

2 Sheets—Sheet 1.

## ESCAPE HATCH FOR RAILWAY CARS.

Patented Nov. 10, 1885.

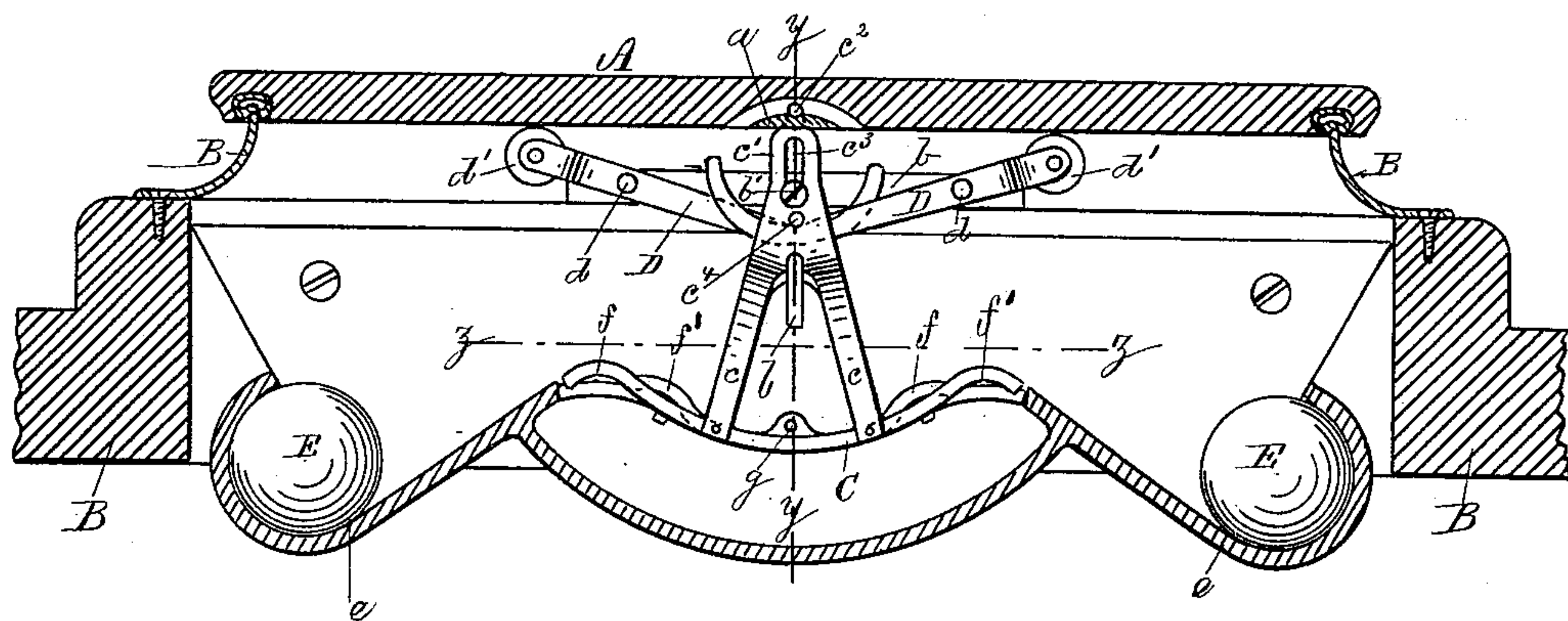


Fig-1.

