(No Model.)

2 Sheets—Sheet 1.

H. J. BLEULER.

GUARD TO HATCHWAYS.

No. 292,092. Patented Jan. 15, 1884.

FIG. 1.

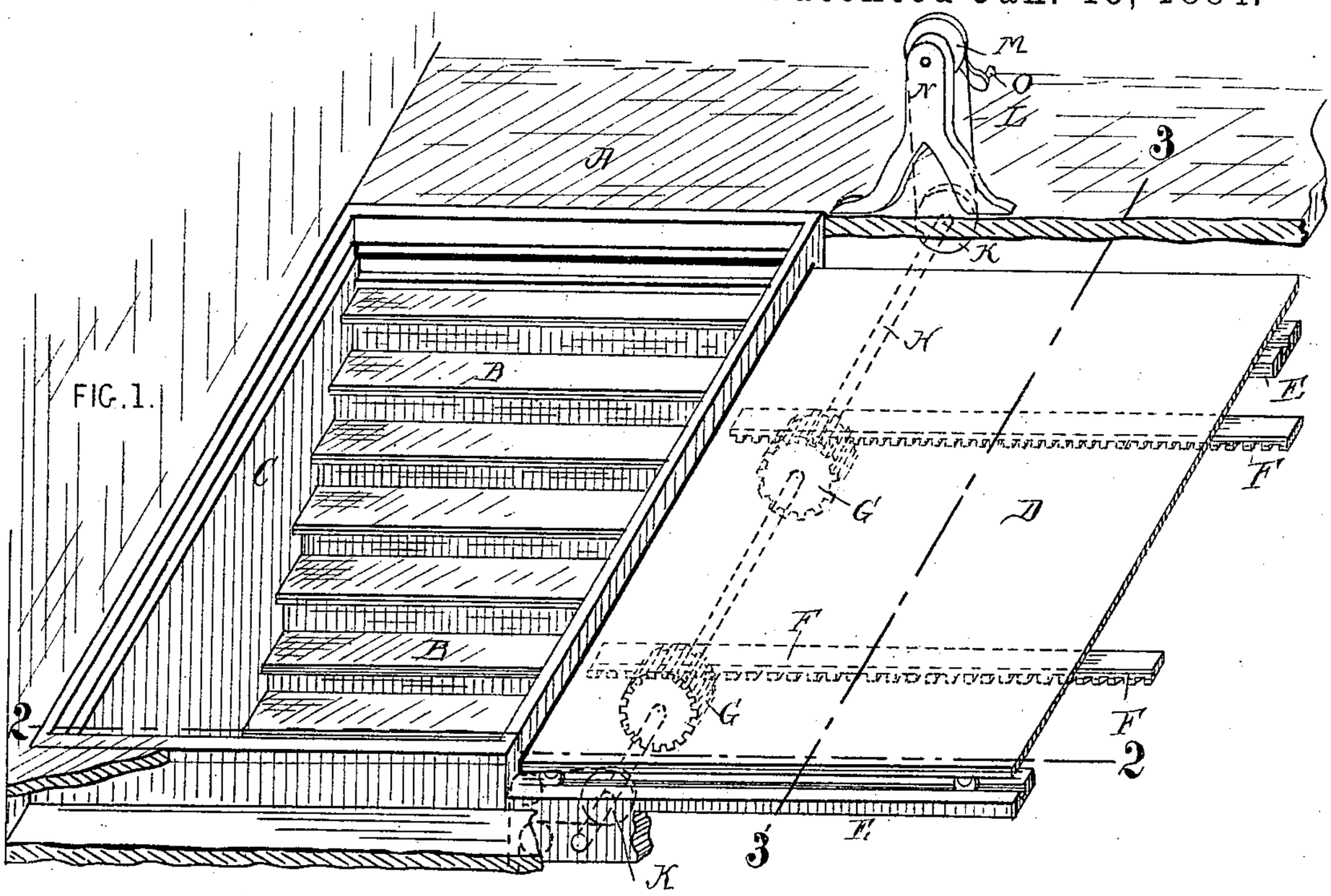


FIG. 2.

