

No. 652,118.

Patented June 19, 1900.

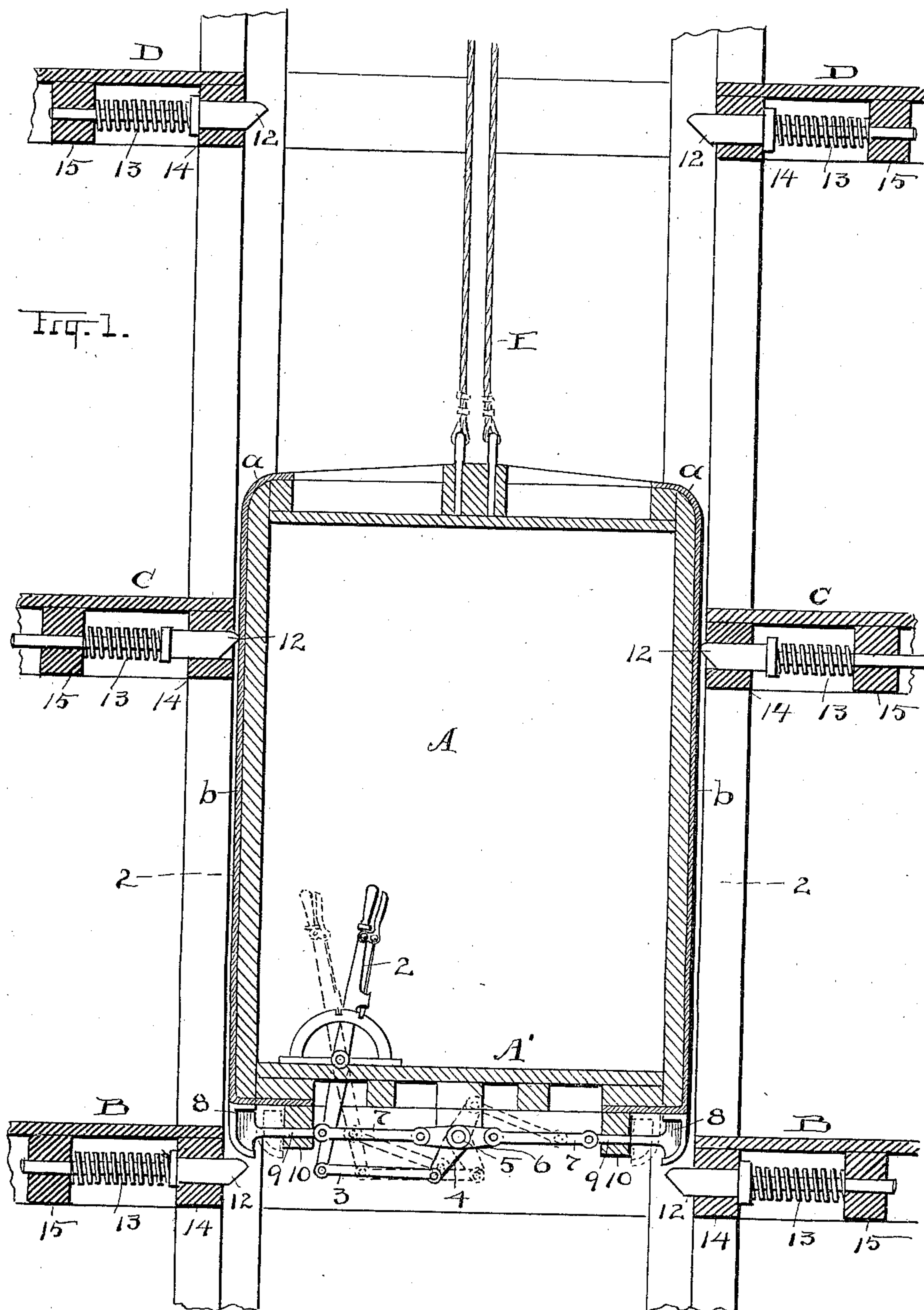
C. KIMBALL.

