

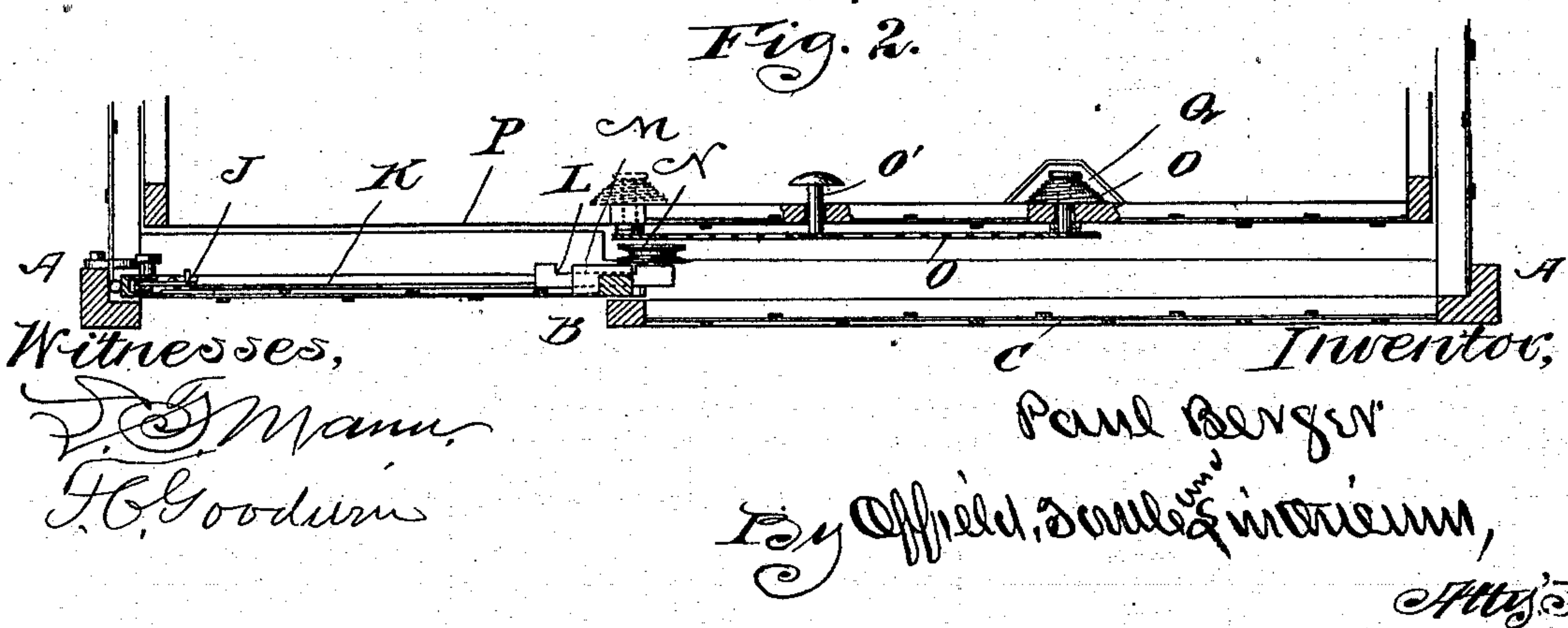
