawing from the cylinders in consequence of the leakage past the pistons in compressing the air. It is also desirable to have the vent so arranged that it be opened automatically when the press stops running, and closed in the same manner when it starts, to avoid the attention and labor necessary to do it by hand. Vents have been used heretofore on these springs—in one case, a stop-cock to be opened and closed by hand; and in another case, a valve was used, which was automatically opened and closed by a governor worked by gearing connected with the driving mechanism of the press. Now, my invention consists of a valve which is automatically opened by either gravitation or by the suction of the piston of the air-springs, or by the same and gravitation, and closed by the air compressed to form the spring, without the aid or intervention of any apparatus for actuating it.

Figure 1 is a longitudinal sectional elevation of part of a printing-press, showing the air-spring mechanism and my improved automatic vent opener and closer. Fig. 2 is an end elevation, and Fig. 3 is an enlarged section of the vent opener and closer.

A represents the reciprocating table or bed of a printing-press, which the air-springs are employed to check up and stop at every stroke without jamming and straining the machinery, the said table being very heavy and running at a high speed. B represents the cylinders, and E the pistons employed for compressing the air contained in the cylinders when closed

by the pistons, and thus forming the air-springs by which the table is stopped.

When the table moves very slowly when the machine is first set in motion, or when stopping or turned by hand, it is not necessary to have the air-spring mechanism operated; and, if it is, the machine turns so hard, either by the compressions or the vacuums, that the driving-belt will run off, or unnecessary exertion is necessary to turn it by hand; hence I have a little valve-chamber, D, on the outer end of each hollow piston-rod E, with a vent, F, in it; also with a valve, G, which closes the vent and opens it; and, for causing it to close the vent, I construct it in suitable form and in such relation to the time of the passage from the piston into the chamber D that the impulse by the air received on it when the piston enters the cylinder quickly will throw it against the seat and close it; but when the piston enters slowly as when turning by hand, and the like, no impulse sufficient to close the vent will be given, so that the valve will remain open and thus relieve the machine of the resistance caused by both the compression and the vacuum.

When the pistons withdraw from the cylinders the valves move back automatically by the combined action of the suction and gravitation, or suction only, in case the valve is arranged to slide horizontally, as it may be, and as I will have it in some cases. They close and open the vent each time the pistons enter the cylinders and withdraw again, when the machine is running up to the working speed, but this is only incidental to the plan adapted for having the vent attached by the air, or by the same and gravitation.

It is immaterial whether the valve here shown be arranged to work vertically or horizontally.

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

The conical valve G decreasing from its upper working-face downwardly, in combination with a superposed seat having vent F, an air-chamber, D, and a hollow piston-rod, E, as and for the purpose described.

JOHN WALTHER.

Witnesses:

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