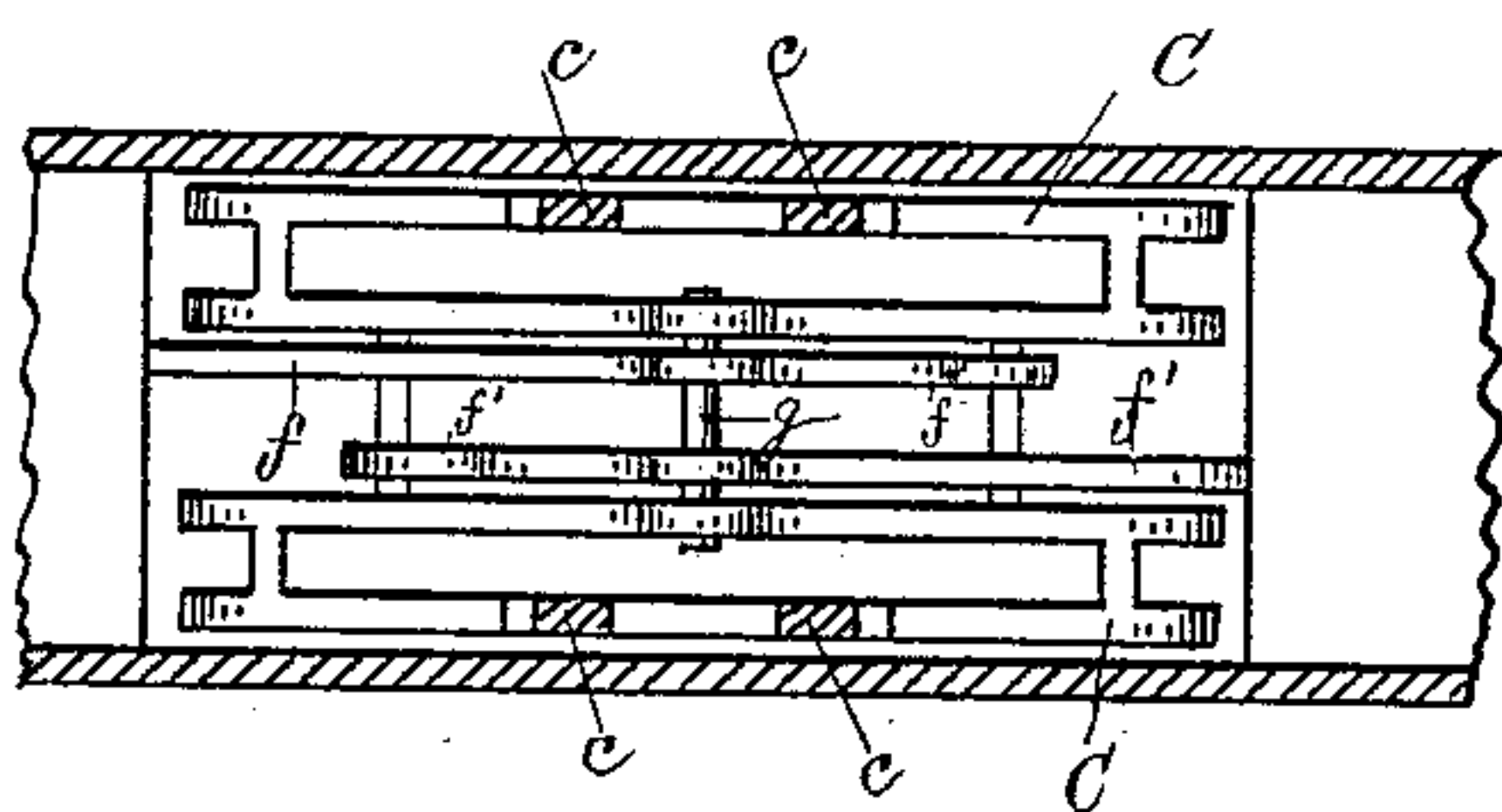


Fig. 5.

