

No. 696,855.

W. R. & N. B. CAIN.  
FIRE ESCAPE.

Patented Apr. 1, 1902.

(Application filed Aug. 26, 1901.)

(No Model.)

Fig. 1

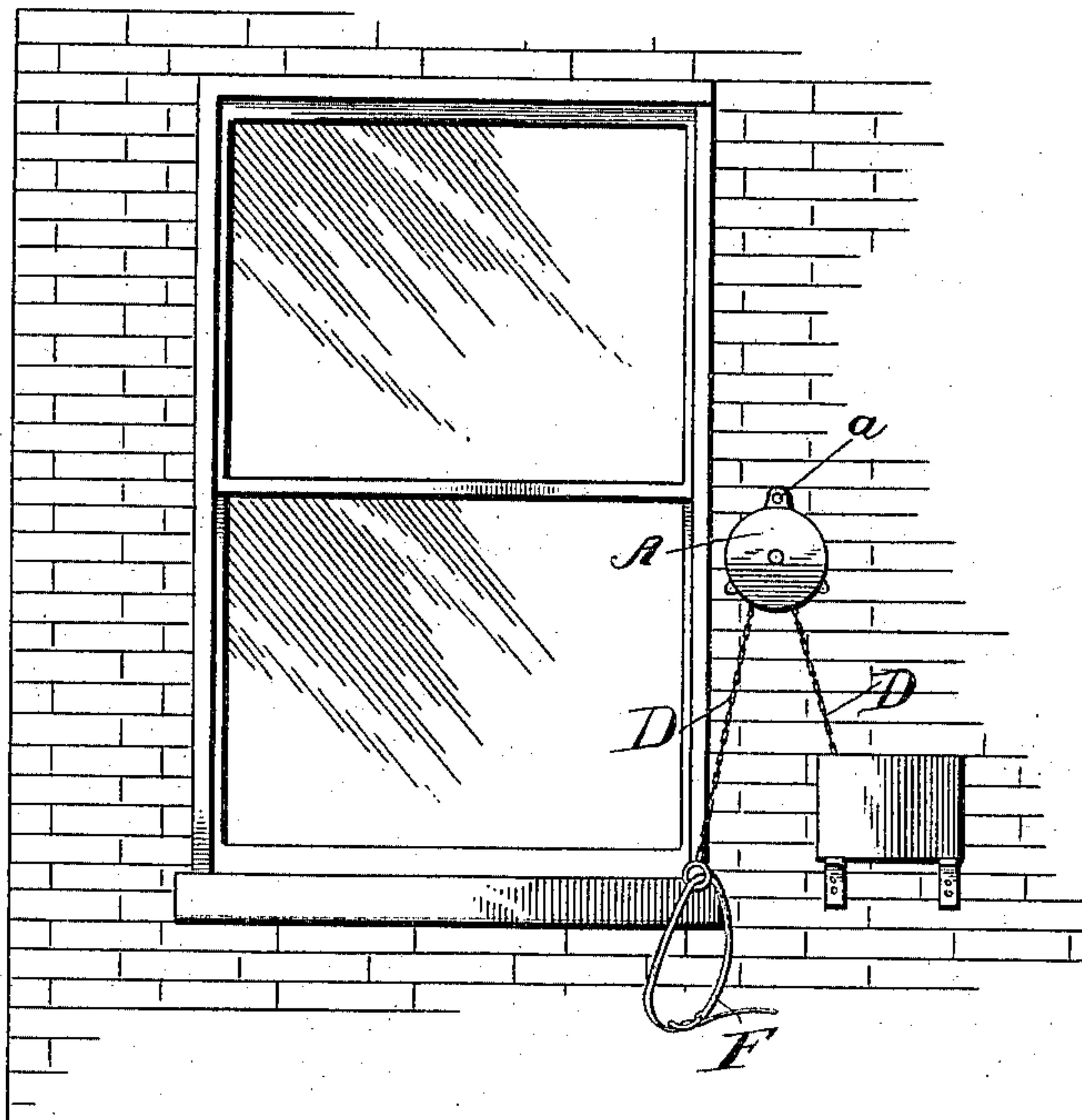


Fig. 2.

