

J. A. SHERMAN.

No. 428,232.

Patented May 20, 1890.

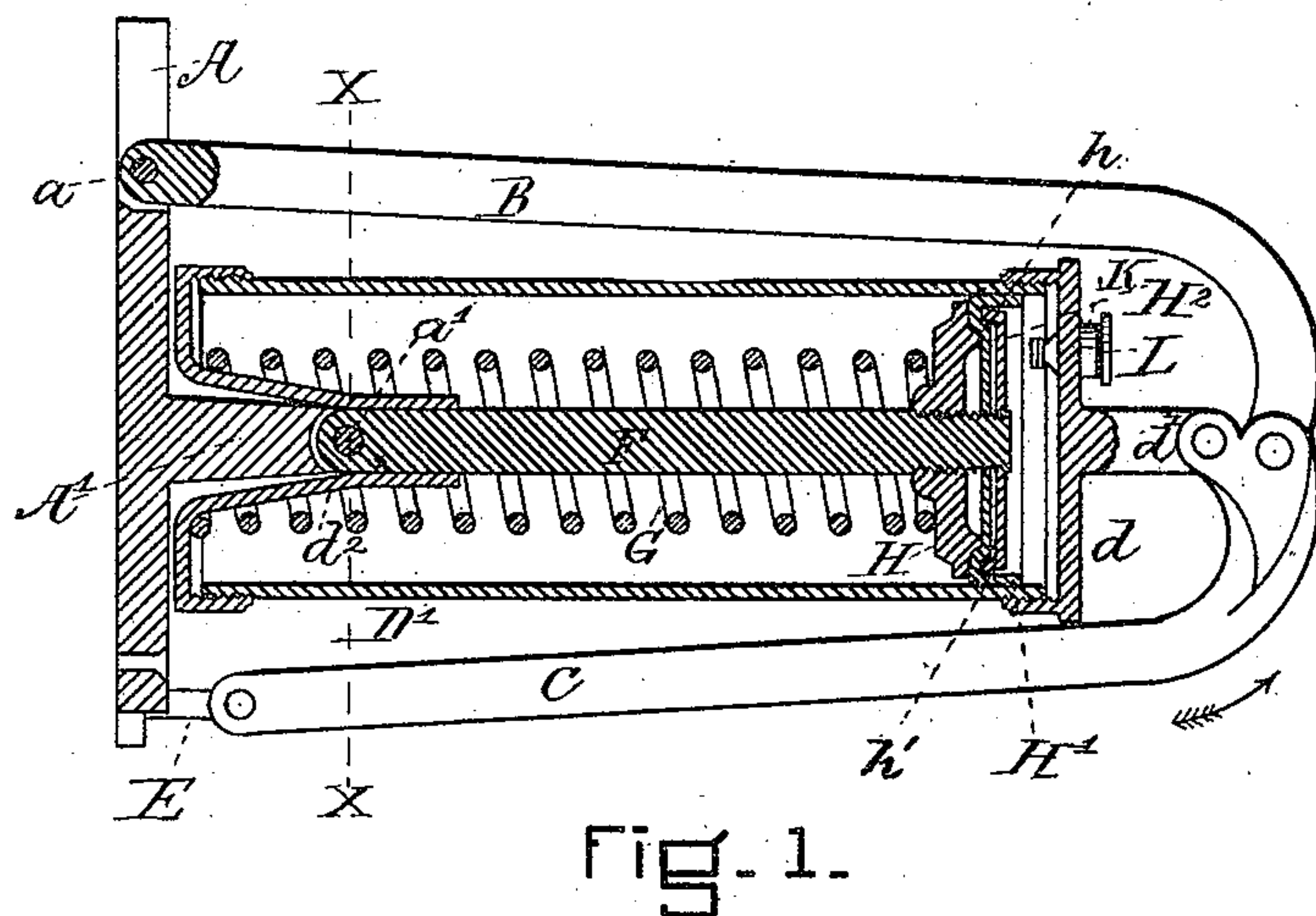


Fig. 1.

