(No Model.)

T. GOODENOUGH.

PNEUMATIC DOOR CHECK.

No. 409,961. Patented Aug. 27, 1889.

Fig. 1

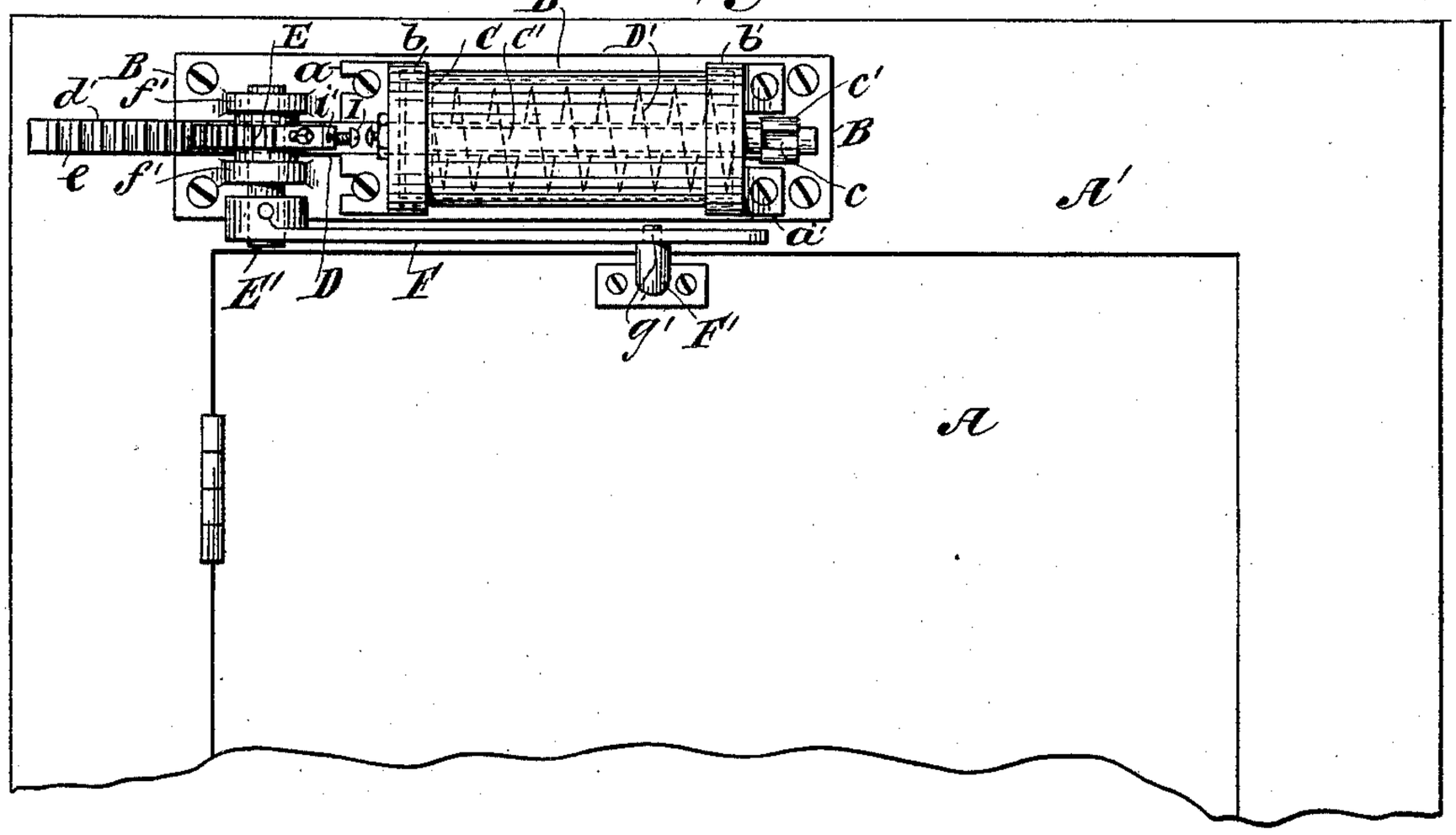

Fig. 2.

