

W. C. CLARK.
PNEUMATIC DOOR CHECK.

No. 296,727.

Patented Apr. 15, 1884.

Fig. 1.

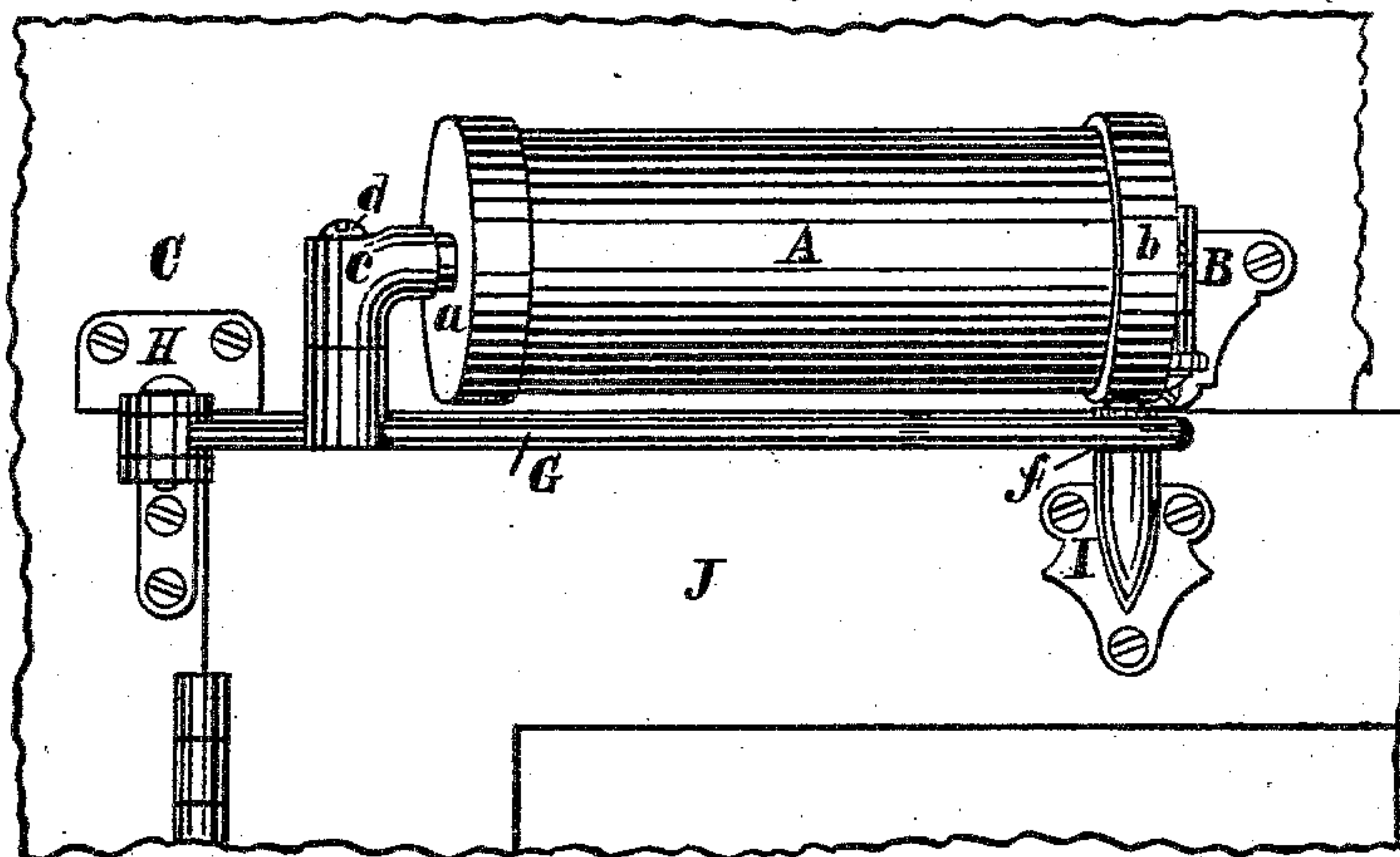


Fig. 2.

