

No. 751,504.

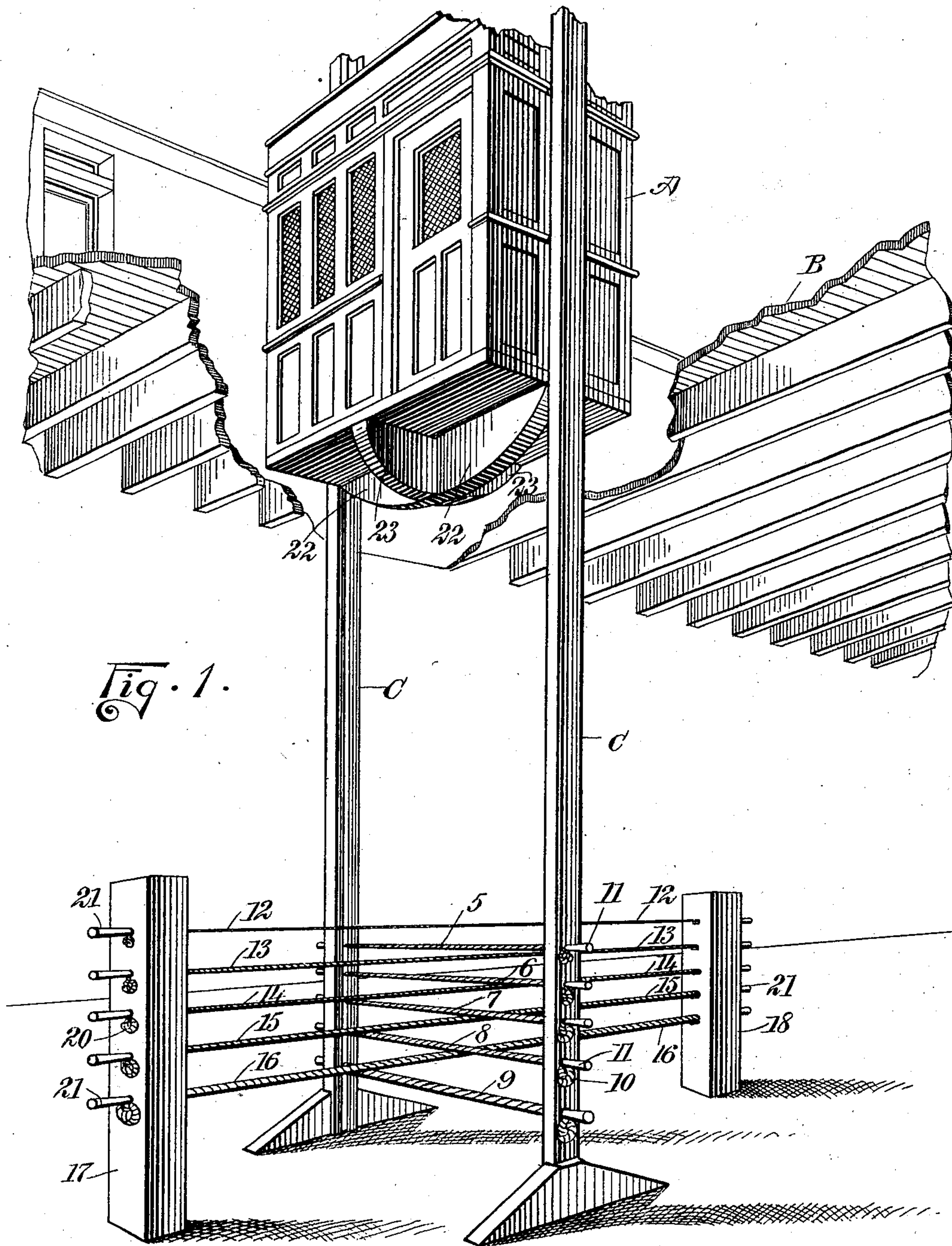
PATENTED FEB. 9, 1904.