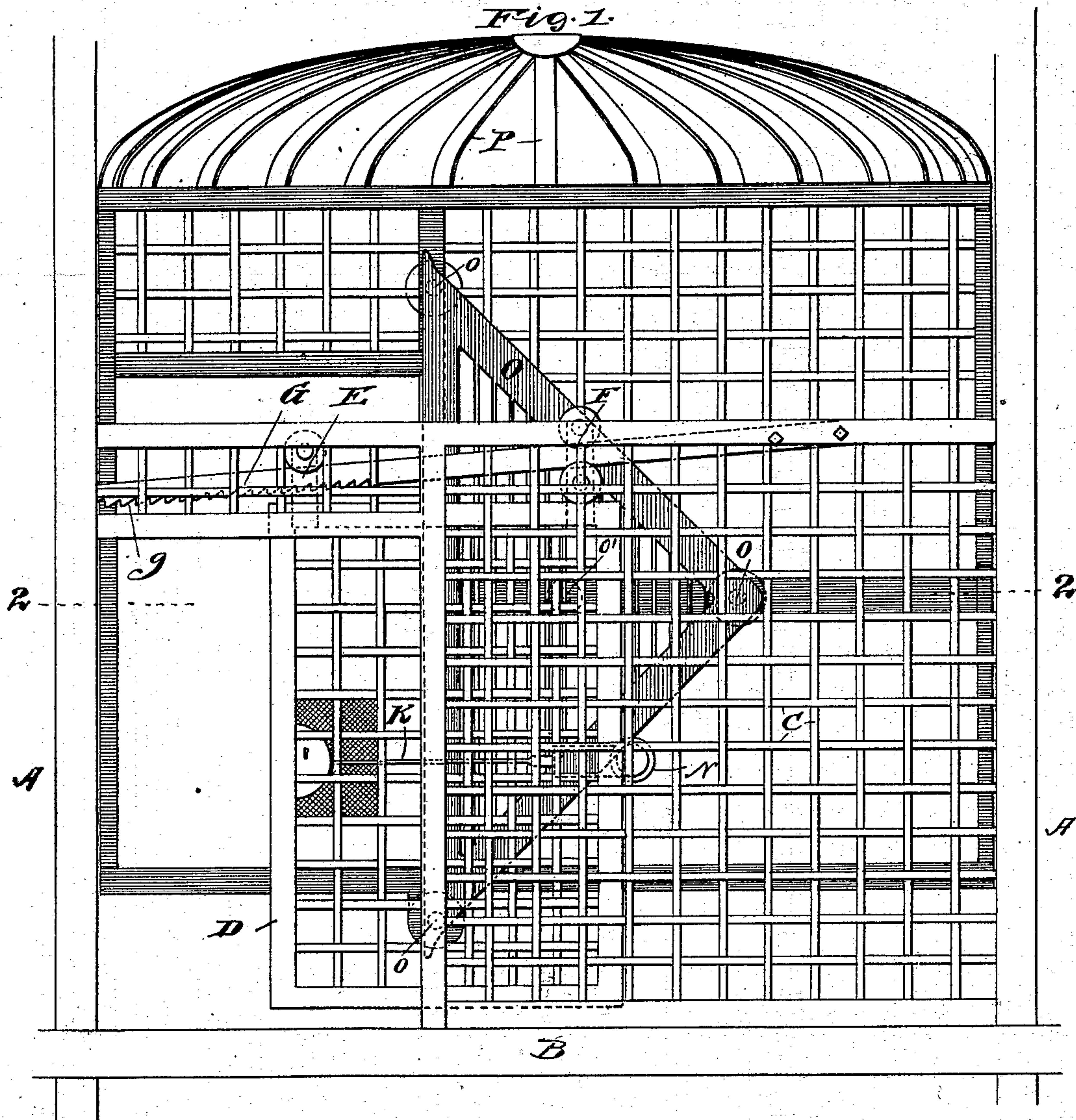
(No Model.)