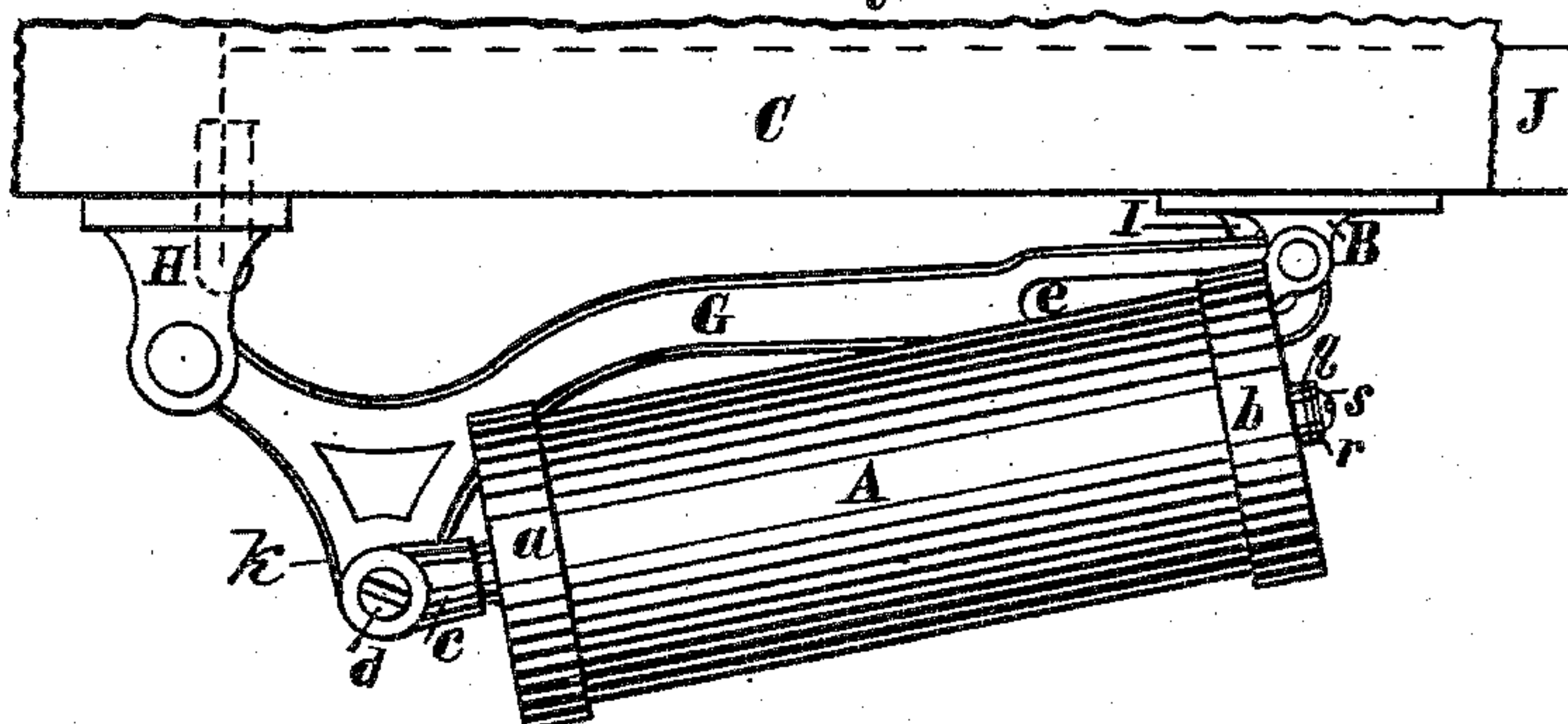