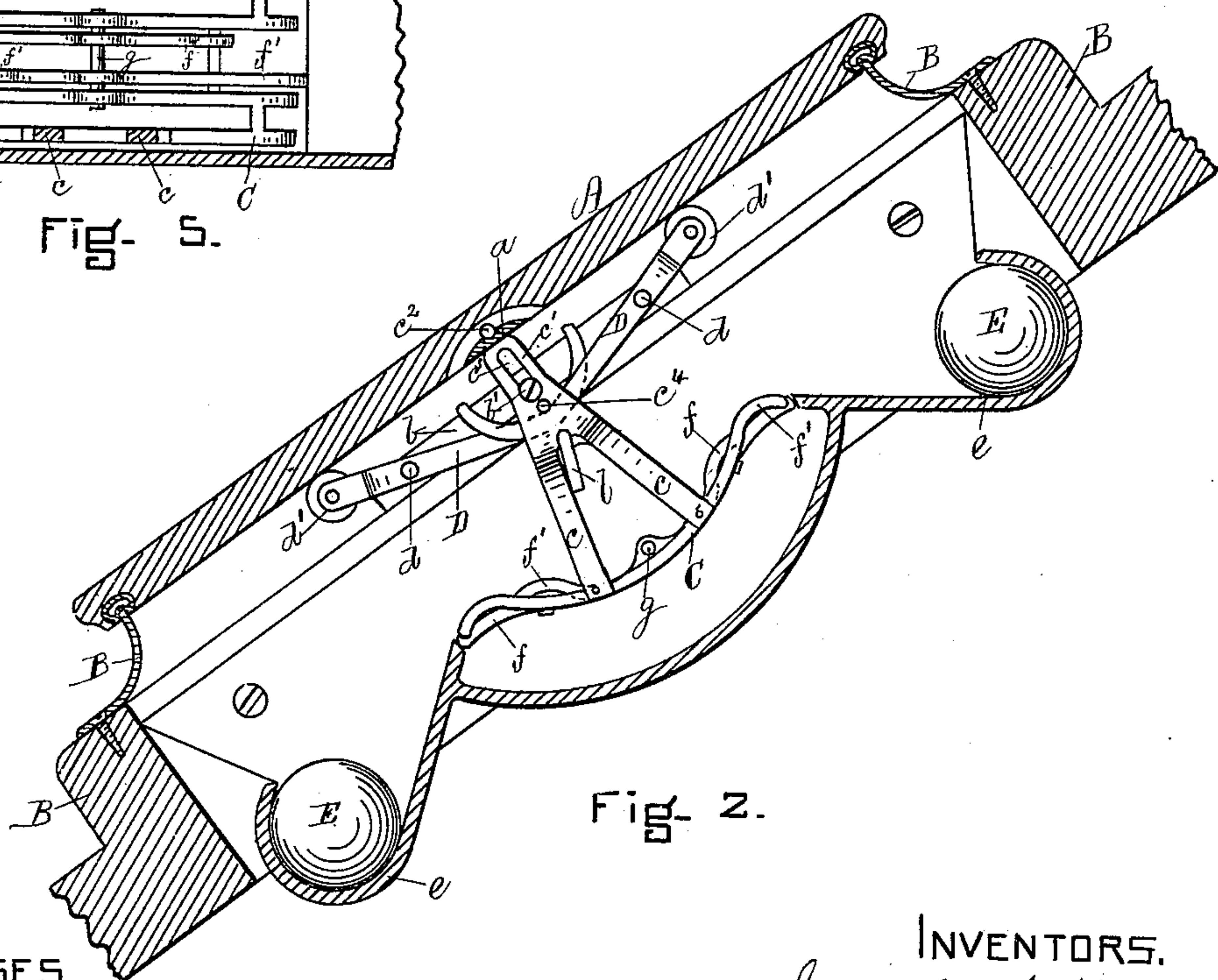


Fig. 2.

WITNESSES

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2 Sheets—Sheet 2.

Patented Nov. 10, 1885.