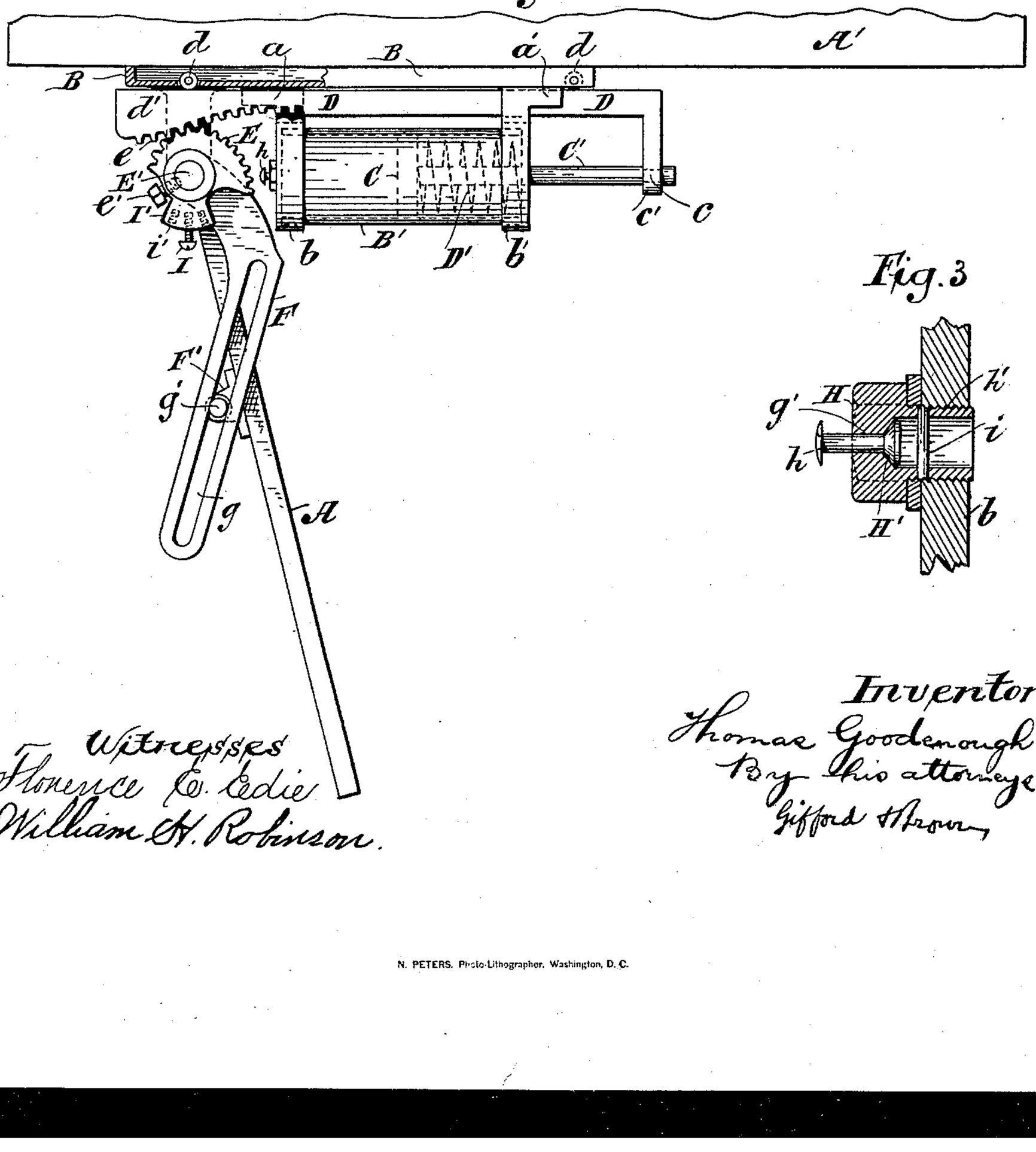

Fig. 3

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THOMAS GOODENOUGH, OF WOODSIDE, ASSIGNOR TO THE AKBAR MANUFACTURING COMPANY, OF NEW YORK, N. Y.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 409,961, dated August 27, 1889.

Application filed November 2, 1888. Serial No. 289,853. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GOODENOUGH, of Woodside, in Queens county and State of New York, have invented a certain new and useful Improvement in Door-Checks, of which the following is a specification.

The invention relates more particularly to that class known as "pneumatic door-checks;" and it consists in the construction and novel combination of parts, as herein set forth, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front view of a door-check as applied to a door and embodying my improvement. Fig. 2 is a top plan view of the same, showing the door as open; and Fig. 3 is a detail, in section, illustrating the check-valve.

Similar letters of reference designate corresponding parts throughout the drawings.