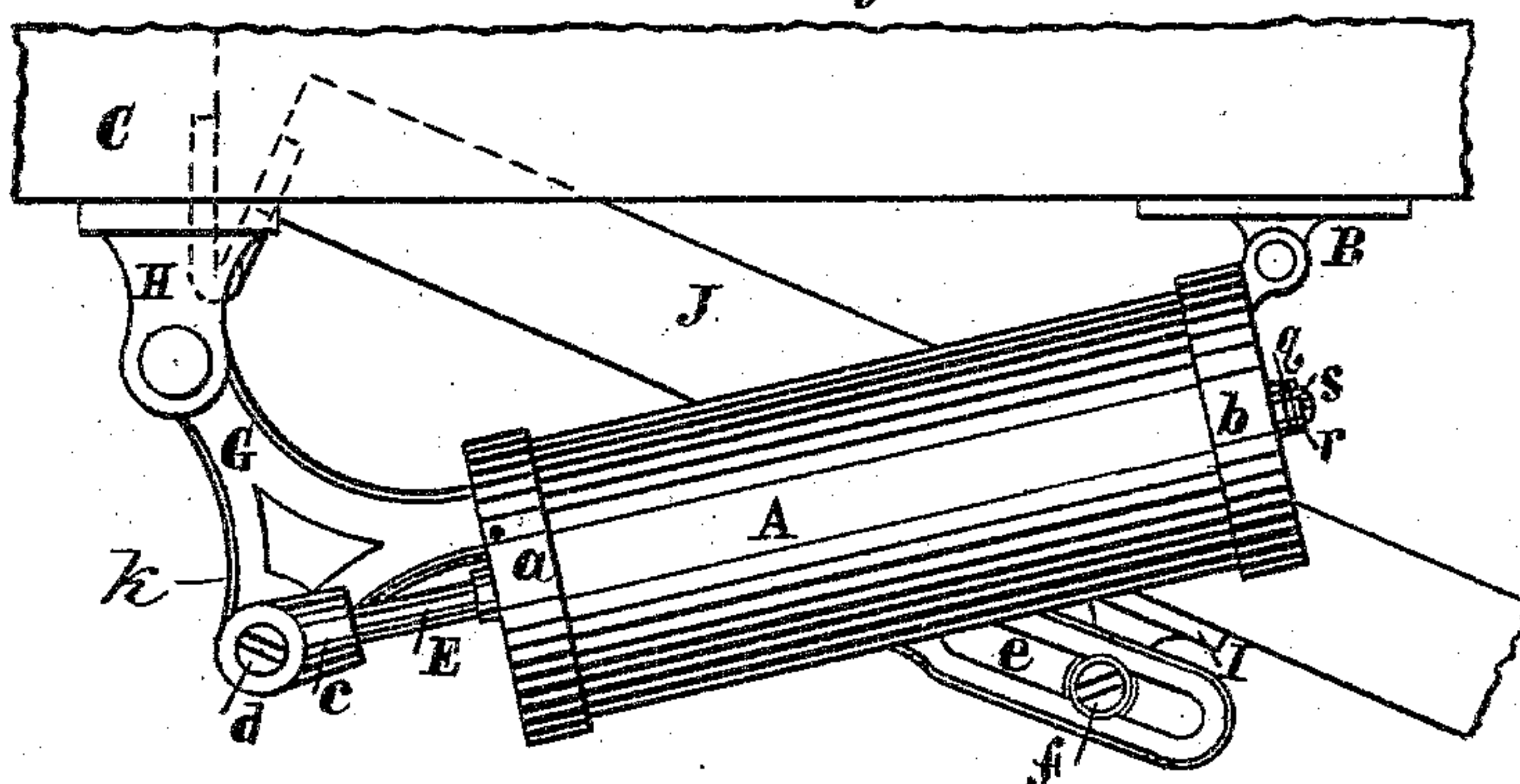