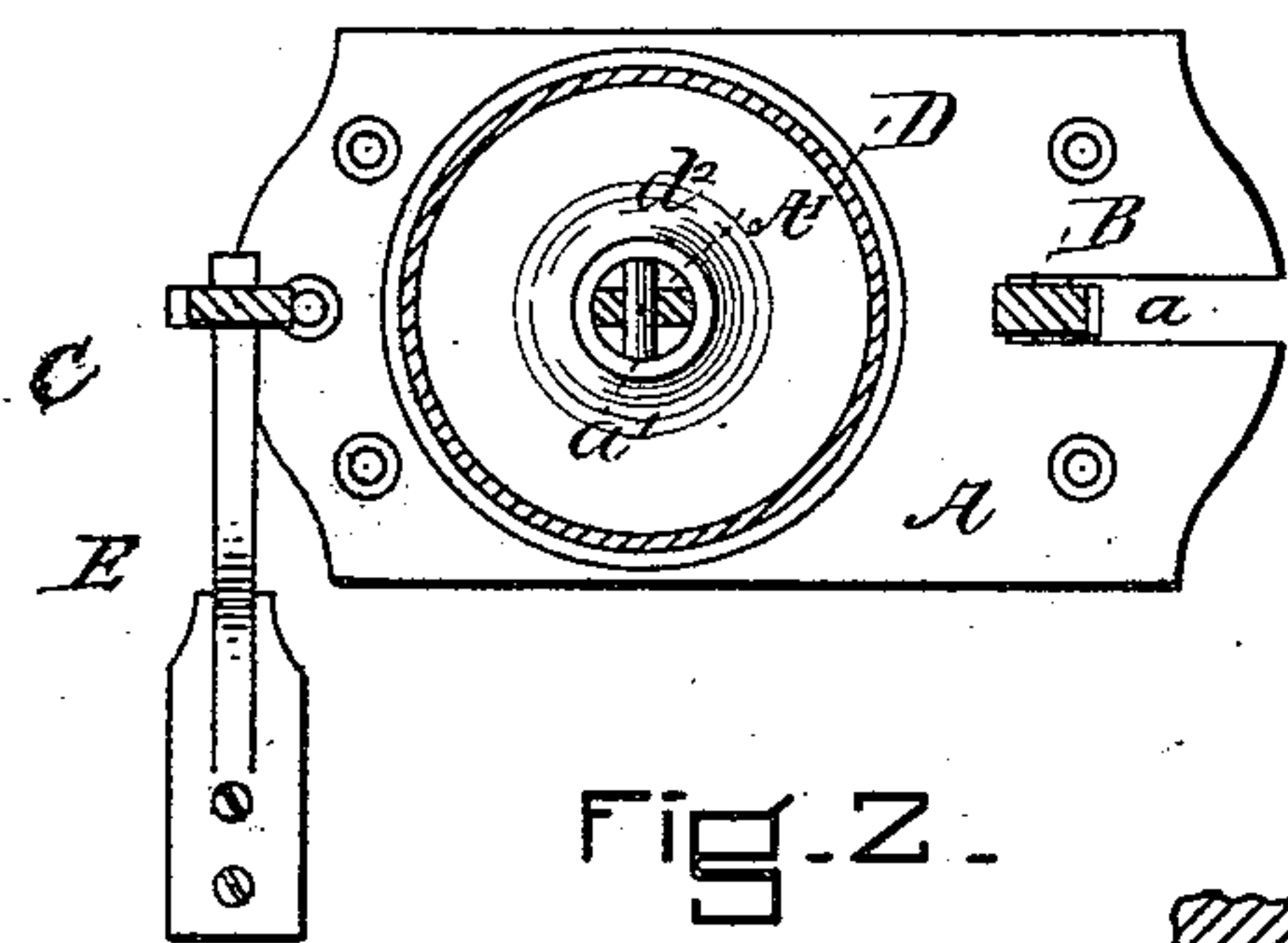


Fig. 2.

