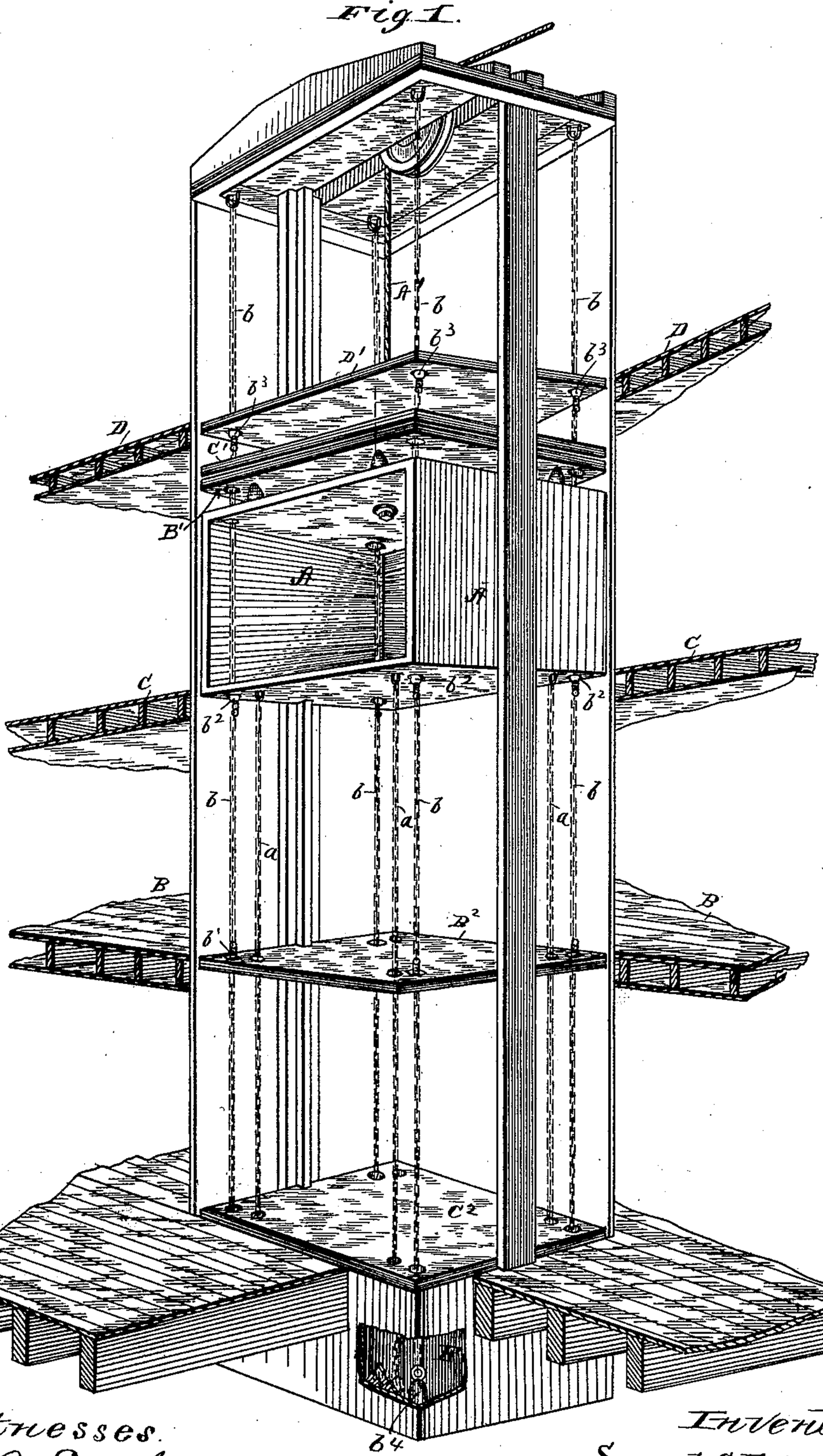
(No Model.) 2 Sheets—Sheet 1.

S. C. EVANS.

ELEVATOR.

No. 424,869. Patented Apr. 1, 1890.

Fig. 1.



Witnesses.
H. R. Edelen
B. L. Gourie.

Inventor.
Samuel C. Evans
By Leggett & Leggett
Atty's.

(No Model.) 2 Sheets—Sheet 2.

S. C. EVANS.

ELEVATOR.

No. 424,869. Patented Apr. 1, 1890.

Fig. 2.