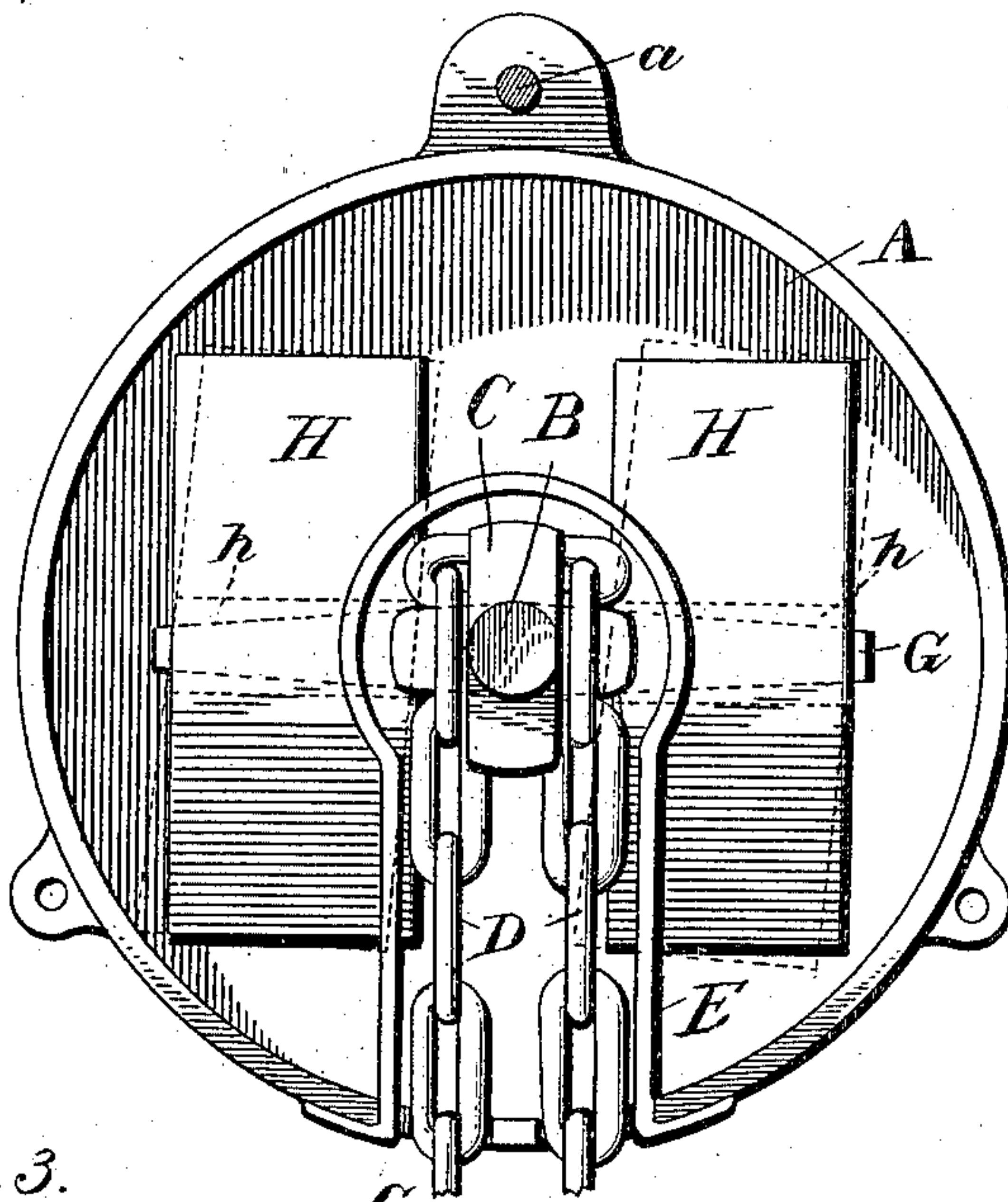