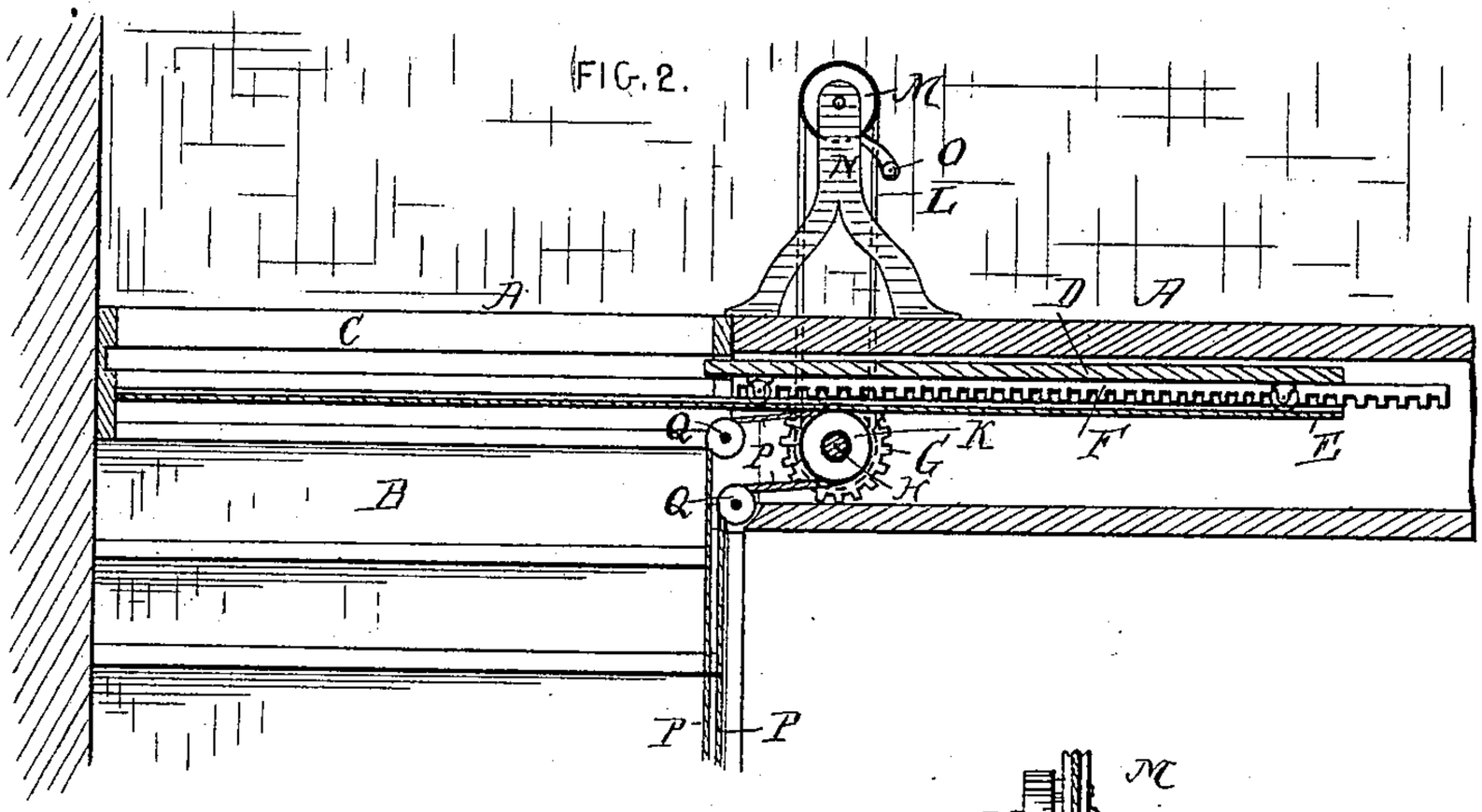