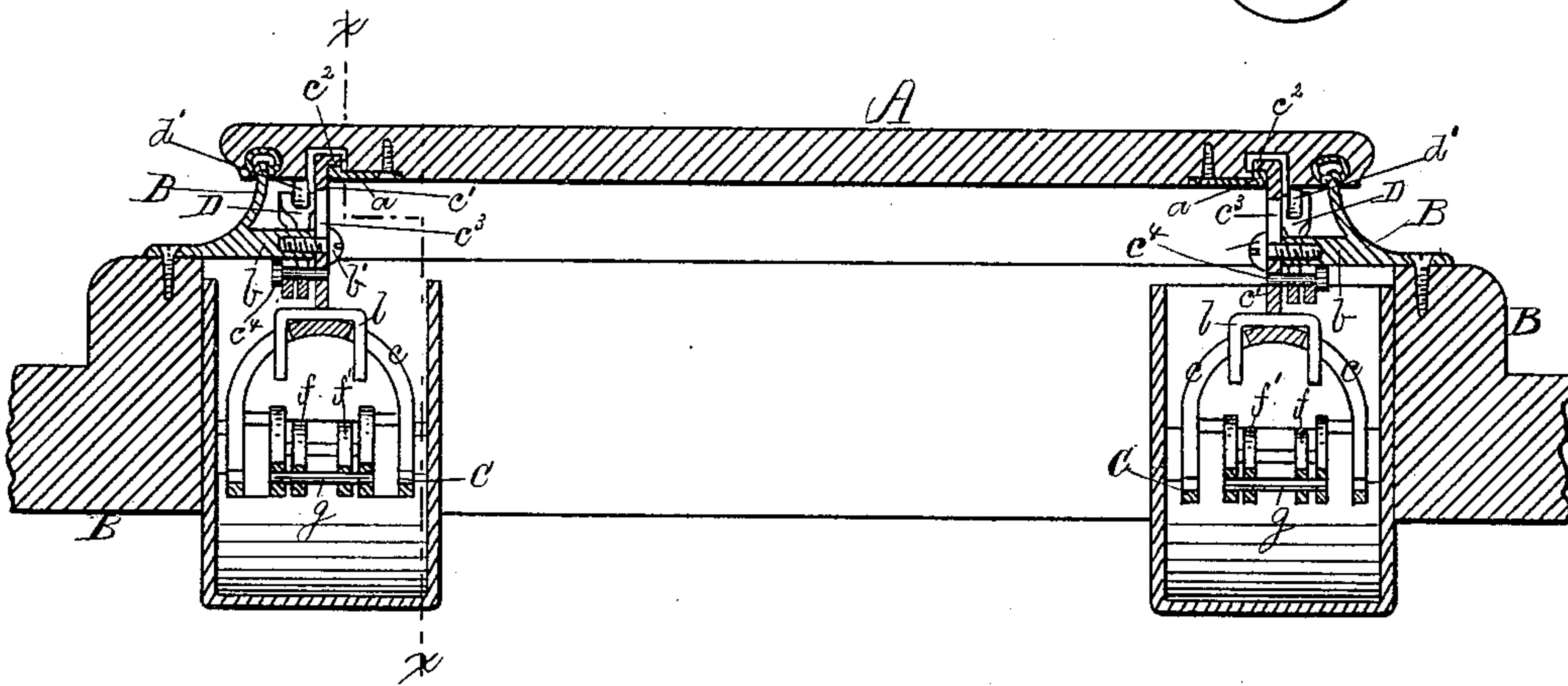
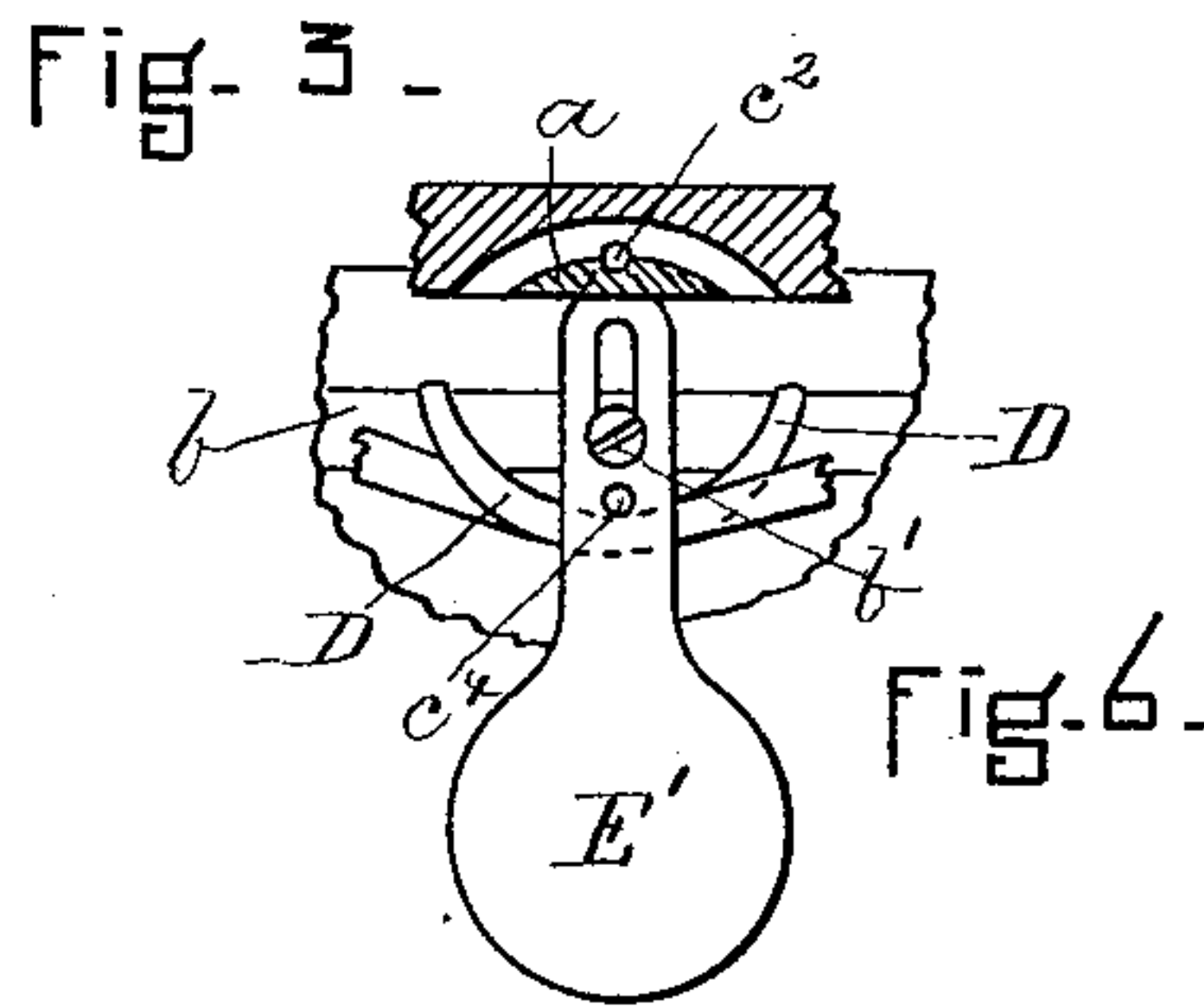


Fig. 4.