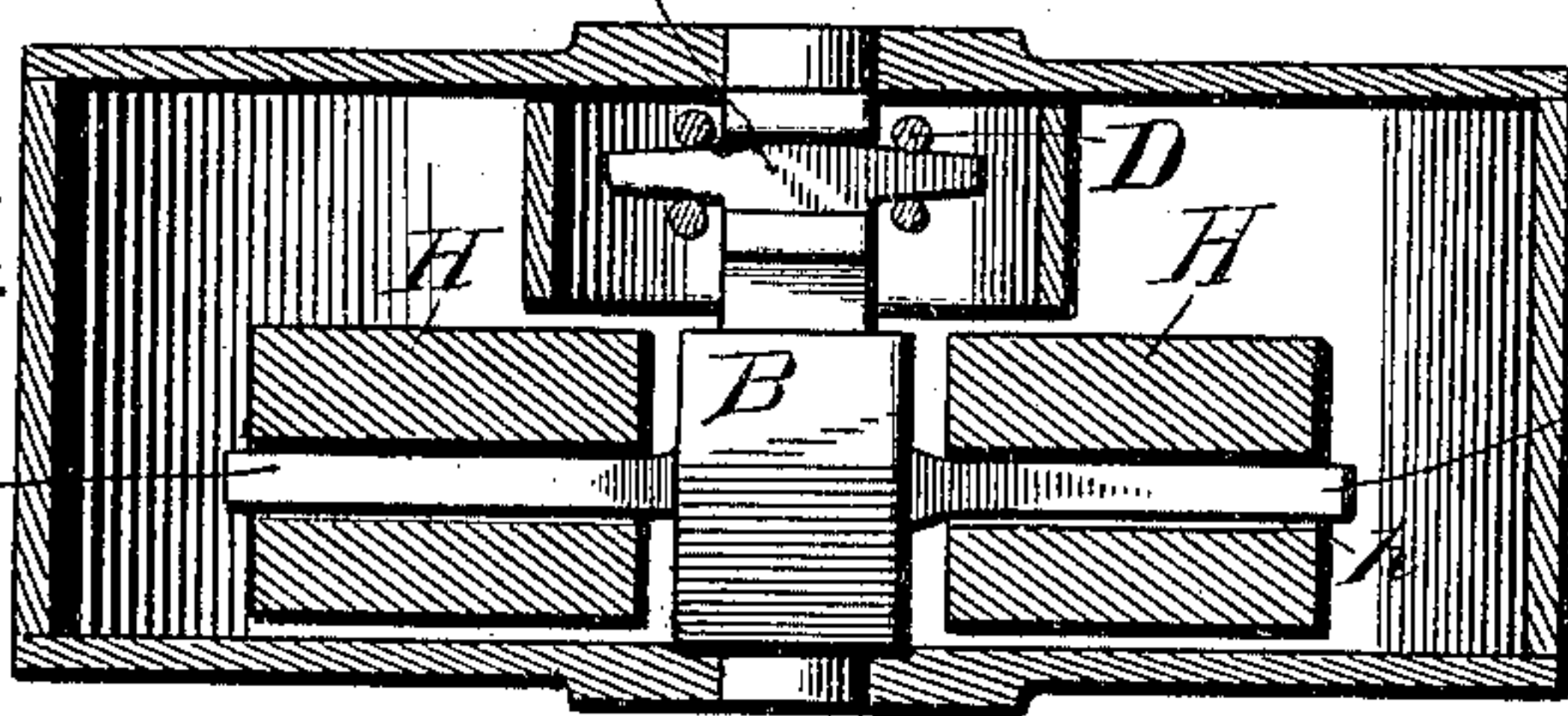