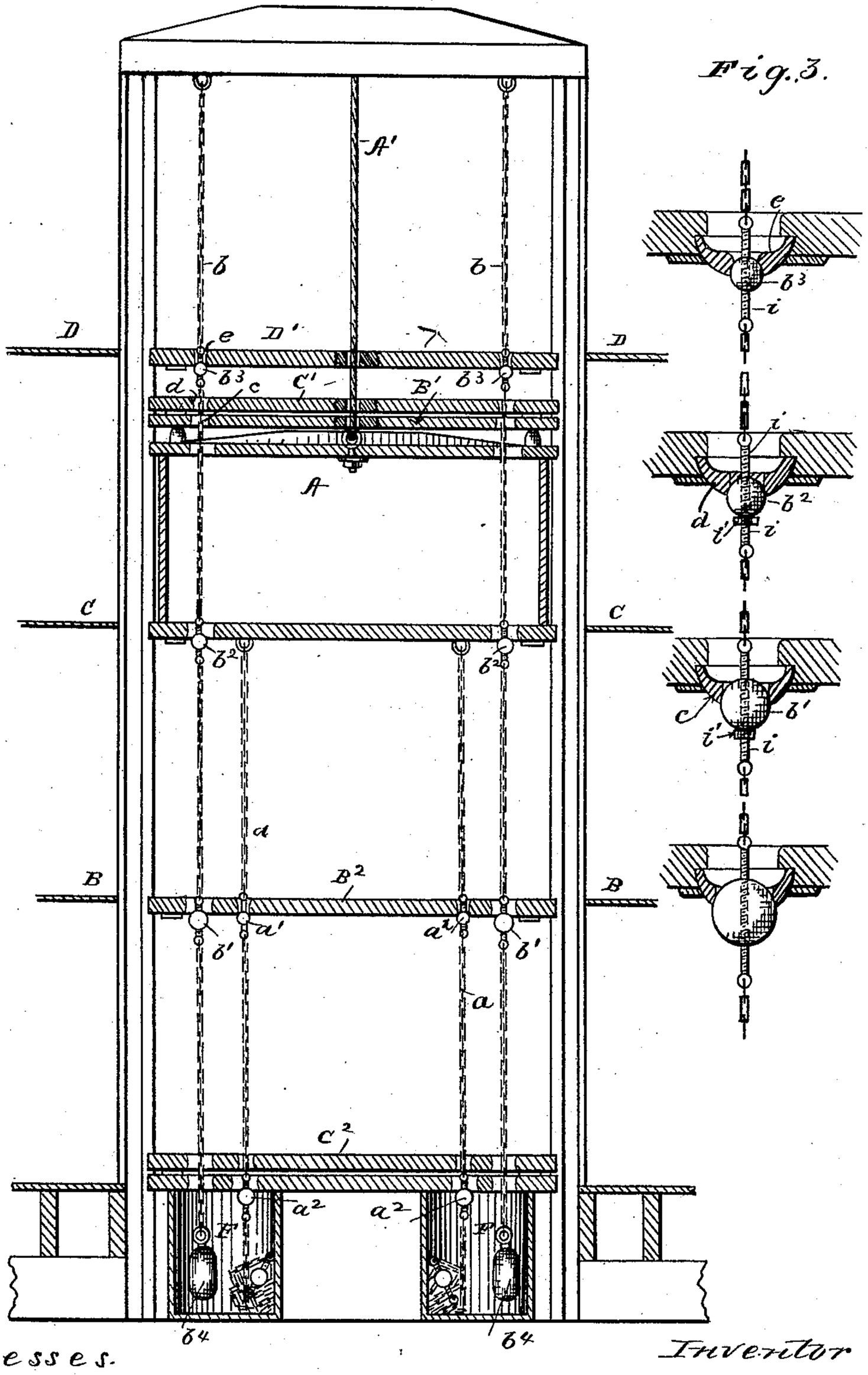


Fig. 3.

Witnesses.
W. R Edelen.
B. S. Lowrie.

Inventor
Samuel C. Evans
By Leggett & Leggett
Atty's

UNITED STATES PATENT OFFICE.

SAMUEL C. EVANS, OF CLEVELAND, OHIO.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 424,869, dated April 1, 1890.

Application filed August 1, 1889. Serial No. 319,398. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL C. EVANS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in safety attachments for elevators, the same comprising a series of suspended hatches for closing the elevator-shaft at the different floors above and below the elevator, such hatches being automatically operated by the elevator.

In the accompanying drawings, Figure 1 is a view in perspective. Fig. 2 is an elevation in section. Fig. 3 is an enlarged elevation in section in detail.

A represents an elevator-car, and A′ the hoisting-cable for the same, these members being of ordinary construction, and about any variety of elevator will answer the purpose.

B, C, and D represent different floors of the building through which the car passes.