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# UNITED STATES PATENT OFFICE.

JAMES MCINTYRE AND HARRISON LORING, OF BOSTON, MASSACHUSETTS.

## ESCAPE-HATCH FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 330,039, dated November 10, 1885.

Application filed March 30, 1885. Serial No. 160,588. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES MCINTYRE and HARRISON LORING, both of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Escape-Hatches, of which the following is a specification, reference being had to the accompanying drawings, making a part hereof, in which—

Figure 1 is a vertical cross-section on line  $x x$  of Fig. 4, showing our invention when the car is in an upright position and the hatch is closed. Fig. 2 is a vertical cross-section on the same line as Fig. 1, showing the hatch still closed when the car is tilted to an angle of nearly forty-five degrees. Fig. 3 shows the hatch as it appears when tilted to an angle of forty-five degrees, and partially open and lifted from its combings. Fig. 4 is a section on line  $y y$ , Fig. 1, and Fig. 5 is a section on line  $z z$ , Fig. 1. Fig. 6 shows a modification.

Our invention is a safety-hatch intended more particularly for railroad-cars and adapted to open automatically in case the car should be thrown over, and thereby afford an exit for the passengers through the roof, the hatch remaining closed ordinarily and forming a part of the roof; but, as will be clear, our safety-hatch may be operated by hand, and is in that case applicable to other uses than on railway-cars.

The main feature of our invention is a hatch mounted upon its combings so that it can be lifted and lowered bodily by means of levers or their equivalents, the levers preferably having rollers at their bearing ends so that the hatch can be readily moved on the levers to open the hatchway.

A second feature of our invention is a gravity attachment by which the levers are operated to lift the hatch when the car is tilted about forty-five degrees.

In the drawings, A is the hatch and B its curb or combings.

D are levers whose fulcra  $d$  are studs fast to the shelf  $b$ , and each lever has a roller,  $d'$ , at its upper end in order to reduce friction between the levers and the hatch when the hatch is moved. The balls E are weights, which usually rest in the pockets  $e$  at the side of the casing.

C is a tray having the spider-arms  $c$  uniting in the top piece,  $c'$ , bent over at the end to form a hook,  $c^2$ , which rests ordinarily in a notch in the curved plate  $a$ .

$b'$  is a headed pin passing through the slot  $c^3$  and screwed in the shelf  $b$ .

$f f'$  are triggers pivoted on the pin  $g$ , one end of one of the triggers butting against the edge of the pockets  $e$ .

As long as the car remains in an upright position, or until it is tilted to an angle of about forty-five degrees, the weights E will remain in the pockets, as seen in Figs. 1 and 2. When tilted more than forty-five degrees, as shown in Fig. 3, one of the balls E rolls from its pocket upon the tray, striking the curved top of one of the triggers,  $f$ , depressing it, the other end being raised from against the edge of the other pocket. The hook  $c^2$  is thrown from its seat in the curved plate  $a$ , the tray drops until it is suspended from the pin  $b'$ , the stud  $c^4$  bears down upon the levers D, thereby causing them to turn on their fulcra and the upper ends to approach toward each other and raise the hatch from its combings.

$l$  is a piece of wire bent in a U shape, passing through a slot in the top piece,  $c'$ , and forming a stop for the ball E.

The hatch may be allowed to slide from the roof, if desired, or it may be arrested in its movement by a projecting rim on the side of the roof or by a cord, or any other means that will be readily suggested.

Fig. 6 shows a modification of our device, in which a suspended weight,  $E'$ , is used instead of a tray and the two balls E, although I consider the two-ball arrangement the better of the two.

What we claim as our invention is—

1. The hatch A, in combination with levers D, by which it is raised bodily off of the curb B, the ends of the levers forming bearings upon which the hatch is moved, all substantially as described.

2. The hatch A, in combination with levers D and weights by which the levers are made to automatically raise and lower the hatch, substantially as described.

3. The hatch A, in combination with levers D, suspended tray C, and weights E, whereby they may automatically operate the levers and lift the hatch, substantially as described.

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Witnesses:

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