Fig. 3.



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# UNITED STATES PATENT OFFICE.

WESLEY R. CAIN AND NAPOLEON B. CAIN, OF PORT JERVIS, NEW YORK.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 696,855, dated April 1, 1902.

Application filed August 26, 1901. Serial No. 73,319. (No model.)

*To all whom it may concern:*

Be it known that we, WESLEY R. CAIN and NAPOLEON B. CAIN, citizens of the United States, residing at Port Jervis, in the county of Orange and State of New York, have made certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

Our invention is improvement in that class of fire-escapes in which a chain or rope is employed for lowering persons to the ground, the same passing through a drum or casing secured to the wall of a building or to some fixed object in an apartment of the same and operating an automatic brake mechanism whereby the descent of the persons is regulated.

Our invention includes improved braking mechanism, forming an automatic regulator for governing the rapidity of descent.

The details of construction, arrangement, and operation are as hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a front view of a portion of a building, showing our improved fire-escape arranged in position for operation. Fig. 2 is practically a section of the main portion of the fire-escape, the cover of the circular casing being removed. Fig. 3 is a horizontal transverse section of the apparatus shown in Fig. 2.

The casing A, in which the operative parts of our fire-escape are mainly inclosed, is shown cylindrical and provided with ears and a connecting-bolt *a*, by which it may be attached to the wall of a building, as shown in Fig. 1. A shaft B traverses the center of the casing A and is journaled in the sides thereof, as shown in Fig. 3. Said shaft is provided with a sprocket-wheel C, over which runs a chain D, the two parts C D being so relatively connected that the arms or teeth of the wheel are adapted to pass through links of the chain, and the links being likewise adapted to lie between other teeth, as illustrated in Fig. 2. By this means the chain is prevented from slipping on the wheel as it runs over the same. To hold the chain engaged with the wheel under all conditions, we provide a guard E, which consists of a broad metal band secured to the

lower side of the casing A and passing around the wheel, as shown in Fig. 2. The lower side of the casing is provided with two openings, and through these the ends of the guard plate or band E project, the same being provided with laterally-bent portions, forming flanges which engage the edges of the casing adjacent to the openings. Through such openings the chain is adapted to pass freely. The chain is provided at one end with a belt F, (see Fig. 1,) adapted for attachment to the body of the person to be lowered from the building. The other end of the chain may be supported in any preferred manner or by any preferred means—as, for example, a rotatable shaft, from which it may be drawn off, or a box attached to the side of the building. In case the apparatus—that is to say, the casing A and its contained mechanism—be secured within an apartment the chain may be left free on the floor or otherwise disposed of, as occasion requires.

The rotatable shaft B is provided with opposite radial arms G, which are tapered toward their outer ends, as shown by dotted lines, Fig. 2. Upon these arms are mounted two weights H, which are provided with two central slots *h*, whose width is slightly greater than the greatest width of the arms G, as illustrated by dotted lines, Fig. 2. It is apparent that said weights H are adapted to slide freely on the rigid arms G of the shaft and that they will tend to be thrown out by centrifugal action as the shaft rotates.

In practical use of our invention the body-belt F is attached to a person to be lowered, and so soon as his weight is applied the chain G begins to travel rapidly and to rotate the wheel C and shaft B with corresponding rapidity, whereby the weights H are revolved with the arms G and at the same time caused to slide outward by centrifugal action, so as to come in frictional engagement with the inner side of the casing A. It will be seen that the farther the weights are from the center of rotation the greater the leverage or power required to rotate; and, further, the greater the rapidity of rotation, the greater will be centrifugal action, and hence the higher will be the degree of friction with the casing. Thus the weights serve, for two reasons, as an ef-



fective brake for regulating the rapidity of rotation of the wheel C, and thereby the rapidity of travel of the chain D over the same and the descent of the person to the ground.

- 5 In brief, this apparatus acts most effectively as an automatic brake for regulating the descent of light or heavy persons, as the case may be, since the centrifugal tendency of the weights H and their friction with the casing  
10 will always correspond to the weight of the person. As a detail of the operation it may be noted that the taper of the arms G and the form of the slots *h* in the weights H cause the weights when revolved to assume a position  
15 slightly inclined to the longer axes of the said arms, whereby friction with the casing A is increased—that is to say, as illustrated by dotted lines, Fig. 2, in case the shaft B is rotated to the left the lower side of the left-  
20 hand arm and the upper side of the right-hand arm will be brought into contact with the adjacent sides of the slots in the weights H, the weights assuming a slight angle, as shown, so that one corner of the weights is  
25 brought in contact with the casing A. The apparatus is simple in construction, involves no parts liable to get out of order, and all being constructed of metal is exceedingly durable.
- 30 It is apparent that the chain might be made endless and that the same operation would result, and in case it be thus constructed it would be practicable to attach stirrups there-  
35 to, so that several persons might descend from the building simultaneously.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. The improved fire-escape comprising a circular casing, a shaft journaled concentric- 40 ally therein, and provided with sprocket-wheel, and a radial arm which is tapered toward its outer end, a chain adapted to travel on the wheel, and a rectangular weight having a slot whose diameter is slightly greater 45 than the widest portion of the aforesaid arm, the weight being of such length that when traction is applied to the chain and the shaft rotated the weight is thrown into an inclined position and one of its outer corners engaged 50 with the inner wall of the casing, as shown and described.

2. The combination, with the circular casing having openings in the lower sides, and a rotatable shaft journaled in said casing concentrically and provided with a sprocket-wheel, 55 and a chain running on said sprocket-wheel, of the guard consisting of a metal plate bent into U shape and provided at its ends with laterally-bent flanges which engage the edges 60 of the casing at the openings aforesaid, substantially as shown and described.

In testimony whereof we have hereunto set our hands and affixed our seals, in the presence of two subscribing witnesses, this 20th 65 day of August, 1901.

WESLEY R. CAIN. [L. S.]  
NAPOLEON B. CAIN. [L. S.]

Witnesses:

STEPHEN BROWN,  
JULIUS B. CARTWRIGHT.