Fig. 3.



Attest:
Geo. R. Gordon,
Edw. Dummer.

Inventor:
Walter C. Clark.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

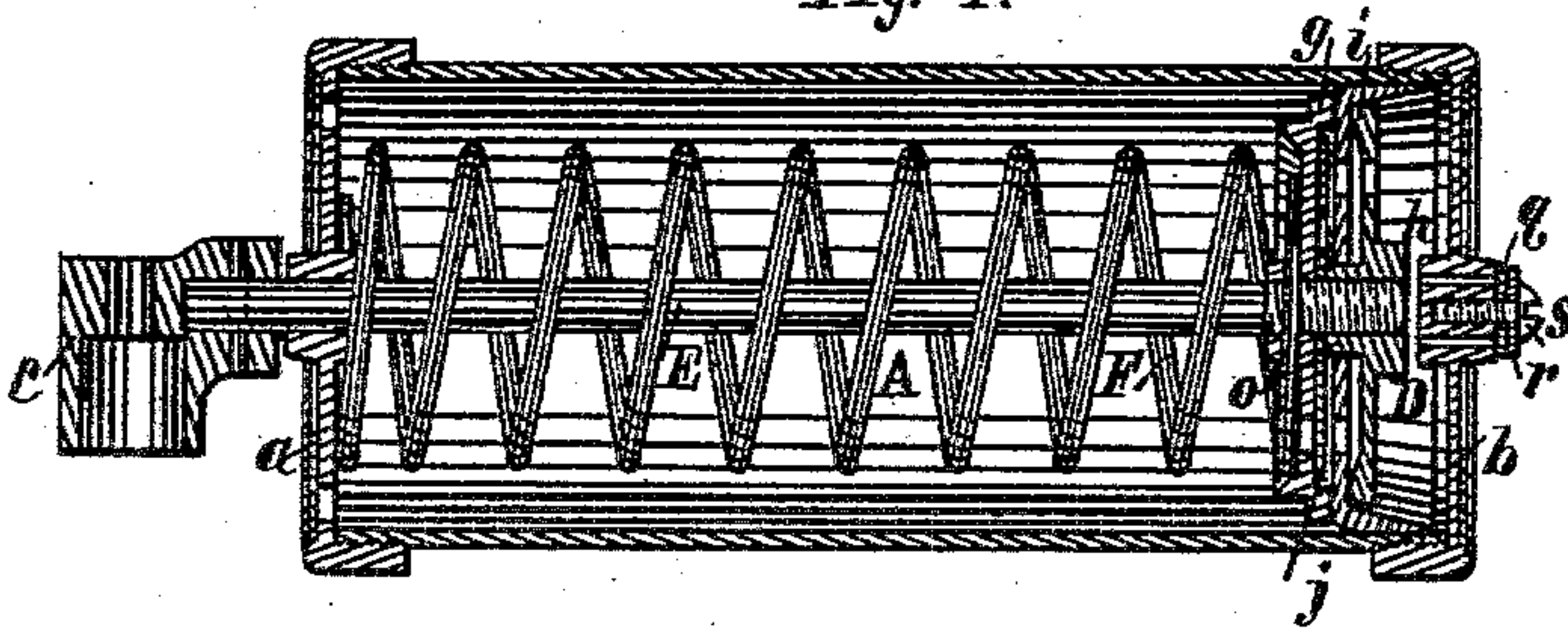


Fig. 5.

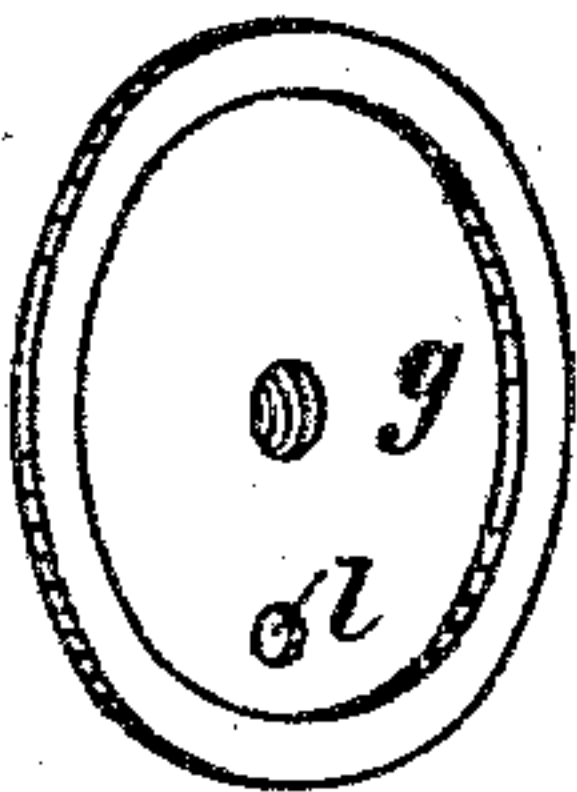


Fig. 6.