SAFETY ATTACHMENT FOR ELEVATORS.

(Application filed Mar. 24, 1900.)

(No Model.)

2 Sheets—Sheet 1.



ATTEST.

T. B. Moore

H. E. Mudgett

INVENTOR.

CHARLES KIMBALL.

BY *W. V. Fisher*
ATTY

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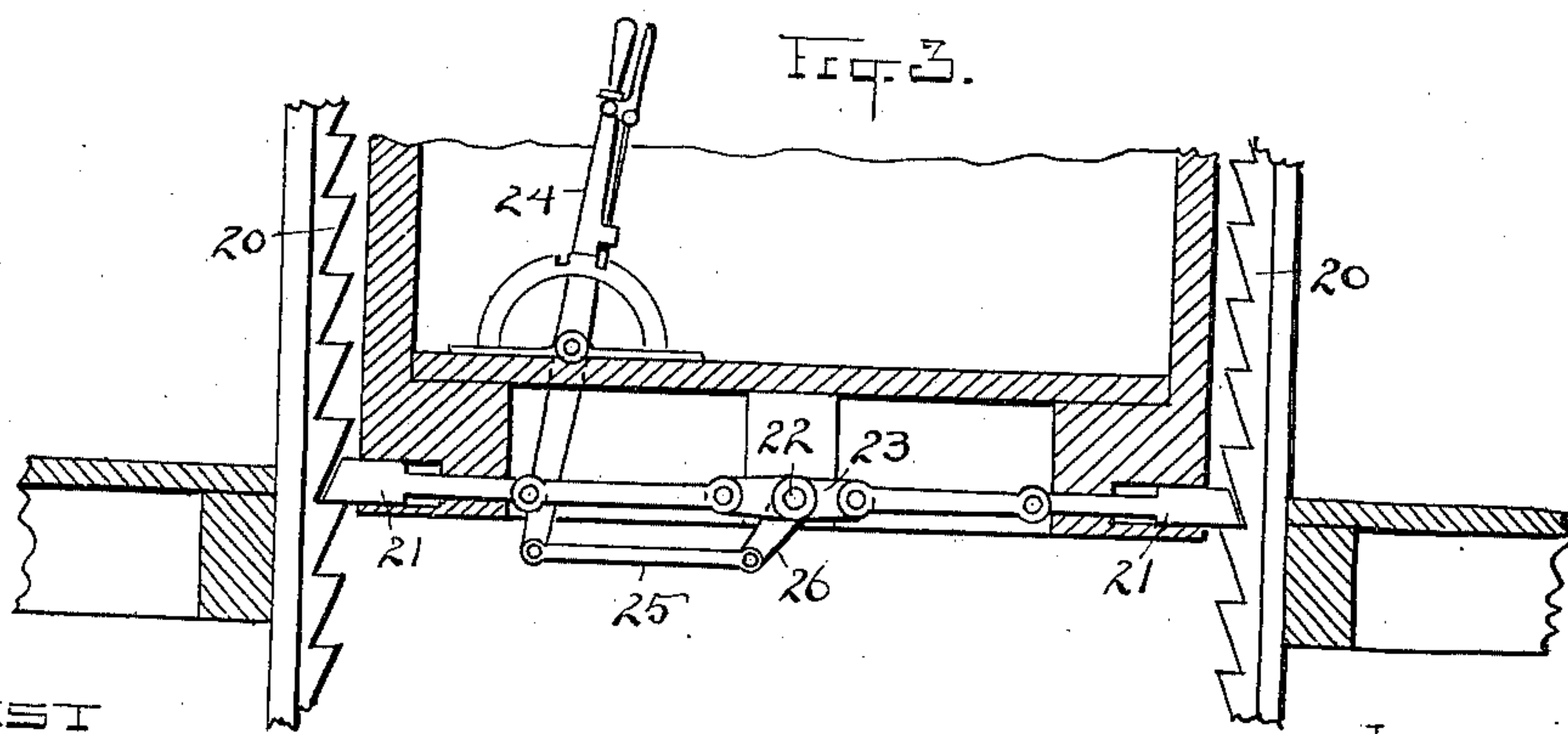
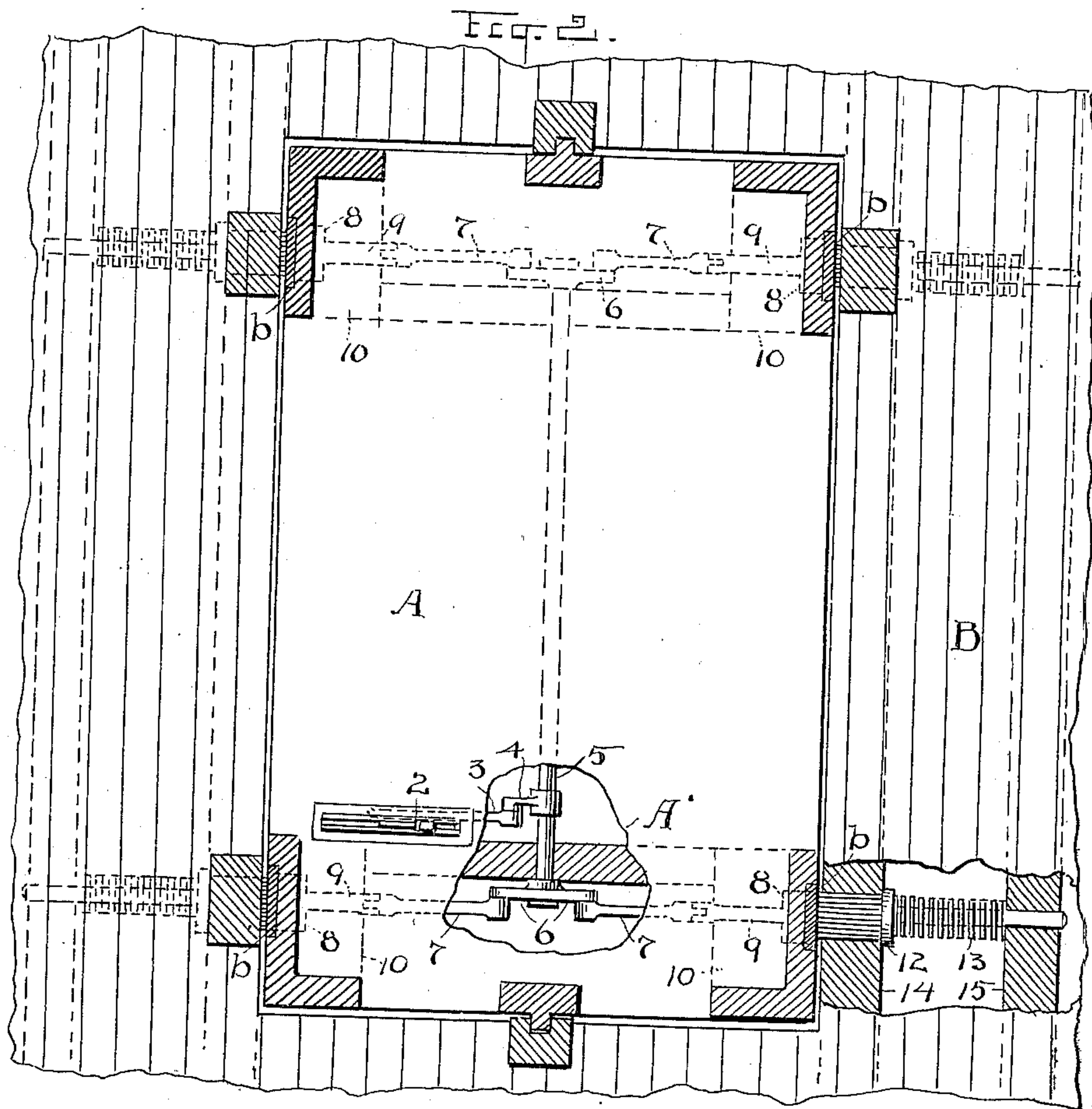
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ATTEST

V. B. Moser
H. E. Mudra

INVENTOR
CHARLES KIMBALL

BY *W. T. Fisher*
ATTY

UNITED STATES PATENT OFFICE.