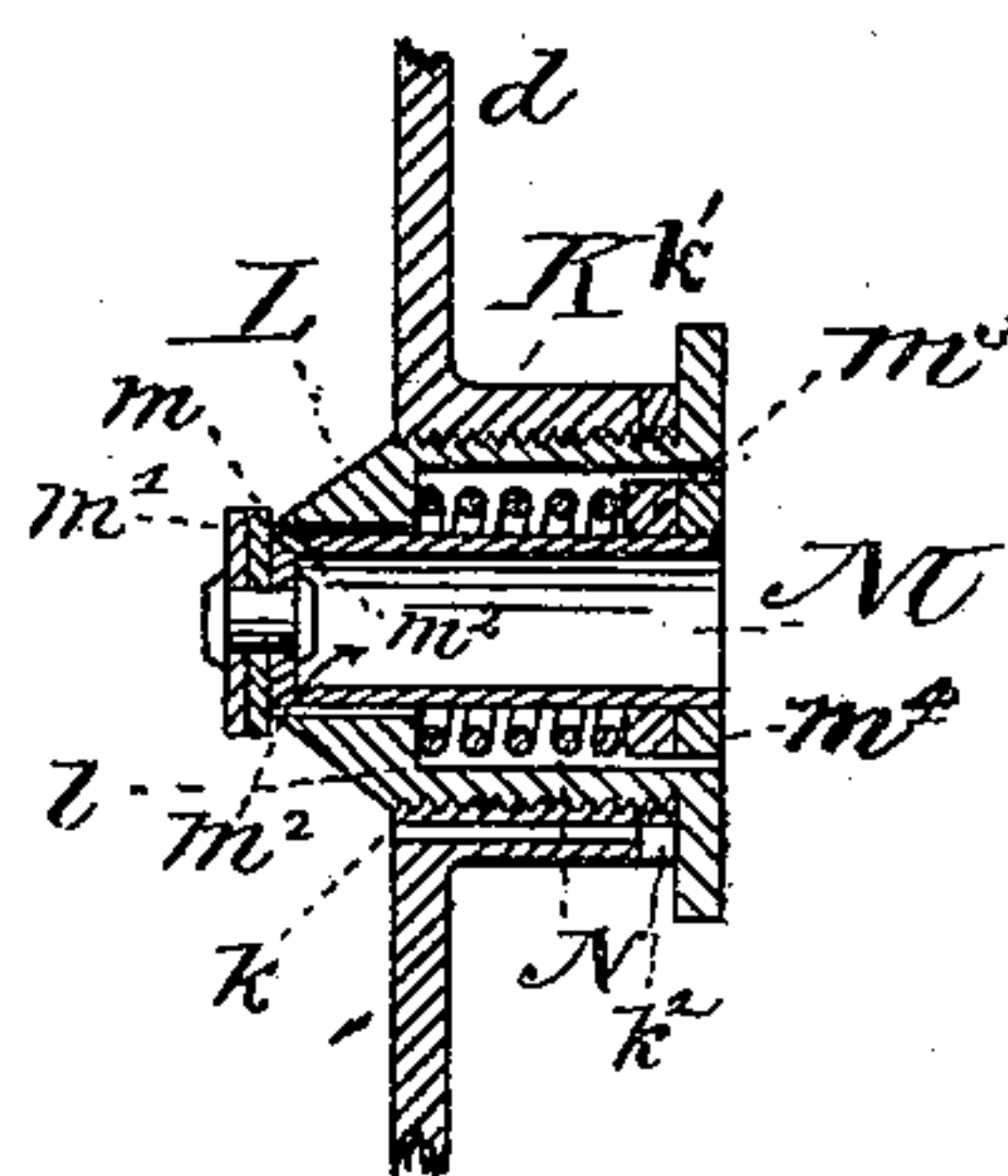


Fig. 4.