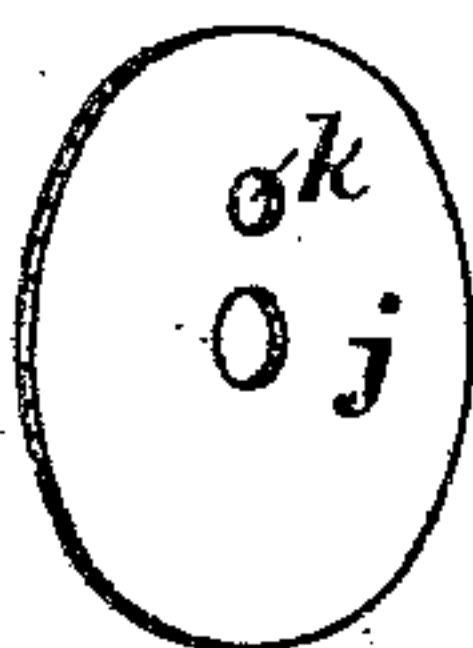


Fig. 7.

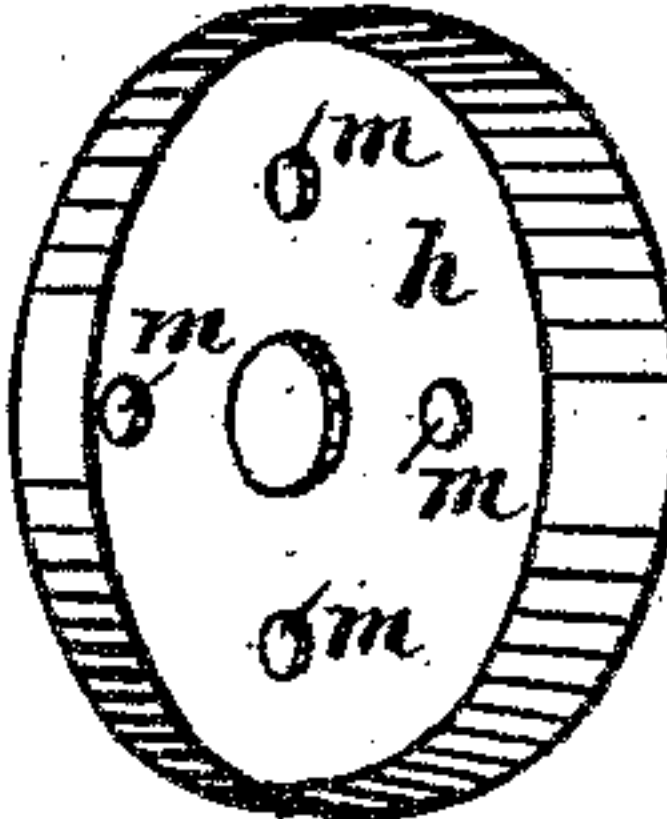


Fig. 8.

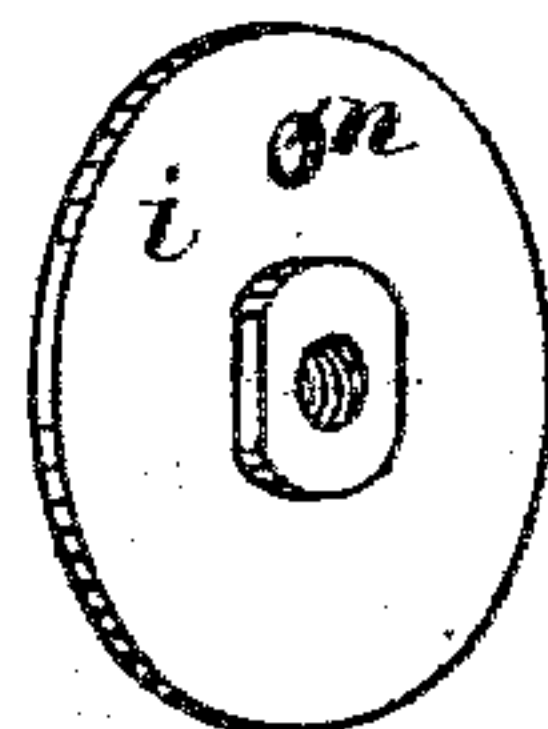


Fig. 9.