P. F. HALLOCK.
MEANS FOR ARRESTING ELEVATOR CARS.

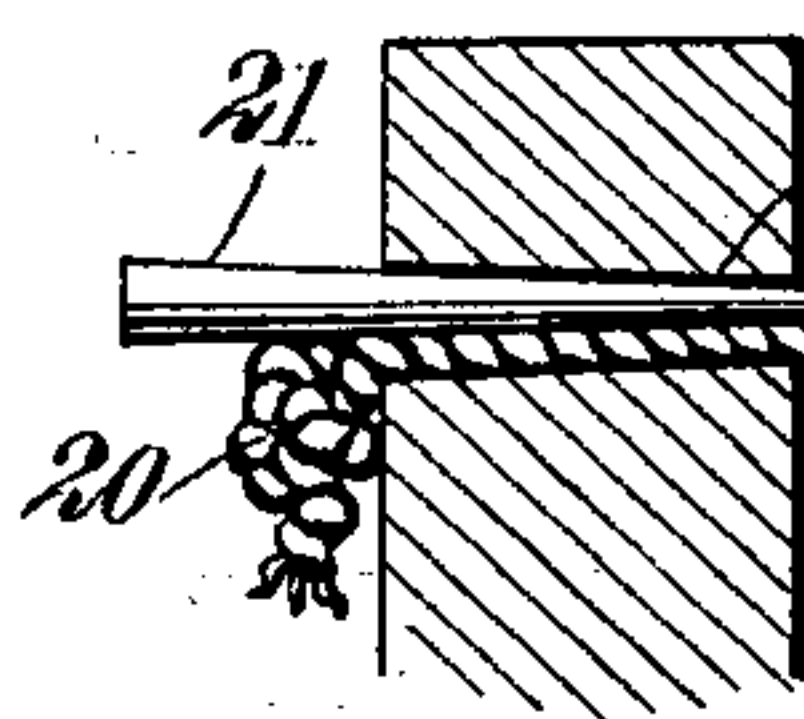
APPLICATION FILED APR. 22, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES
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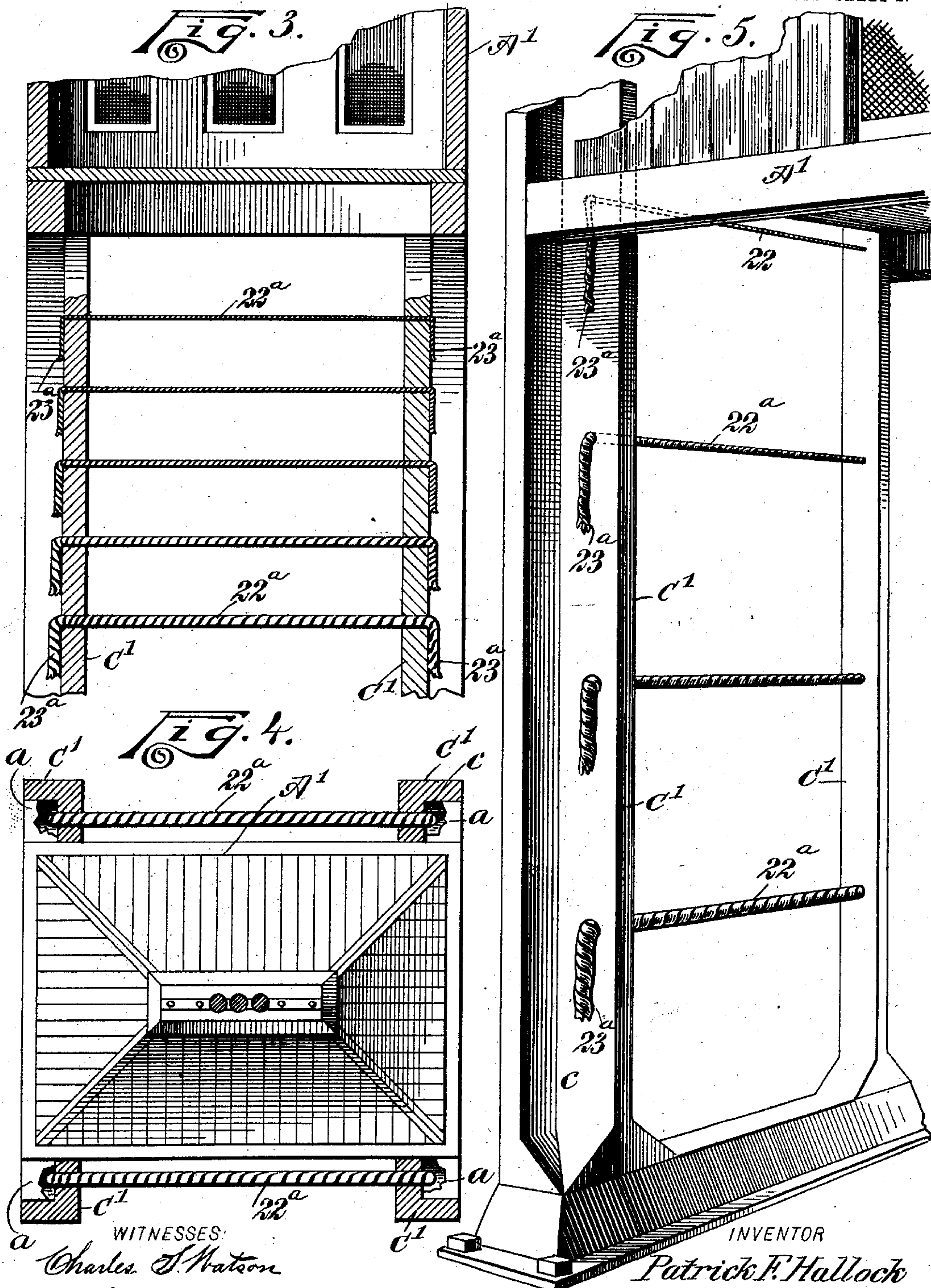
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UNITED STATES PATENT OFFICE.