2 Sheets—Sheet 1.

P. BERGER.
DOOR OPERATING DEVICE.

No. 503,782.

Patented Aug. 22, 1893.



Witnesses,
J. S. Mann,
J. C. Goodwin

Inventor,
Paul Berger

By Offield, Doolittle & Wierum,
Attys.

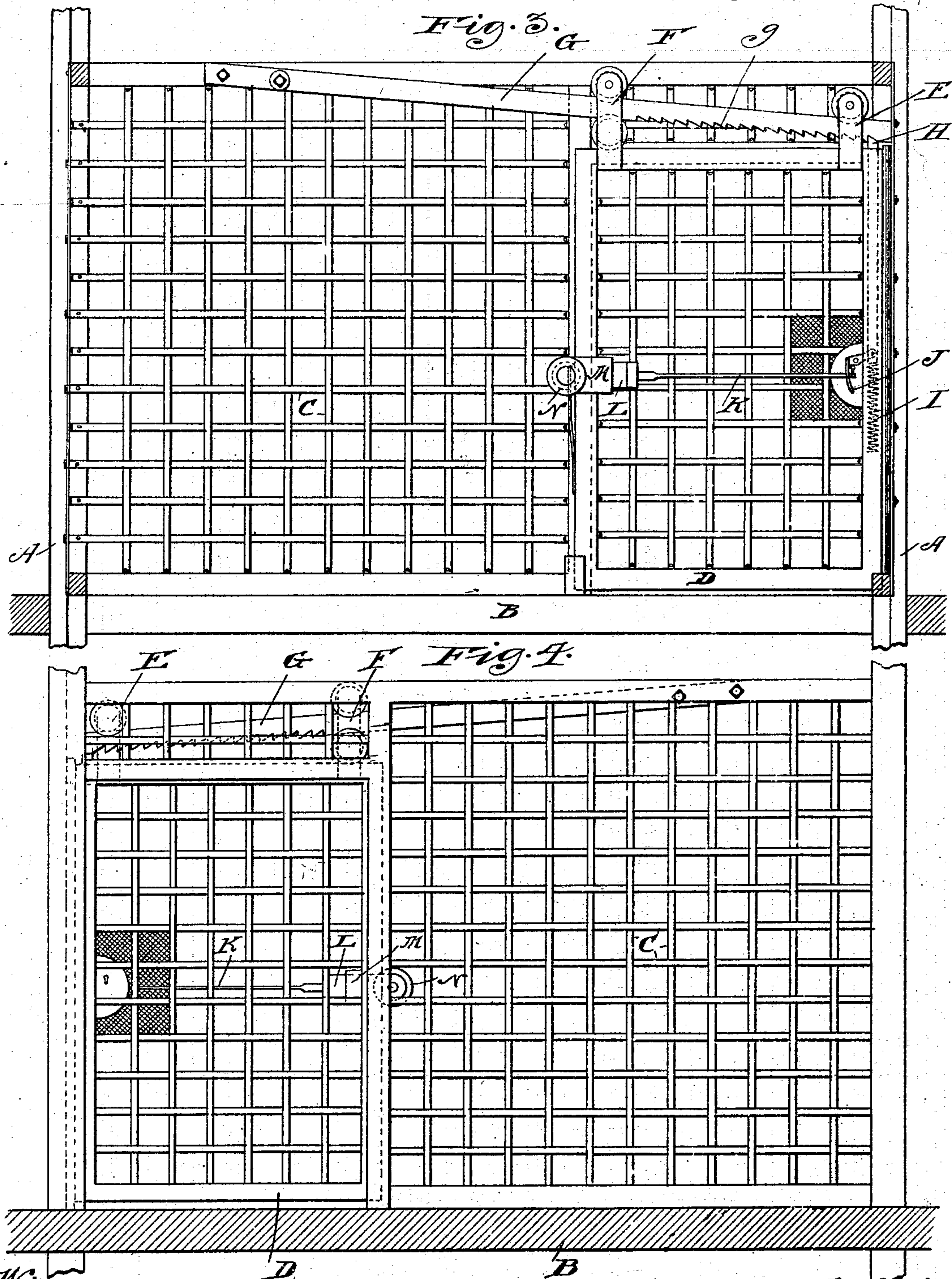
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UNITED STATES PATENT OFFICE.

PAUL BERGER, OF CHICAGO, ILLINOIS.

DOOR-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 503,782, dated August 22, 1893.

Application filed August 20, 1892. Serial No. 443,643. (No model.)

To all whom it may concern:

Be it known that I, PAUL BERGER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Operating Devices, of which the following is a specification.

This invention relates to devices to be used in connection with sliding doors, and is particularly intended for use in connection with the doors of elevator shafts.

One feature of the invention, when applied to the last mentioned use, has for its object to provide for opening the door by means of a movable frame carried upon the elevator cage, which frame is adapted to be moved into engagement with a projection upon the door itself whereby the door is first unlocked and then moved back to permit the passengers to alight, the door being preferably so arranged as to close under the action of gravity.

In the accompanying drawings, Figure 1 is a side elevation showing a section of the elevator shaft at the door, the elevator cage within the shaft, the floor of the cage being at a higher level than the bottom of the doorway. Fig. 2 is a cross sectional view below the line 2—2 of Fig. 1. Fig. 3 is a view in elevation of the inside of one wall of the elevator shaft and of the door; and Fig. 4 is a view in elevation of the outside of the same.

In the drawings, A represents the upright posts of the frame of the elevator shaft; B floors, and C a grating inclosing the shaft.