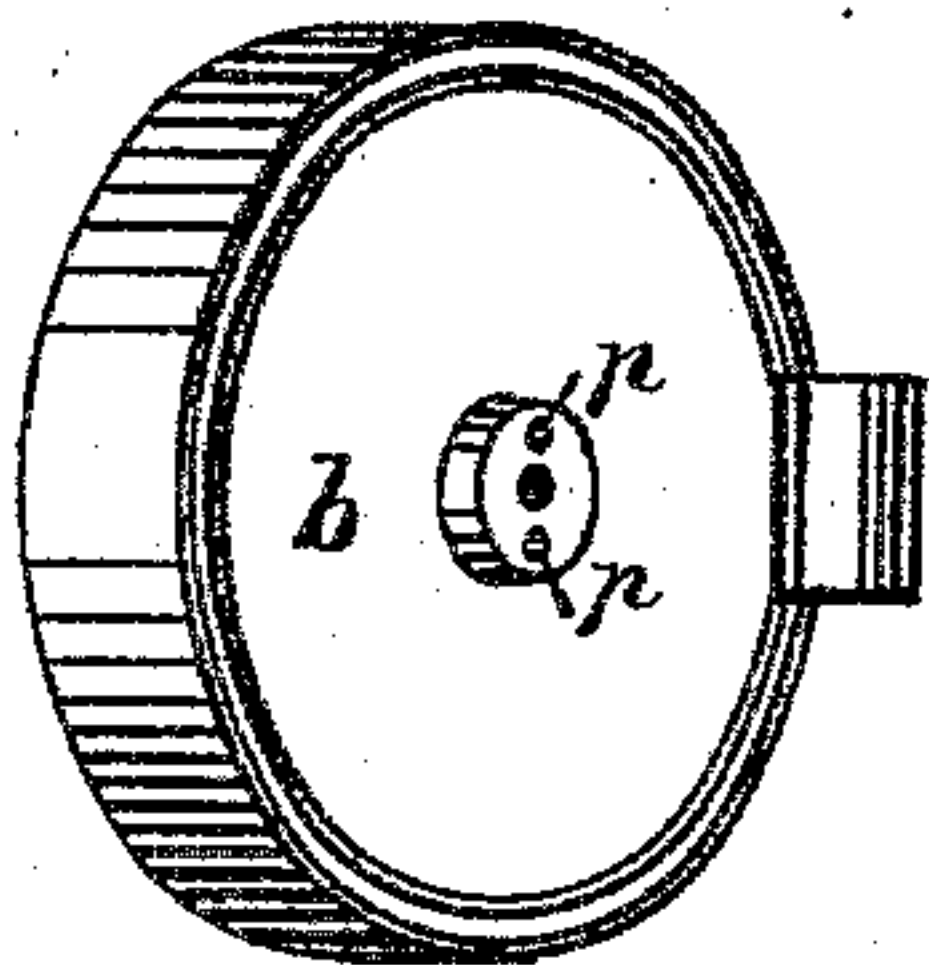


Fig. 10.



Fig. 11.



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UNITED STATES PATENT OFFICE.

WALTER C. CLARK, OF AUBURNDALE, MASSACHUSETTS, ASSIGNOR TO THE
SHAW DOOR-CHECK AND SPRING COMPANY, OF PORTLAND, MAINE.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 296,727, dated April 15, 1884.

Application filed June 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, WALTER C. CLARK, a citizen of the United States, residing at Auburndale, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic Door-Checks, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to door-checks of that class in which air compressed in a cylinder by means of a piston acts by its resistance to check the movement of the door in closing, and to prevent the same from slamming.

My invention consists in the combination of a cylinder and piston with a lever pivoted to the door and door-frame, and in the construction of valve and air-vent, all as hereinafter set forth, and specifically pointed out in the claims.

In the drawings (two sheets) Figure 1 shows a front view of a door-check embodying my invention, and as attached to a door and door-frame. Fig. 2 is a plan view of the same. Fig. 3 is also a plan view, showing the position of the parts when the door is part way open. Fig. 4 is a longitudinal section of cylinder and piston. Figs. 5, 6, 7, and 8 are perspective views of the several parts of the piston and of the valve therein. Fig. 9 is a perspective view of the cap at one end of the cylinder, and Figs. 10 and 11 show the disk and washer, illustrating the construction of the vent.

The figures on Sheet 2 are drawn on a larger scale than those on Sheet 1.