PATRICK FALCONER HALLOCK, OF DETROIT, MICHIGAN.

MEANS FOR ARRESTING ELEVATOR-CARS.

SPECIFICATION forming part of Letters Patent No. 751,504, dated February 9, 1904.

Application filed April 22, 1903. Serial No. 153,786. (No model.)

To all whom it may concern:

Be it known that I, PATRICK FALCONER HALLOCK, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Means for Arresting Elevator-Cars, of which the following is a full, clear, and exact description.

This invention relates to means for arresting the cage or hoist of an elevator in case of accident; and the object that I have in view is the provision of simple devices adapted to be easily and cheaply supplied to existing or newly-installed elevators and capable of service in a way to check and arrest a swiftly-falling loaded car without injury to the apparatus and its load.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view showing my improved arresting mechanism in operative position below and in the path of a cage, car, or hoist of any style of elevator. Fig. 2 is a detail sectional elevation showing one means for fastening the hoist-arrester members in position. Fig. 3 is a vertical section of another embodiment of the invention. Fig. 4 is a sectional plan view of the device shown by Fig. 3, and Fig. 5 is a perspective view of the devices shown by Figs. 3 and 4.

In order that others skilled in the art may understand the application and mode of using my improved arrester, I have illustrated the same in connection with one style of elevator, wherein A designates any kind of elevator car, cage, or hoist arranged to move vertically through a hatchway provided in a building and extending through one or a series of floors B. This elevator cage, car, or hoist is movable between suitable guides C; but as these parts are ordinary in the art I have not considered it necessary to illustrate and describe the same in detail.

The arresting mechanism of my invention consists of a series of members in the form of cables, ropes, or their equivalents strung in series below and in the path of the elevator cage, car, or hoist.

