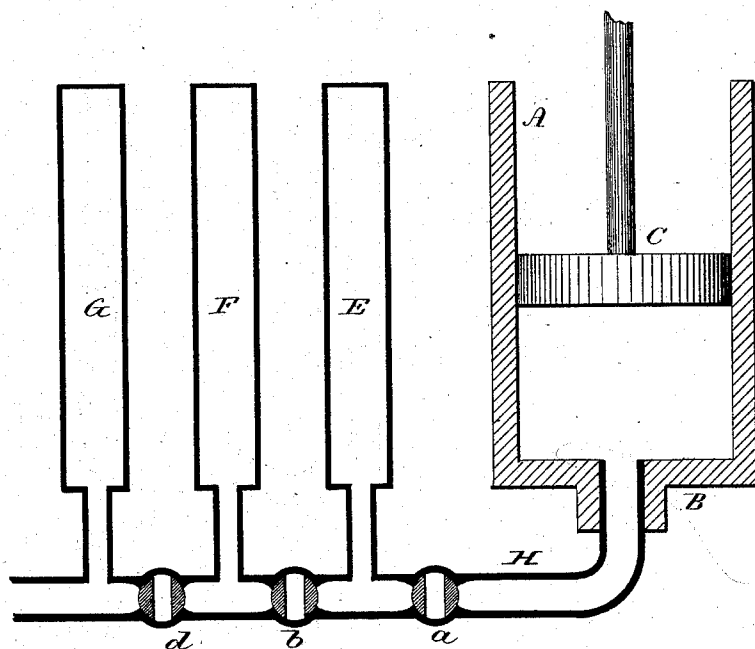


(No Model.)

S. WHITLOCK.  
AIR CUSHIONING DEVICE.

No. 284,524.

Patented Sept. 4, 1883.



Witnesses:  
*John Shumway*  
*John C. Calk*

*Sturges Whitlock*  
Inventor  
By atty.  
*John C. Calk*

# UNITED STATES PATENT OFFICE.

STURGES WHITLOCK, OF NEW HAVEN, CONNECTICUT.

## AIR-CUSHIONING DEVICE.

SPECIFICATION forming part of Letters Patent No. 284,524, dated September 4, 1883.

Application filed May 7, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, STURGES WHITLOCK, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Air-Springs; and I do hereby declare the following, when taken in connection with accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents a longitudinal section through the several cylinders.

This invention relates to an improvement in air springs or cushions for mechanical purposes—such as used in printing-presses or like places where a cushion is desirable to “ease up” on the termination of the reciprocating movement of parts of machinery. In the usual construction such cushions consist of a cylinder closed at one end, having a piston or plunger fitting closely therein, and so that as the part to be cushioned approaches the termination of its movement it will compress the air in the cylinder between the piston or plunger and the head of the cylinder. In many cases, in such cushions it is desirable to vary the cushion accordingly as the machine runs faster or slower, or to make the cushion more or less elastic. In the usual construction the amount of cushion is limited to the cylinder itself—that is to say, the chamber between the end of the plunger and the head of the cylinder. If a greater amount of air is desired for cushioning, the plunger must be adjusted to stand at a greater distance from the head of the cylinder; or, if less, to stand the nearer the head of the cylinder.

The object of my invention is to make the cushion adjustable outside the air-cylinder; and it consists in combining with the air or cushion cylinder one or more auxiliary cylinders or air-chambers communicating with the cushioned chamber in the cylinder, which communication may be shut off or opened as desired, as more fully hereinafter described.

A represents a common air-cushion cylinder, having a head, B, at one end. The other end may be open, and within the cylinder is the plunger C, fitting closely, but so as to be

free to move therein, and against which the moving part of the machinery to be cushioned will strike as it approaches the termination of its movement, and so as to force the plunger into the cylinder and compress the air between the plunger and the closed head of the cylinder, such compression of air forming the cushion.

E F G are auxiliary air cylinders or chambers, which may be more or less in number and variable in size. From that part of the cylinder within which the cushioning is produced, preferably from the head end, a pipe, H, extends, and into it the several auxiliary air-chambers E F G open, as shown, each independent of the other. Between the main cylinder and the first cylinder is a cock, *a*, and between the auxiliary cylinders there is a like cock, *b d*. When all the cocks are open, the auxiliary chambers communicate with each other and with the main cylinder A. In that case the cushioning or compression of air produced by the plunger will be not only upon the air in the main cylinder, but will extend to the air in the auxiliary chambers, thus increasing the amount of air for the cushion from the amount which the cylinder itself will contain by so much as the the auxiliary chambers contain.

By the interposition of the cocks *a b d* between the respective air-chambers, one or more of said auxiliary chambers may be employed in connection with the main cylinder, thus making that cushion adjustable according to circumstances, so that if, in running the machine, operation appears to necessitate a greater amount of air for the cushions, then the operator will add additional chambers accordingly, or vice versa.

The auxiliary chambers may be arranged at a distance from the main cylinder or in immediate connection therewith—as, for instance, they may be small cylinders surrounding the main cylinder—it only being essential that they shall be in communication with the main cylinder and combined with the devices whereby such communication may be opened or cut off, accordingly as one or more of the auxiliary cylinders is required in connection with the main cylinder.

## I claim—

The herein-described improvement in air-cushions for mechanical purposes, consisting of the main cylinder and its plunger, combined with one or more auxiliary chambers communicating with the main cylinder and cocks, whereby one or more of said auxiliary

cylinders may be opened to or cut off from the main cylinder, as occasion requires, substantially as described.

STURGES WHITLOCK.

Witnesses:

JOHN E. EARLE,  
JOS. C. EARLE.