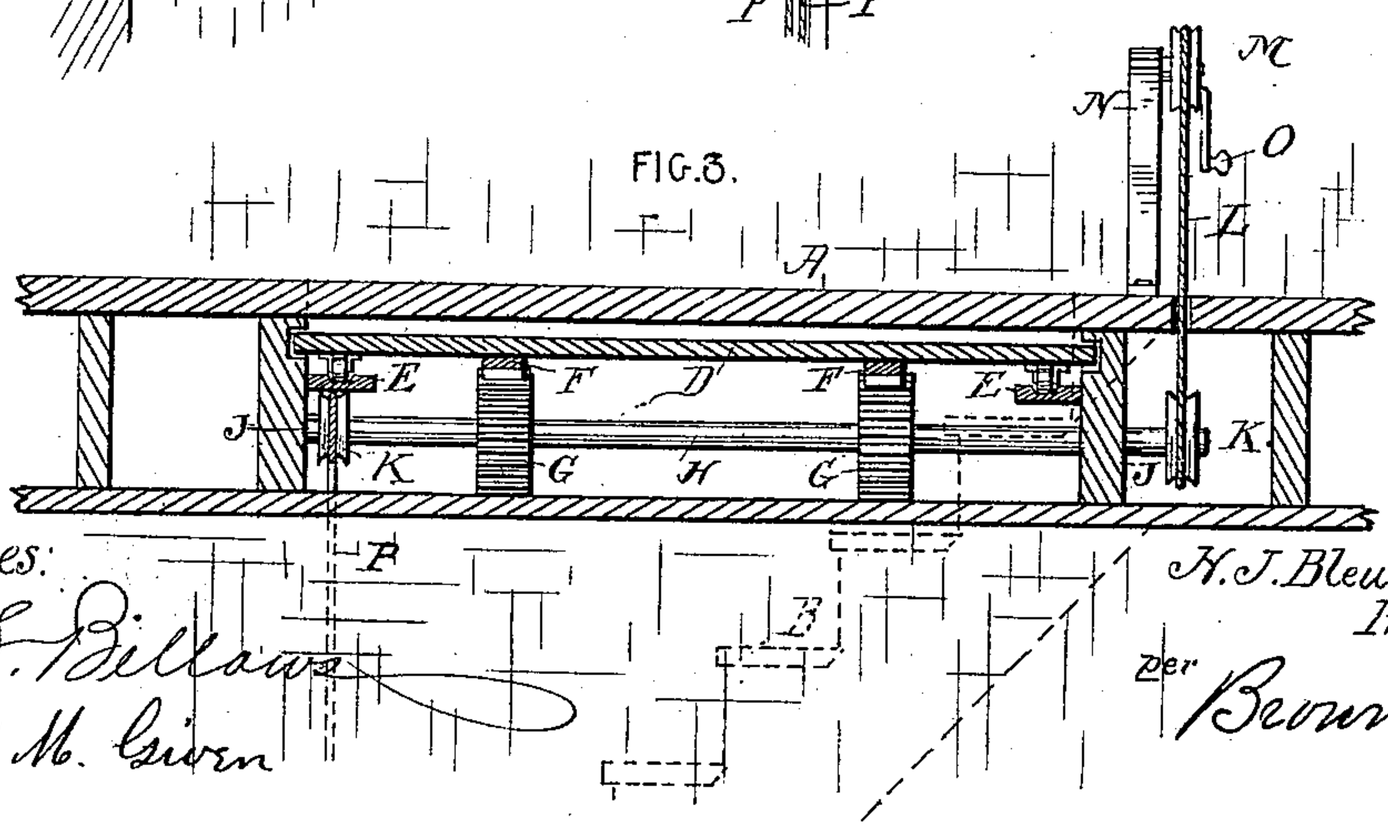


