C. B. COTTRELL.

Improvement in Printing Presses.

No. 120,041. Patented Oct. 17, 1871.

Fig. 1.

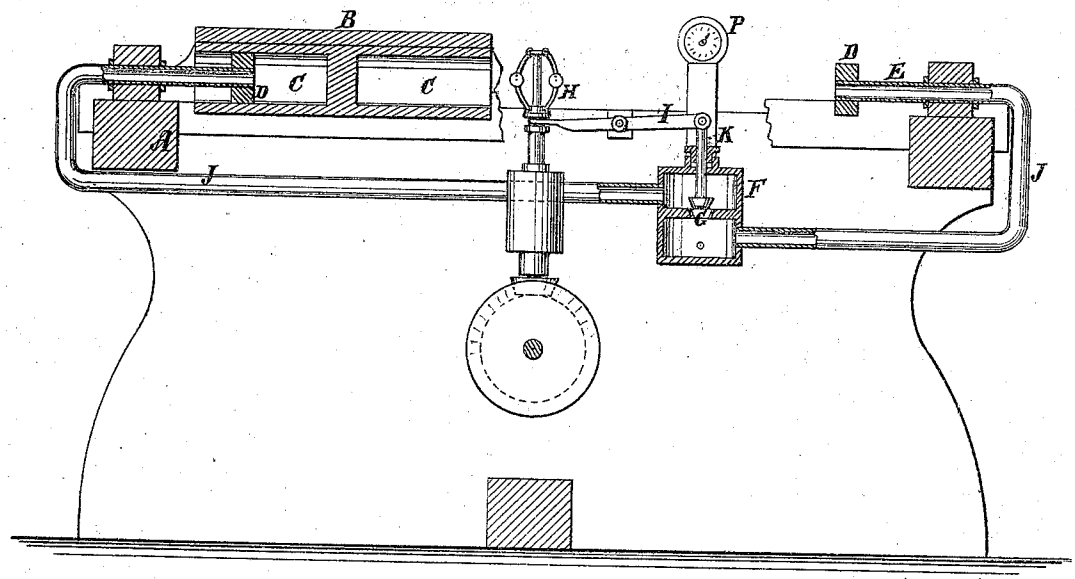
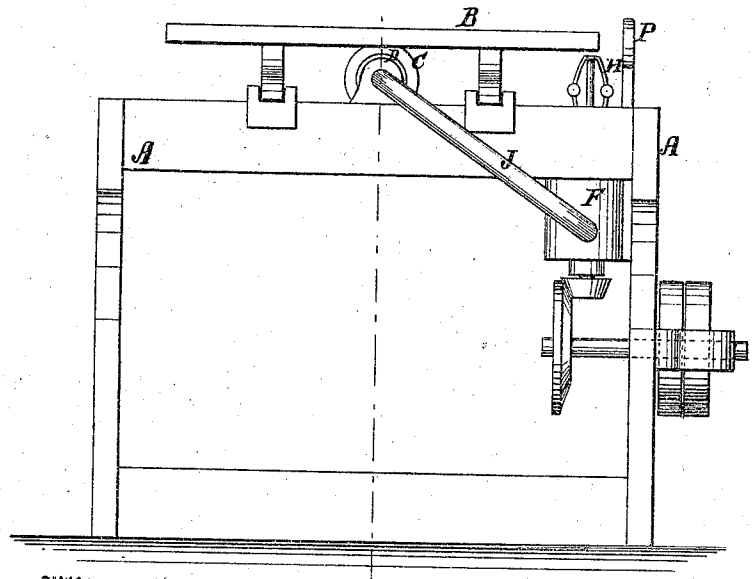


Fig. 2.



Witnesses:

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Reissued July 16th 1872.

120,041

UNITED STATES PATENT OFFICE.

CALVERT B. COTTRELL, OF WESTERLY, RHODE ISLAND.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. 120,041, dated October 17, 1871.

To all whom it may concern:

Be it known that I, CALVERT B. COTTRELL, of Westerly, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to improvements in that class of presses in which the reciprocating table is arrested by an air-spring; and it consists in having the air-spring apparatus arranged for automatically increasing the quantity of air acted upon as the speed of the machine increases and greater pressure is required to arrest the table, and diminishing the said quantity as the machine slows, so that the movements of the table will be equal, whether running fast or slow, and the action of the machine will be more uniform in other respects.

Figure 1 is a longitudinal sectional elevation of a part of a printing-press, showing the application of my improvement, and Fig. 2 is an end elevation.

Similar letters of reference indicate corresponding parts.

A is the frame of the machine. B is the table, whose movements are to be arrested by an air-spring, for which it is provided at each end with a cylinder, C, open at one end, in which a piston, D, is received just previous to the end of the movement, and the air behind the piston compressed to form the spring. The pistons are supported on a rod, F, projecting from the frame. These are the devices commonly employed for compressing air to arrest the motion of the table.

It will be observed that in such arrangements the quantity of air acted upon to form the spring will always be the same, whether the momentum of the table be much or little, and that when the machine is running rapidly, and greater pressure is required to stop the table than when running slowly, the given quantity of air must be compressed more. Consequently, the table must either move further before being arrested than when running slowly, or it will be finally stopped by some of the working parts or gearing, greatly injuring them. Now, this variation in the action of the table very greatly interferes with the proper action of some parts of the machine, especially the "shoe" on the reciprocating end of the rack, and it is highly desirable to avoid it.

I have therefore conceived the idea of varying the quantity of air acted upon according to the speed of the table, which I do by allowing a considerable quantity of air behind the piston to escape when running slowly, and thus have the pistons act upon a smaller quantity, which, being properly regulated according to the speed of the table, admits of always having the table stop at the same point. To this end I make tubular connections of the cylinder C by means of tubes J, or any equivalent thereof, with a drum-cylinder or other suitable place, F, for a check-valve, G, to be opened more or less to let the air escape; and for varying the speed of the valve I employ a speed-governor or regulator, H, such as is commonly employed upon steam-engines for actuating the throttle-valves, gearing the said governor with some part of the machine, so that its speed will be governed by the speed of the machine, and arranging it with the said valve so that as the speed increases and the balls rise or swing away from the axis the valve will be closed, as clearly shown in the drawing, the valve being connected to the lever I by the stem K, and the lever being raised by the balls as the speed increases, moving the valve down, closing it and shutting off the escape for the air. I propose to connect a pressure-gauge, P, with the cylinder F, or any other suitable part, to indicate the compression of the air and show the variations thereof due to different speeds, and to facilitate the adjustment of the governor for varying the openings of the valve for any given speed.

It will also be observed that the governor will always open this valve on the stopping of the machine, so that the air will be allowed to escape from the pistons when starting the machine, moving it by hand, and thus avoid the necessity of compressing the air when the driving-belt has but little adhesion to the pulley or when the table is moved by hand, as is sometimes required.

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

The air-compressing devices employed in printing-presses for compressing air to arrest the table, when arranged for allowing some of the air to escape, and controlled by an automatic regulator, substantially as specified.

The above specification of my invention signed by me this 21st day of July, 1871.

CALVERT B. COTTRELL.

Witnesses:

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