CHARLES KIMBALL, OF ASHTABULA HARBOR, OHIO.

SAFETY ATTACHMENT FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 652,118, dated June 19, 1900.

Application filed March 24, 1900. Serial No. 10,042. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KIMBALL, a citizen of the United States, residing at Ashtabula Harbor, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Safety Attachments for Elevators; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in safety attachments for elevators; and the object of the invention is to provide an attachment for an elevator car or platform which is adapted to be thrown into action for arresting the descent of a car when the cables break or for any reason the car is dropped, all substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of a section of an elevator-shaft and a car or car-body therein and of three several floors or landings at successive elevations, as are ordinarily found in buildings and as hereinafter more fully described. Fig. 2 is a cross-section of the shaft and car on line 2 2, Fig. 1, with a portion of the bottom of the car and of one corner of the landing below broken away to disclose the operative parts beneath. Fig. 3 is a vertical sectional elevation of a section of a modification of the invention shown in Figs. 1 and 2 and hereinafter fully described.

I am of course aware that there are now in use various attachments for elevator cars or platforms designed to effect the stopping of the car in case of its accidental descent through the breaking of its cables or from other possible causes, and I do not claim to be the first to anticipate danger on this account or to provide against the serious loss of lives consequent upon such accidents; but I am not aware that any one has ever before known or made an attachment for an elevator car or platform and the landings thereof or for the four several corners of the elevator-shaft at the landings in conjunction with parts on the car which is like my invention in construction or principle of operation, and two different embodiments of which are set forth in the accompanying drawings above

described and forming a part of this specification.

Referring now to Figs. 1 and 2, in which the preferred form of the invention is disclosed, A represents the elevator-car, which may be for passengers or freight, or both, or it may be simply a platform car or carriage having a bottom corresponding to the bottom A' herein and equipped with my new stop mechanism. B, C, and D represent three several successive landings or floors, and there may be as many of these as are ordinarily found in buildings, the number being immaterial. The car is of course adapted to be operated as ordinarily, whether it be by hydraulic, electric, or other power, and it is supported by cables E, as usual, and supposed to have the usual appliances for operating the car, according to the motive power employed, but which appliances are not here shown.

In the invention as illustrated in Figs. 1 and 2 I have arranged the stop mechanism at the several landings, the purpose being to always catch a car at the next landing below where the drop begins. Thus if it were between landings B and C the car would be stopped at B, or if it were between C and D the car would be stopped at C. It will also be noticed that this stopping of the car is partly dependent upon a simple lever mechanism in the car, which the operator has at hand and can instantly throw when occasion requires, so that the provision for stopping is simple and prompt and such as will render the stop effective when the mechanism has shifted for that purpose. This is clear from the illustrations in said figures, in which 2 represents a hand-lever pivoted on the platform or floor of the car or at some other convenient place and connected by a link 3 at its lower end to a crank-arm 4 on a rock-shaft 5. This shaft is supported in suitable bearings in the bottom of the car and extends centrally across the car-front to rear and is adapted to be rotated through the lever 2 and link 3. Upon said shaft 5 are two sets of short arms 6, rigid therewith and connected each by a link 7 with a bolt-operating member consisting of a shoe 8, having a stem 9 and arranged beneath each corner of the car. The said shoes and their stems 8 are suitably supported in the bottom of the car, or, more

properly, in corner-pieces 10, in which they have a sliding movement, and which pieces or supports are of such depth as to hold the said shoes up in working position with all the strength they require. The said shoes 8 have rounded or inclined exterior engaging surfaces, which adapt them to bear against and depress or press back the bolts 12 as the elevator descends, while the top corners of the elevator-car are rounded at *a* to depress said bolts as it ascends, and vertically at the sides of the car are bearings *b* to keep said bolts back till the car is passed. Thus the car is not disturbed by bolts 12 in its ordinary travels, although as each landing is passed both upward and downward the bolts in said landing shoot out to stopping position again when cleared by the car and are held out by the springs 13, which are engaged between the end bearings 14 and 15 for said bolts. These bearings are designed to be very firm and strong, so that if a car should drop with whatever weight the immediate bearings or supports for the bolts, as well as the bolts themselves, would be such as to stop it absolutely. Of course the bolts are designed to be made of any size or quality required in any given case to make them safe, depending somewhat on the character of the elevator and its most extreme demands.