FIG. 3.



Witnesses:
Wm. S. Billau
Geo. W. M. Gibson

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Inventor;
per Brown Bros.
attorneys.

(No Model.) 2 Sheets—Sheet 2.

H. J. BLEULER.

GUARD TO HATCHWAYS.

No. 292,092. Patented Jan. 15, 1884.

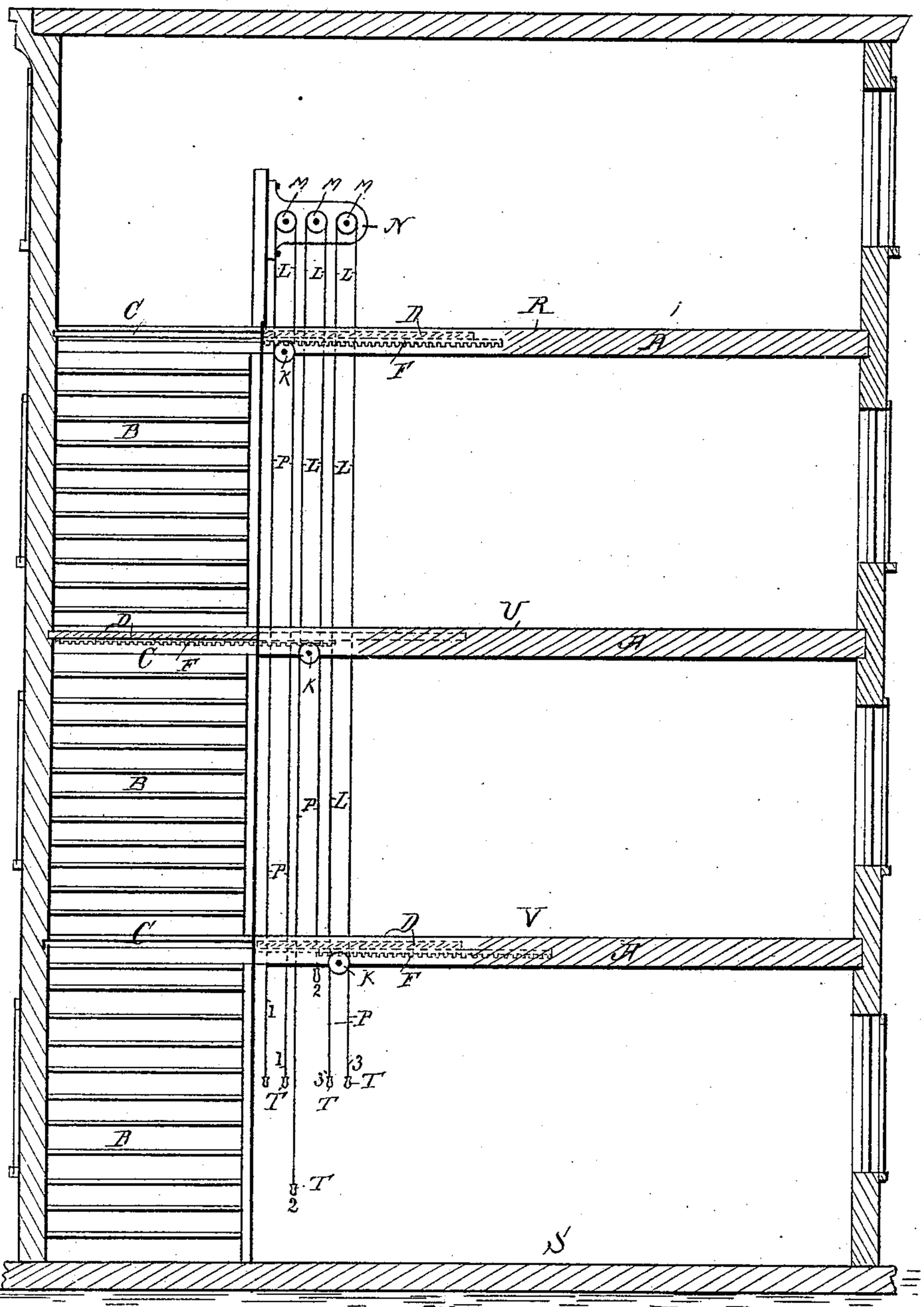

FIG. 4.

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UNITED STATES PATENT OFFICE.

HENRY J. BLEULER, OF BOSTON, MASSACHUSETTS.

GUARD TO HATCHWAYS.

SPECIFICATION forming part of Letters Patent No. 292,092, dated January 15, 1884.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. BLEULER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Guards to Hatchways, &c., against Fire, of which the following is a full, clear, and exact description.

This invention pertains to protection against the spread and circulation of fire, smoke, &c., in dwelling-houses and other buildings by way of the openings in the floors or well at which the stairs or elevators are located.

This invention consists of a door arranged, preferably, at each floor or landing of the several floors to the well, in combination with mechanism for operating the same, all substantially as hereinafter described, whereby, in cases of fire, &c., the well can be closed or opened at any floor, as may be desired or found necessary, and from both above and below said floor.

In the accompanying plate of drawings, in Plate 1, Figure 1 is a perspective view of a floor to a building and of the stair-opening or well through the same and stairs, illustrating a door for opening and closing the well, arranged for operation in accordance with this invention, some parts being broken out and in vertical section; Fig. 2, a vertical section on line 2 2, Fig. 1; Fig. 3, a vertical section on line 3 3, Fig. 1. In Plate 2, Fig. 4 represents a building in vertical cross-section, the well extending through the several floors, and having a door for opening and closing the well at each floor, and showing the several doors as arranged for being operated at any one of the floors, as desired.

In the drawings, A represents a floor of a building; B, stairs leading to said floor from the floor below through the well or opening C of the floor.

