

(No Model.)

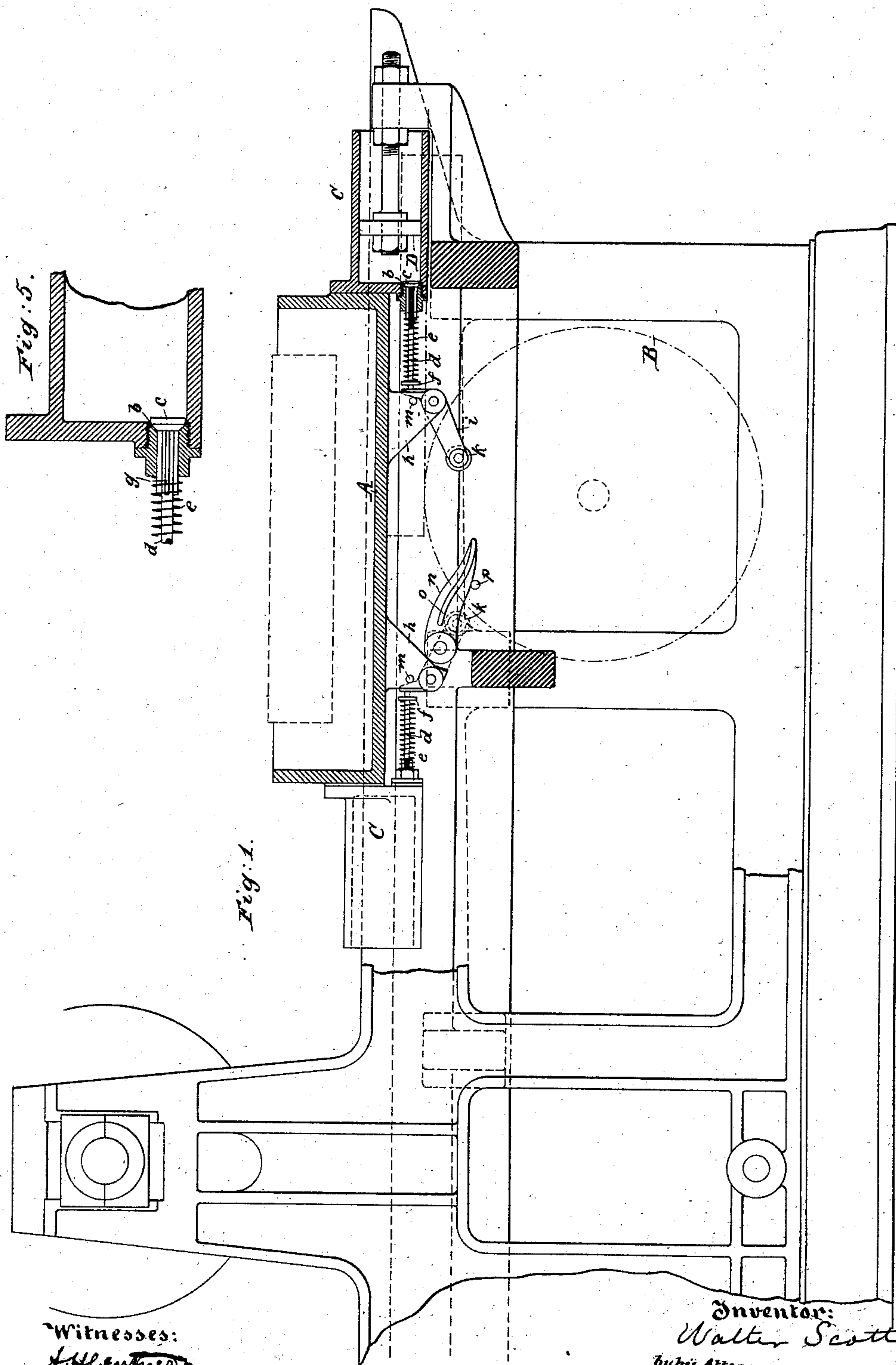
2 Sheets—Sheet 1.

W. SCOTT.

AIR CUSHIONING MECHANISM FOR PRINTING PRESSES.

No. 282,379.

Patented July 31, 1883.



Witnesses:
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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

AIR-CUSHIONING MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 282,379, dated July 31, 1883.

Application filed March 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, a subject of the Queen of Great Britain, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Air-Cushioning Mechanism for Printing-Presses, of which the following is a specification.

My invention relates to that class of devices which are used to check the momentum of a reciprocating form or stone bed; and the object of my invention is to prevent the formation of a vacuum in the cylinders of the reciprocating bed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a portion of a printing-press with my invention applied thereto. Fig. 2 is a plan view of a portion of the same. Fig. 3 shows a modification in the arrangement of the parts. Fig. 4 is a plan view of the arrangement shown in Fig. 3, and Fig. 5 is a view illustrating certain details of construction.