Now in case of accident the elevator-man has immediately at hand the lever 2, which he can throw instantly from the position in full lines, Fig. 1, to the position in dotted lines, which through rock-shaft 5 withdraws the shoes 8 and leaves the corners of the car free to drop directly on the next bolts below, where of-necessity it must stop, the same as if it had reached the bottom of the shaft.

It is understood, of course, in all such structures that the car travels in bearings which hold it upright at all times, so that it is immaterial where the load may be on the car when the cable breaks, the position of the car will be the same. Hence in an accidental dropping of the car it is presumable that the four several bolts at each landing, at the corners thereof, as seen in Fig. 2, will be struck simultaneously by the car, or at any rate so nearly so that the severe strain which any bolt might incur by the car striking it first would be immediately divided by the several bolts, and obviously the car could not pass beyond this point unless all the bolts gave way. However, the corners of the car are so reinforced and the bolts are of such strength and are so fortified in their bearings that it is made impossible for the car to break them away or to pass through to the next set of stops below. The only possible shock or damage that could occur, therefore, would result from the dropping of the car the distance between the landings, and this being always relatively short the accident could not in the nature of things be serious.

Another form of the invention is disclosed

in Fig. 3. In this case the shaft is provided with ratchet bars or teeth 20 in its four corners, the entire depth thereof, and the car carries four several ratchet-bolts 21, constructed with heads adapted to slide over said teeth as the car ascends, but to engage therewith as it descends, as clearly seen in Fig. 3. A rock-shaft 22 and arms 23 correspond to shaft 5 and its arms 6 in Fig. 2, and the lever 24 is connected by link 25 with a crank-arm 26 on the same rock-shaft as in the first instance, so that here again, as in Fig. 1, the lever 24 controls the action of the safety mechanism. Ordinarily when the car is being used the bolts 21 are withdrawn and pass clear of the ratchet-teeth both in their ascent and descent, and the position shown in Fig. 3 is only taken in case of accident and when said bolts are thrown out through lever 24. The point of correspondence in this case with Fig. 1 is in the operation of the lever and the rock-shaft and their connections, which are the same in both cases, and the members of the safety attachment operated in case of accident to arrest the car. I might of course devise still other means for doing the same thing, but have presented the foregoing views as a sufficient illustration of the principle and purpose of my invention.

In respect to Fig. 1 it will be noticed that the shoes 8 are held forcibly in their extended position through lever 2, so that they serve to clear the way for the elevator-car as it descends. When the car ascends, the bolts 12 are engaged by the curved or beveled portions *a* at the top of the car.

What I claim is—

1. In elevator-shafts, a landing and a set of spring-pressed stop-bolts in the corners of the landing projecting normally into the path of the car, in combination with a car and hand-controlled appliances thereon to press the said bolts back to enable the car to pass down, substantially as described.

2. The elevator-shaft and its landings and spring-pressed bolts in the four corners of the landings, in combination with a car, shoes on the car to press said bolts back and a lever and mechanism extending to said shoes to withdraw them and cause the car to be stopped in its descent, substantially as described.

3. In elevators, an elevator-shaft having spring-pressed bolts in its corners at the landings therein to stop the car in case of accident, in combination with the car having its corners constructed to stop and rest on said bolts when the car drops, a lever in the car and shoes connected with said lever arranged to press said bolts back, substantially as described.

Witness my hand to the foregoing specification this 16th day of March, 1900.

CHARLES KIMBALL.

Witnesses:

H. E. MUDRA,
R. B. MOSER.