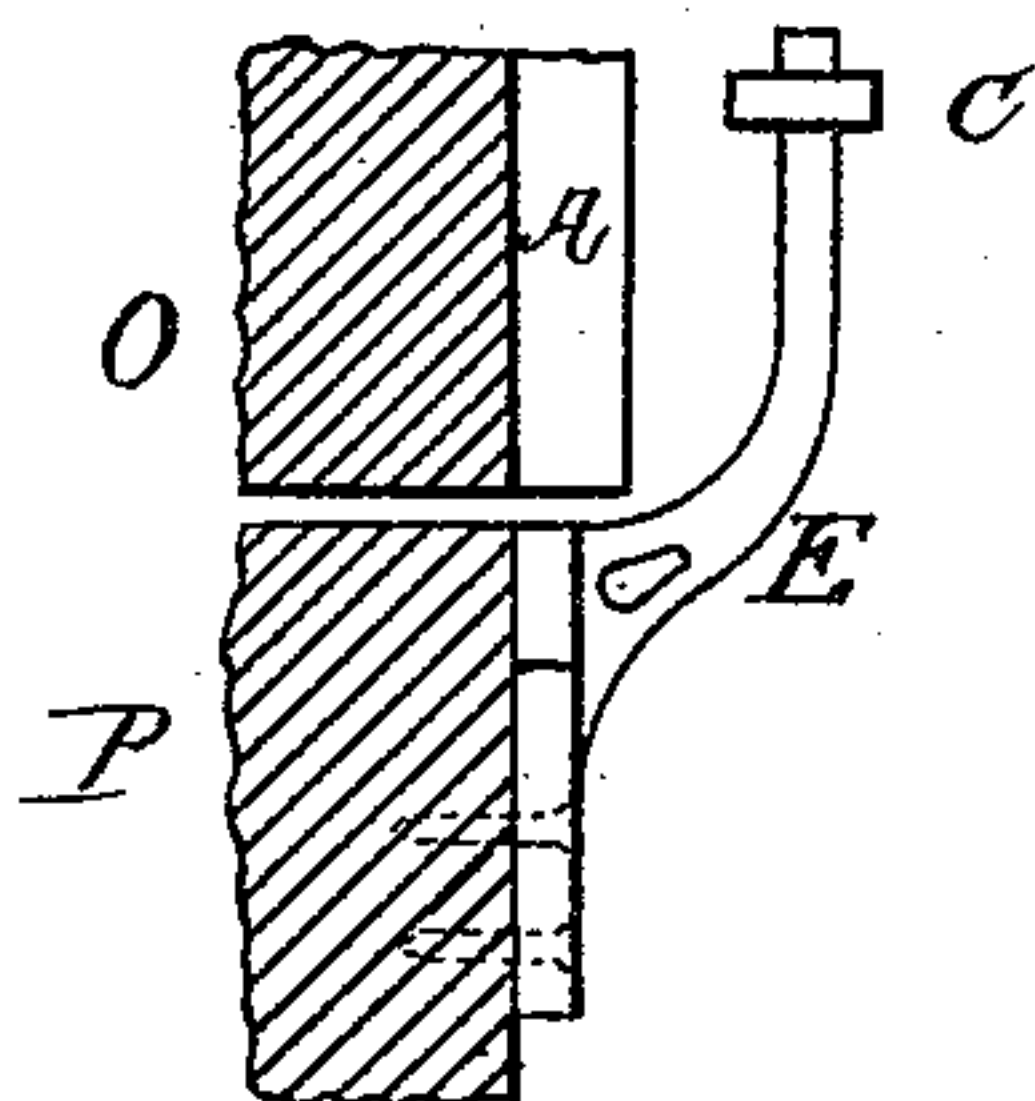


FIG. 3.