The cylinder A is pivoted at one end to a stand, B, fixed on the door-frame C. In the cylinder is the piston D, having a piston-rod, E, and a spring, F, between the piston and the cap a, at the other end of the cylinder, the spring acting to press the piston toward the cap b of the cylinder, and hence to compress the air between the piston and the cap b. The outer end of the piston-rod is pivoted to a lever, G, by means of a boss, c, on the rod, which fits on a stud on the lever, and is held thereon by means of a screw, d, or by any other suitable means for pivoting. One end of the lever G is pivoted to a stand, H, fixed on the door-frame. Through a suitable dis-

tance at the other end of this lever extends a slot, e. In this slot plies a vertical stud, f, having preferably a roller thereon, fixed to a stand, I, which is fastened to the door J. The form of the lever and the places of pivoting the cylinder, lever, and piston-rod are such with reference to each other and to the door and door-frame, the lever having an arm, K, by which the place of pivoting the piston-rod is brought outside of a straight line between the places of pivoting the lever to the door-frame and to the door, that the spring will operate to close the door, the force thereof being applied with greater leverage, and the movement of the piston being more rapid at the last part of the motion of the door in closing than during any other part thereof.

It is important that the spring should be applied to act with greater advantage when its tension becomes less, to insure complete closing and latching the door, and also that the piston move most rapidly at the last part of its stroke, to insure such compression of the air as to successfully prevent the slamming of the door. These results are gained in a simple and effective manner by my invention.

The piston is composed of the disk g, cup-packing h, and disk and nut i. The disk g fits on the piston-rod against a shoulder on the same, and the disk and nut i screws onto the end of the rod, so that the cup-packing is firmly secured between the two disks. These parts of the piston are formed substantially as shown. There is a recess in the face of the disk g adjacent to the cup-packing, in which a disk, j, of leather or other pliable material, is fitted so that it may have a slight movement therein and act as a valve. There is a hole, k, in the valve j, and a hole, l, in the disk g. These openings are in such relation to each other that one will never be over the other. There are openings m in the cup-packing and an opening, n, in the disk i. The disks g and i bear air-tight against the cup-packing at their outer edges, and the disk i has a hub, o, which bears against the valve j at this part, so that on the backward motion of the piston air may pass through the opening l, opening k, openings m and n; but on the forward motion of the piston the valve j will be pressed against the disk g, covering the opening l so

closely that no air can pass. By such construction I obtain a very effective and durable valve at slight cost.

I form a vent by which the escape of air from the cylinder may be easily and successfully regulated by making holes or openings *p* in the cap *b*, placing a washer or disk, *q*, of leather, felt, or other suitable material, over these openings, and a metallic washer, *r*, against the disk *q*, and holding the same in place by means of a screw, *s*, which extends through the disk *q* and washer *r* and screws into the cap *b*, as shown.

As will be readily understood, the size of the vent may be easily regulated by the screw.

The felt, or washer of other like material, acts as a muffler to prevent that disagreeable hissing sound which is made when air, escaping under pressure, impinges against a metallic or hard substance.

I claim as my invention—

1. The combination of a cylinder having a piston and spring therein, and pivoted at one end to the door-frame, with a lever pivoted at one end to the door-frame, having at the other end a slot, *e*, into which a stud on the door extends, and having an arm, *K*, to which the

outer end of the piston-rod is pivoted, said arm being formed with said lever as an integral part thereof, substantially as and for the purpose set forth.

2. In combination with the disk *g*, forming part of a piston in a pneumatic door-check, and having an opening, *l*, a disk, *j*, of leather or of other pliable material, having an opening, *k*, substantially as and for the purpose set forth.

3. In a pneumatic door-check, the combination of the disk *g*, having an opening, *l*, valve *j*, of leather, or of material having like pliability, having opening *k*, cup-packing *h*, having one or more openings, *m*, and disk and nut *i*, having one or more openings, *n*, substantially as described.

4. In combination with the cap *b* of the cylinder, having one or more openings, *p*, the disk *q*, of felt or other suitable material, the washer *r*, and screw *s*, to form an adjustable vent and muffler, substantially as set forth.

WALTER C. CLARK.

Witnesses:

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EDW. DUMMER.