D represents the door which is suspended by means of the hangers E, F, upon the rail or track G, the latter being secured in an inclined position, as clearly shown in Figs. 1, 3 and 4 of the drawings. The hanger F is longer than the hanger E and is preferably provided with two anti-friction rollers engaging respectively the upper and lower edges of the track, while the hanger E has a single roller riding on the top edge of the track. The lower edge of the track rail is notched, as seen at *g*, to provide locking seats for a locking pawl H which is adapted to slide in a suitable way upon the edge of the door, being seated upon the spring I. A bell crank latch J is pivoted upon the door and one arm of this latch is connected to the dog H.

K is a rod engaging at its forward end the

latch J, and said rod extends across the door and is connected with a block L sliding in the keeper M on the edge of the door, said keeper having a stud on which is mounted the anti-friction roller N. These devices are best shown in Fig. 3 of the drawings. As there arranged the devices may be operated by hand, the attendant unlocking the door by means of the latch and then sliding it back to open the passage, while the door on being released closes by gravity, the rollers traveling on the inclined track returning it to place.

In order to make the door self-opening as well as self-closing and particularly in order to adapt it for use with elevator cages, I employ a frame O, triangular in form, (Figs. 1 and 2) which is carried upon the studs *o* working in suitable apertures in the frame work of the cage P. Said studs project through the frame pieces of the elevator cage and are provided with heads and around their stems are coiled springs having one end confined beneath the head and the opposite end bearing upon the frame of the elevator, as clearly seen in Fig. 2 of the drawings. The springs normally hold the frame O against the wall of the elevator cage, but when the attendant upon the elevator desires to open any door which he is approaching he presses upon the head of the stud *o'*, thus forcing the frame out so that one of its inclined rails engages the roller N, which roller will travel along the inclined member in engagement therewith, thus drawing the door back to open the passage. After the roller has passed off the member which has engaged it, the door will close by gravity, the other member of the frame restraining its too rapid movement. By referring to Fig. 1, this operation will be fully understood. Supposing the cage shown in that figure to be descending and it is desired to open the door shown in said figure, the attendant forces the frame out so that its lower corner engages the roller N on the door and as the elevator descends the door will be drawn back. In said figure the door is shown partially open, but it is obvious that upon the further descent of the elevator and by the time the roller has reached the apex of the frame, the door will be fully opened and it will immediately, unless restrained by the attendant, close under the action of gravity,

being restrained by the engagement of the roller upon the other inclined member of the frame, and by the time the frame has passed out of engagement with the roller, the door
5 will have been fully closed and the spring will actuate the lock.

The details of construction of the device may be varied. For example, the means for supporting and moving the frame which actuates the roller on the door may be altered, and
10 the spring Q may be coiled about the stem of the operating stud o' or said spring may be omitted and other equivalent means employed for holding the frame normally in contact with
15 the wall of the elevator and out of the plane of the roller on the door, the essential requirement being that the will of the operator must be exercised before the frame will be in a position to engage and open the door.

20 It is obvious that the means of hanging, locking and unlocking the door above described may be employed where the automatic opening feature is not present, and I do not therefore intend to limit my invention so far
25 as said features are concerned to use in connection with devices carried by a traveling elevator cage. It is also obvious that the door hangers may run on a horizontal track and the door be closed by a suitable spring or weight.
30 I claim—

1. In a door operating device, the combination with a door having hangers applied to its top, travelers carried by said hangers, an inclined track or way for said travelers, the track rail having locking notches, and the door
35 having a locking bar or dog, means, as a spring, normally tending to thrust the dog into locking engagement with the notches on the rail, and means for moving the dog against the action of the spring whereby to unlock the
40 door, substantially as described.

2. In a door operating device for elevators, the combination, with the elevator shaft having openings therein, sliding doors applied to said openings, a lock applied to the front edge
45 of the door, a bar connected with said lock and extending across the door, an anti-friction roller carried by said bar at the rear edge of the door, an elevator cage having an opener loosely mounted thereon and normally held
50 in contact with the wall of the cage by a suitable retaining spring, and means for thrusting said opener outwardly from the wall into the plane of the roller on the door, substantially as described.

PAUL BERGER.

Witnesses:

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N. M. BOND.