Similar letters refer to similar parts throughout the several views.

The bed A, which carries the form or stone, is mounted in the usual manner upon ways *a a*, and is driven by a toothed wheel, B, which engages with a rack secured to the bed of the press, and also with a rack attached to the under side of the form-bed, motion being imparted to the wheel B by means of a connecting-rod, which reaches from its axle to the main crank of the press. The bed A is provided with two pairs of cylinders, as C C, one pair being secured to each of its ends. These cylinders register with pistons, as D D, which are fixed to the framework of the press in such positions as to enter the cylinders prior to the stopping of the bed. Each of the air-cushioning cylinders is provided with an opening, as *b b*, which is normally closed by a valve, as *c*. This valve *c* is provided with a projecting rod, as *d*, around which there is coiled a spiral spring, as *e*, one end of which bears against the extending portion of the valve-seat, while the other end bears against a pin or collar, *f*, which is secured to the outer end of the rod. The inner end of the rod *d* is enlarged, so as to fit snugly in the cylindrical portion of the valve-seat, and a slot, as *g*, is cut throughout the entire length of this

enlarged part of the rod. Lugs, as *h h*, project downward from the under side of the form-bed, and to these lugs there are pivoted levers, as *i i*, which carry rollers, as *k k*, on their lower ends. The upper arms of the levers *i i* extend up in front of the projecting ends of the rods *d d*, and rest against limit-pins, as *m m*, which project from the lugs *h h*.

Movable arms, as *n n*, which carry cam-surfaces, as *o o*, are pivoted to the tracks or ways *a a* at points where their cam-surfaces will be struck by the friction-rollers *k k* of the levers *i i* prior to the time when the return of the bed would cause a partial vacuum in the cylinders C C. These arms *n n* are held up by pins *p p*, which project from the track *a*. My object in securing the cam-surfaces to pivoted arms is that such cams are necessarily located in such positions as to be struck by the rollers *k k* while the bed is advancing, as well as during its retrograde movement. As the bed is about to complete its travel in one direction, the leading rollers *k k* strike the under side of the cam-surfaces *o o*, thus raising the arms *n n*, which, however, drop back to their normal positions after they are released by the rollers. At about the time the rollers *k* strike the cams *o* the cylinders on the leading end of the bed reach the pistons, with which they register, and as the pistons enter the cylinders the air therein is gradually compressed, and at the same time the momentum of the bed is overcome, until at the time of the full throw of the crank the bed is brought to rest against air-cushions which are formed between the pistons and the cylinder-heads. The continued rotation of the crank reverses the motion of the toothed wheel B, and the bed is consequently at once started on its way to the other end of the press, thus withdrawing the cylinders C C from engagement with the pistons D D. As this backward movement of the bed commences the compressed air in the cylinders is gradually rarefied, until at about the time when the density of such air is equal to that of the surrounding atmosphere the rollers *k k* strike the cam-surfaces *o o*, whereby the levers *i i* are raised and their arms *l l* brought to bear against the projecting ends of the rods *d d*, which rods are consequently forced in, so that the valves *c c* are carried away from their seats and a free

communication established between the interior of the cylinders and the surrounding air.

It will be readily seen that by the use of the mechanism described all liability of a formation of a vacuum in the cylinders is avoided.

Although I have described the bed as being driven by a reciprocating toothed wheel operated by a crank, it will be understood that my invention is equally applicable to any form of reciprocating bed.

It will also be understood that the cylinders C C may be connected by a tube such as I have described in my application No. 88,091, now pending in the United States Patent Office, and that if so connected but one valve to each pair of cylinders will be required.

In Figs. 3 and 4, I have illustrated a modified arrangement of the parts, wherein the arms *n n* and the levers *i i* are pivoted to move laterally instead of vertically, as in the other figure. In this arrangement the arm *n* is brought back to its position by the spring *x'*, and the lever *i* by the spiral spring on the rod *d*.

It will be readily seen that the positions of the pistons and cylinders could be changed, so

that the pistons would be carried by the form-bed, in which case they would be provided with the valve mechanism.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the movable cam *o*, of a mechanism for opening the valve of an air-cushioning apparatus, as and for the purpose specified.

2. The combination, with the cylinders C, located in pairs at each end of the form-bed, and provided with valves, as D, of the movable cam *o* and a mechanism for actuating the valves, as and for the purpose specified.

3. The combination, with an air-cushioning apparatus, which consists of a piston and a cylinder, one of which is carried by the form-bed, of a valve, as D, a lever, as *i*, and a movable actuating-cam, as *o*, substantially as described.

WALTER SCOTT.

Witnesses:

GEO. W. PERKINS,
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