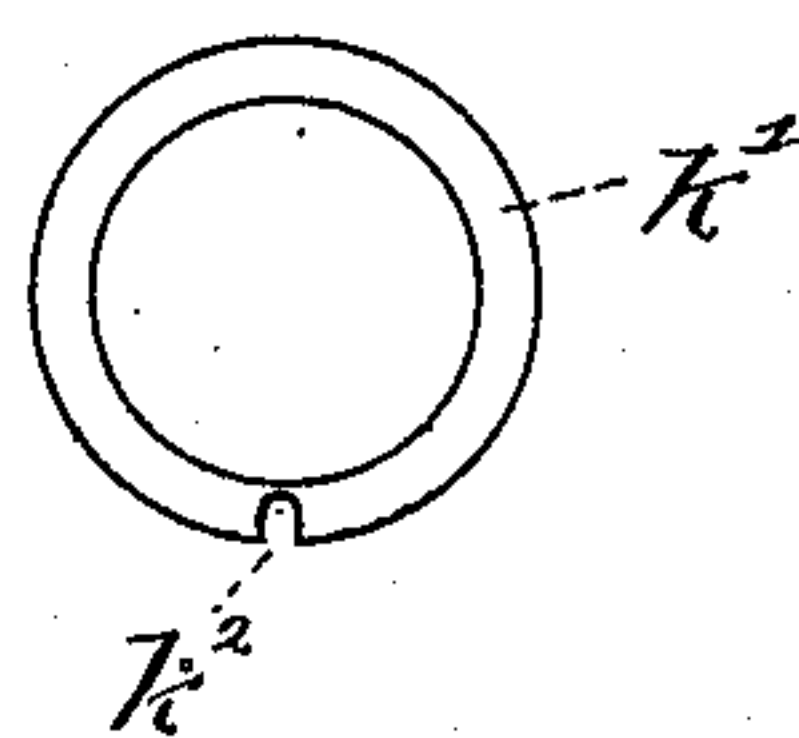


Fig-5.

WITNESSES

Frankl. Parker
Chas. Spaulding.

INVENTOR

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by
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his atty-

UNITED STATES PATENT OFFICE.

JOHN A. SHERMAN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE NORTON
DOOR CHECK AND SPRING COMPANY, OF PORTLAND, MAINE.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 428,232, dated May 20, 1890.

Application filed September 23, 1882. Serial No. 72,583. (Model.)

To all whom it may concern:

Be it known that I, JOHN A. SHERMAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Door-Checks, of which the following is a specification.

My invention consists in certain details of construction, which are fully described below.

In the drawings, Figure 1 is a longitudinal section of a check embodying my invention. Fig. 2 is a cross-section on line $x x$ of Fig. 1, the spring G being omitted. Fig. 3 is a side view showing a mode of attaching the brackets and bed-plate to the door and frame, the machine being omitted. Figs. 4 and 5 are details of the valve mechanism shown in Fig. 1.

A is a bed-plate adapted to be attached to the frame over the door and provided with a countersunk hinge a and a slot at one end. To this hinge is attached the guide-rod B. By countersinking the hinge of the guide-rod in the bed-plate a guide-rod of increased length can be used, so as to lengthen the piston-stroke without otherwise altering the machine. The bed-plate, shaped as shown, allows the machine to be firmly attached to the door-frame, and its slot permits the guide-rod to swing around so as to lie parallel with the door-frame. The other end of the guide-rod B is pivoted to the end of the arm C, which is also pivoted, as shown, to a stud d' , forming a part of the cap d of the cylinder D. The other end of the arm C is hinged to the bracket E, which is attached to the door P. The bed-plate A is provided with a stud A' , formed at its outer side, so that the piston-rod F may be pivoted to it. (See a' .) This stud projects from about the middle of the bed-plate, thereby allowing the plate to be screwed to the door-frame on all sides of the stud and held securely in place. The end of the cylinder nearest the bed-plate is provided with a nipple d^2 , which projects into the cylinder sufficiently far to form a bearing for and center the piston-rod F. It should be so shaped as not to strike the hinge a' as the cylinder is drawn from the piston and the machine turned upon the hinge a' .