C′ D′ are hatches located above the car for closing the elevator-shaft at the different floors above the car. C^2 and B^2 are similar hatches for closing the elevator-shaft at the respective floors below the car. The hatches above the car are suspended by chains or rods *b b*, the same being attached to the framework above and extending loosely through holes located near the corners of the elevator-platform. The rods or chains (and we will suppose the latter) *b* have each attached a series of balls b' b^2 b^3, these balls being respectively located opposite the different floors, these balls being graduated in size, the larger ball being the lower one of the series. Thimbles *c*, *d*, and *e* are set in the different hatches that are above the car, thimble *c* being adapted to engage the larger ball b', but the bore of this thimble being large enough to pass the smaller balls located above. Thimble *d* is adapted to engage ball b^2, and so on throughout the series, each set of thimbles being adapted to engage the corresponding balls and the balls above being of such size as will pass through the thimbles below.

In operating the device, suppose the car to be at floor B, in which position of the car the different hatches C′ D′ will be in position suspended, respectively, opposite the different floors C D. The car in moving upward first engages hatch C′, carrying it up, and this hatch in turn engages the next hatch above, and so on until the car reaches the upper floor, the hatches above the car all resting thereon. With the descent of the car the thimbles of hatch D′ will engage balls b^3 and arrest this hatch opposite floor D. Next the thimbles of hatch C′ will engage balls b^2 and suspend this hatch opposite floor C, and so on, the elevator-shaft being successively closed at the different floors above the car. The hatches B^2 C^2, below the elevator, are operated by chains *a*, fastened to the under side of the car, these chains each having attached a series of balls, respectively a' a^2, for engaging corresponding thimbles in the different hatches B^2 C^2, arranged as aforesaid. With the car at floor B the lower set of hatches will be piled below, as shown. As the car moves upward balls a' will engage the thimbles of hatch B^2 and carry this hatch up flush with floor B, reaching this point as the elevator-platform reaches floor C. When the car is raised to floor D, hatch B^2 will be brought in line with floor C, and hatch C^2 will be elevated to floor B, and so on. On the descent of the car the lower series of hatches will be correspondingly depressed and successively close the elevator-shaft opposite the different floors, these lower hatches being eventually piled at the starting-place when the car shall have reached the bottom floor.

Pockets F, constructed, preferably, of short sections of large tubing, receive chains *a* and the connected balls, and weights b^4 are attached to the lower end of chains *b* to hold these chains taut. In case rods are substituted for chains *b*, of course such weights can be dispensed with. As shown in Fig. 3, the different balls have screw-threaded holes engaging short pieces of screw-threaded rods *i*, these rods having eyes or hooks at the ends for connecting them with the chains, of which they are made to form a part. With such construction the balls may be adjusted with little trouble to bring the different hatches flush with the different floors, and the rods had better have jam-nuts *i′* for holding the balls in such adjustment.

The apparatus herein described is not only valuable as a safety attachment, whereby the elevator-shaft is closed at the different floors above and below the elevator, but the hatches may fit the floors so closely as practically to prevent a draft of air through the elevator-shaft, and this in case of fire will be found of great value.

The hatches may be constructed of sheet metal or other suitable material, and if the hatches are constructed of wood at least the underside of the hatches had better be covered with asbestus or some fire-proof material.

What I claim is—

1. The combination, with an elevator-shaft and an elevator-car suspended therein, of chains suspended from the top of the shaft and extending to the bottom thereof, a series of balls of varying sizes secured to said chains, a series of hatches above the car, supported by said balls, chains suspended from the car, balls of varying sizes secured thereto, and hatches below the car, supported by said last-mentioned balls, substantially as set forth.

2. The combination, with an elevator-shaft and an elevator-car therein, of chains suspended from the top of the shaft and extending to the bottom thereof, balls adjustably secured to said chains, hatches above the car, supported by said adjustable balls, chains suspended from the car, adjustable balls therein, and hatches below the car, supported by the last-mentioned adjustable balls, substantially as set forth.

3. The combination, with an elevator-shaft and an elevator-car therein, of chains suspended from the top of the shaft and extending through perforations in the car to the bottom of the shaft, hatches above and below the car, having perforations for the passage of said chains, chains suspended from the car and passing through a second set of perforations in the hatches below the car, balls of varying sizes secured to each of said chains, and thimbles secured in the perforations of the hatches, such thimbles being respectively adapted to engage a corresponding ball, and thus support the hatches at the proper points, substantially as set forth.

4. The combination, with the elevator-shaft and an elevator-car therein, of chains suspended from the top of the elevator-shaft and from the car, balls of varying sizes secured to said chains, hatches supported by said balls, and pockets secured in the bottom of the elevator-shaft for receiving the chains when the car is lowered, substantially as set forth.

5. The combination, with suspended hatches and chains and balls for operating the same, substantially as indicated, of screw-threaded rods engaging screw-threaded holes in the respective balls, such rods having appliances at the ends thereof for attaching the rods in the line of the chains, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 6th day of July, 1889.

SAMUEL C. EVANS.

Witnesses:
CHAS. H. DORER,
WILL B. SAGE.