D is a door for closing and opening the well C at the floor A. This door D, preferably, is to be made of metal or other non-combustible material or materials, and it is of a size and shape to fully close said well C when placed in suitable position therefor, as will hereinafter appear. The door D, as shown, is arranged to slide horizontally upon parallel horizontal guideways or rails E, and at either end of the well C, and in said slide to travel under the floor A, said guide-rails E being suitably extended therefor.

F F are two toothed rack-bars parallel to the guide-rails E, and attached to the under side of the door between its two ends.

G G are pinion gear-wheels secured to a common horizontal shaft, H, turning at each end in suitable bearings of the supporting beams or structure J of the floor, and all so that said pinions will engage one with each of the rack-bars, and thus when this common shaft H is turned in the one direction slide the door D from under the floor across the well-opening C, and thus close the same, and when said shaft is turned in the opposite direction slide the door under the floor and from the well-opening, and thus open the same.

To operate the shaft H as above described, the shaft is provided with a pulley, K, at each end, and to each pulley mechanism is connected, so that from the one pulley the door can be operated from below and from the other above said floor. The mechanism above stated in one instance consists of an endless belt, L, passing about the pulley, and from thence about another pulley, M, turning in a standard or upright, N, upon and above the floor A, and provided with a crank-handle, O, for operating it. The turning of the crank-handle O in one direction will, through the pulleys and belt L, connecting same to the shaft H, carrying the pinions, slide the door in one direction to close with it the well-opening, and the turning of said crank in the opposite direction will slide the door in a direction to open said well-opening. The mechanism in the other instance consists of a belt, P, passing about the pulley K, and from thence over guide pulleys or wheels Q into a position below the floor, to be operated conveniently thereat. Pulling on the belt in one direction and in the opposite direction obviously will slide the door in the proper direction in either case to close or open the well-opening, the same as described from the turning of the crank; but in this instance the door is operated from below, while in the other it is operated from above the floor.

The door preferably is provided with friction rolls or wheels R, to run upon the guide-rails.

Doors as above described may be arranged at each and every floor of the building, and, if so desired, the connecting mechanism for operating from both above and below the floor at which either door is located may, as is plain, have its operating belts or ropes so extended through the various floors of the building that the door of any floor can be operated as desired from any other floor, and both above and below said floor. Such an arrangement of the doors for the several floors of a building is shown in Fig. 4, Plate 2. A rope to each door passes over a separate pulley, M, above the upper floor, R, and a rope extends down through the several floors to the lower floor, S, where each end of these ropes has a handle, T, by which to pull it. In the figure the ropes marked with a figure 1 operate the door at floor marked R, the ropes marked 2 operate the door at floor marked U, and the ropes marked 3 operate the door at floor marked V, the door to floor U being shown as closed or moved over the opening, and the other as open, or away from the opening or well.

The operating belts or ropes, or other devices by which the doors are to be operated, it is preferable to label or mark in a manner to indicate at a glance how and which of the same is to be used to open or close a door, as the case may be—as, for instance, to mark or label them with the words "Shut" and "Open," and, should the operating mechanism be extended through the series of floors, to also label or mark it so as to distinguish the floor—as, for instance, "First," "Second," "Third," &c.

The doors may be made in parts, to slide in directions opposite to each other, and, meeting, close the well-opening, in which case separate operating mechanism would be necessary for each part.

Obviously, doors arranged to open and close the well-opening in the floors of dwelling-houses, &c., as above described, must, in cases of fire, &c., if properly handled and manipulated and in due season, act as an advantageous protection against the spread of the fire through the building, while at the same time they offer of themselves no practical obstruction to the escape of the occupants, for the reason that each door is adapted to be operated from both above and below the floor.

It plainly is best that these doors should be arranged to shut as closely as possible the well-opening, and consequently they will thus make guards against the downward flow of water, which advantage can be still further enhanced by making them of a basin shape, to the better hold or contain the water.

Having thus described my invention, what I claim is—

1. A door constructed and arranged in relation to a well-opening, C, in the floors of a building, to close and open the same, in combination with mechanism connected with said door, and extending through the several floors of the building, to be operated at any one of said floors, and so as to slide said door either to close or open said well-opening, as the case may be, substantially as and for the purpose specified.

2. The combination, with a well-opening in the floor of a building, of a door constructed and arranged to slide across said opening, rack-bars F, a shaft, H, gear-wheels G, pulley-wheels K, and ropes L and pulley M, for operation of said door, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY J. BLEULER.

Witnesses:
EDWIN W. BROWN,
WM. S. BELLOWS.