Referring by letter to the drawings, A designates a door, and A′ is its frame or casing, to which is attached in any suitable manner, but preferably by screws, the metal bed-plate B, which is arranged longitudinally above the door. The door-check proper comprises a cylinder B′, which is removably secured to the bed-plate by means of screws passing through openings in the lugs *a a′*, extending from and integral with the heads *b b′* of the cylinder. The openings through the lugs *a* have an elongated form and open outward, so that the securing-screws therefor need not be entirely removed from the bed-plate when it is desired to remove the cylinder, and also to allow a short longitudinal adjustment of the same.

Within the cylinder is the piston C, having its piston-rod C′ projected outward through a central opening in the head *b′*. Near its outer end the piston-rod has a reduced portion *c*, designed to engage in the outwardly-turned bifurcated end *c′* of the operating-rod D. By this construction of the operating-rod and piston-rod they are easily separated; but they may be otherwise or permanently secured together without departing from the spirit of my invention. A spring D′ is coiled about the piston-rod within the cylinder and bears against the piston and the inner face of the head *b′*, and is designed to return the piston to its normal position, thus operating to close the door. The main portion of the operating-rod D extends longitudinally adjacent to the bed-plate, and bears preferably on anti-friction rollers *d*, journaled in the bed-plate near its ends. The free end *d′* of the rod D on its outer edge has a varying projection, (shown in this example as curved substantially in ogee form,) and this edge is provided with teeth *e*, meshing with the teeth of the segmental gear E, which is adjustably secured on a shaft E′ by means of a set-screw *e′*, passing through a threaded opening *f* in a plain portion of the segmental gear into the shaft E′, which has journal-bearings in arms *f′* outstanding and preferably integral with the bed-plate. The segmental gear is thus free to oscillate by the opening and closing of the door. The toothed edge of the segmental gear is eccentric to its shaft, conforming to the ogee of the toothed portion of the operating-bar D, so that when the greater circumference of the gear E comes within the concaved or lesser portion of the toothed portion of the bar D the door, when nearly closed, has its speed somewhat checked, allowing it to close quietly.

An arm F is rigidly secured to a downwardly-extended journal of the shaft E′, and this arm longitudinally of its greater length is provided with a guideway or slot *g*, within which projects a stud *g′* on the bracket F′, which is secured to the face of the door near its top edge.

H designates a hollow plug forming a seat for the valve H′, which has its shank portion movable in the reduced hollow *g′* of the plug and is provided with a convex head *h* at its outer end. The hollow plug is preferably screw-threaded, as at *h′*, to engage a tapped opening through the head *b* of the cylinder, and a transverse pin or stop *i* is arranged within the enlarged hollow of the plug to prevent the valve from opening too far inwardly.

An adjustable tappet-arm I, which, as herein shown, is provided with a threaded shank to engage one of the series of tapped openings *i′* in a projection I′ of the segmental gear E, is designed, when the door is nearly closed, to strike against the head *h* of the valve, thus forcing the valve inwardly, allowing the compressed air to escape from the cylinder around

the shank of the valve, which fits loosely within the reduced hollow of the plug. This adjustable tappet-arm, it is to be understood, need not be confined to the particular combination of elements herein set forth, but it may be applied to operate the valve in other pneumatic door-checks.

It is obvious that as the compressed air escapes the door will be entirely closed without jar by the force of the spring bearing upon the piston.

Having thus described my invention, what I claim is—

1. In a door-check, the combination, with the cylinder, the spring-actuated piston, and the piston-rod, of the operating-bar engaging the piston-rod and having a curved toothed portion of varying projection and a toothed eccentric gear engaging with said toothed portion operated by the door, substantially as specified.

2. The combination, with the cylinder, the spring-actuated piston therein, and the piston-rod, of the operating-rod having the ogee-shaped toothed portion, the anti-friction rollers bearing upon the operating-rod, and the adjustable eccentric gear oscillated by a connection with the door, substantially as specified.

3. The combination, with the cylinder, the piston, the piston-rod, the toothed operating-bar, and the segmental gear, of the valve and the tappet-arm, removably secured to the eccentric segmental gear, operated by means of a connection with the door, substantially as specified.

4. The combination, with the cylinder, the piston, the piston-rod, the toothed operating-bar, and the segmental gear engaging therewith, of the valve in the cylinder-head and the adjustable tappet-arm on the segmental gear oscillated by a connection with a door, substantially as specified.

Signed at New York, in the county of New York and State of New York, this 17th day of October, A. D. 1888.

THOMAS GOODENOUGH.

Witnesses:

C. R. FERGUSON,

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