G is the spring by which the door will be kept shut normally.

H is a disk of metal of substantially the internal diameter of the cylinder. It is fastened to the piston-rod F near its free end, and is provided with a ring h , projecting from its face near its edge, as shown. Against this disk H is confined the packing H' , of leather, rubber, or like material.

H^2 is a nut of a diameter large enough to fit tightly within the cup of the packing H' . It is provided with a ring h' , projecting from its edge, as shown, and adapted to force the packing down and hold it against the annular surface h of the disk H, the diameter being such in comparison with the diameter of the ring h and thickness of the leather that the packing will be securely held by them and at the same time forced against the inner surface of the cylinder.

A convenient means for letting air into the cylinder when the piston and cylinder-head are separating, and so preventing a vacuum, is shown in detail in Fig. 4.

The cylinder-cap d is provided with a hole about which is a projecting neck K. The inner wall of this hole is provided with screw-threads, into which the valve-casing L screws. The shoulder l , formed within this valve-casing, serves as a bearing, against which the spring N bears, this spring being located about a hollow cylinder or air-passage M and held in place by the nut m^3 , by means of which its strength may be adjusted, if desired. The nut m^4 serves as a set-nut.

$m m'$ is a valve attached to the farther end of the hollow cylinder M, which rests upon a seat forming part of the valve-casing L. Thus the cylinder M forms a spindle to keep the valve properly centered over its seat. If it fits loosely enough in the valve-casing L, as shown in the drawings, air can escape around it, and consequently the valve-stem may be solid instead of hollow; but it is best when hollow to provide it with one or more holes m^2 , which afford a connection between the interior and exterior of the cylinder of the door-check D when the valve is off its seat. The spring M should be very light, so as to barely hold the valve on its seat and yield to a slight change in pressure. This device is so placed that when the piston and

cylinder-head separate the valve will yield and allow air to pass into the cylinder. When the cylinder and piston come to rest the valve at once closes, and when the piston moves forward again the valve is so located and constructed that no appreciable amount of air can escape through it. I provide a vent for the escape of air from the cylinder by boring a hole k under the head of the valve-casing L, so that by screwing the valve-casing in or out the passage of air through the vent-hole k can be constricted more or less. A washer k' , having a notch k^2 , (see Fig. 5,) may be used to cover this vent-hole more or less, in which case the valve-casing will serve the purpose of a set-screw. Either method is operative.

The exact position of the valve itself is not material to the operation of the machine, although it is best to place it upon the reciprocating element.

The operation of the machine will be understood by all skilled in the manufacture and use of door-checks of this general character.

What I claim as my invention is—

25 1. In a door-check, the valve mechanism above described, consisting of the valve-casing L, cylinder M, with its valve, and the spring

N, suitably held in place about the cylinder M, all arranged and adapted to operate substantially as and for the purposes set forth. 30

2. In a door-check having a piston, cylinder, and cylinder-head, an air-escape hole k and a valve-casing L, with its valve, said hole being located in said cylinder-head and under the head of said valve-casing, all arranged to furnish a free passage into the cylinder when the cylinder and piston-head separate, and an adjustably-restricted air-passage when the piston and cylinder-head approach, substantially as and for the purposes set forth. 35 40

3. In a door-check, the neck K, provided with the hole k , the washer k' , and valve-casing L, with its valve, all operating together, in combination with the piston, to furnish a free air-passage into the cylinder when the piston and cylinder-head separate, and an adjustably-restricted air-passage when the piston and cylinder and piston-head approach, substantially as and for the purposes set forth. 45

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Witnesses:

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