In the embodiment shown by the drawings I employ a series of cables 5 6 7 8 9, although the particular number is not material. The cables increase in size and strength from the upper cable of the series toward the lower cable—that is to say, the cable 5 is somewhat smaller in diameter than the cable 6, whereas the cable 6 is somewhat smaller than the cable 7, and so on throughout the series. The series of cables 5 to 9, inclusive, are disposed in the same vertical plane, and they are shown by Fig. 1 as being strung across the pit or bottom portion of the elevator-hatchway. Any suitable means may be employed for supporting the vertical series of cables; but, as shown, these cables have their end portions extended through suitable openings which are provided in the guides C, each end of each cable being knotted, as at 10, and wedged in place by means of a pin, key, or wedge 11, which is forcibly thrust into the opening and is adapted to bind against the knotted end of the cable and the guide.

The invention also contemplates the employment of an additional series of cables 12 13 14 15 16, the same being arranged at an angle and in crossing relation to the cables 5 to 9, inclusive, and alternating therewith. The cables 12 to 16, inclusive, may be of any desired number, and they extend across the first-named series of cables, preferably at right angles, although the particular angle is immaterial. These cables 12 to 16, inclusive, are of different sizes and strengths, the smaller and weaker cables being disposed at the upper part of the series, while the stronger cables are at the bottom. The second series of crossing cables may be fastened or anchored in place by any suitable means; but, as shown, I employ a pair of anchoring-posts 17 18, which are firmly embedded in the floor or other part at the bottom of the elevator-hatchway or the pit thereof. These anchoring-posts are provided with openings 19, through which are passed the

ends of the second series of cables, each cable having a knot 20 and secured firmly in place by a wedge-shaped pin or key 21, which is thrust into the opening so as to bind against the post and a portion of the cable. (See Fig. 2.)

The cage or hoist A is equipped with a striking member arranged to depend a suitable distance therefrom and in a position for striking the series of arresting-cables. In Fig. 1 of the drawings this arresting member is shown in the form of cross-beams 22 23, said beams being secured firmly to the bottom portion of the car or hoist and disposed at right angles to each other in positions to engage with the respective series of crossing cables. Each arresting member is shown as having a curved or inclined lower edge adapted to strike the topmost cable of the series; but the particular form of the striking-face and the contour and arrangement of the striking members may be varied within wide limits.

It will be understood that I may employ a single series of arrester-cables, said series consisting of cables of any desired number and said cables being of any suitable size, although I prefer to employ cables of different sizes and to use two series of cables arranged in the manner disclosed by the drawings and adapted for coöperation with two striking members. In case I use a single series of cables, however, the cage or hoist should be equipped with only one striking member. I desire to also call attention to the fact that the cables may be stretched in a taut condition across the path of the cage or hoist, or said cables or any desired number of them may be secured in place with a certain allowance of slack.

From the foregoing description, taken in connection with the drawings, it will be observed that I have provided a simple construction of arrester mechanism which may be easily and quickly applied to existing elevators, or said arrester may be installed in connection with newly-erected elevators. The arrester mechanism is entirely out of the way of the cage in the normal service of the latter, because the several parts thereof are disposed in the unoccupied space in the elevator-pit or at the bottom of an elevator-shaft. In the event of accident to the hoisting mechanism for the cage or car or of breakage of the operating suspension-cable the car will descend swiftly between the guides C and the striking member or members will be brought into engagement with the series of cables. The striking members first engage with the cables of small size, which will break asunder and serve to retard the descent of the cage to a certain extent; but the continued downward movement of the cage will successively break other cables of the two series, which in turn serve to further retard and finally arrest the descent of the cage. It is estimated that the

smaller cables of the two series will be broken on the rapid descent of the cage; but the larger cables will be of such strength and resistance as to withstand the shock and finally arrest the cage without injury to the apparatus and the load in said cage.

I have illustrated another embodiment of my invention in Figs. 3 to 5, inclusive, of the drawings, wherein the end portions of the arrester-cables are made to engage frictionally with the guides of an elevator-hoist for the purpose of retarding and arresting the rapid flight of the hoist by frictional engagement with the arrester-cables. In this form of the invention the guides C' for the elevator are channeled, as at *c*, and the elevator-hoist A' is provided with projections *a* at its corners, said projections fitting in the channels of the guides C'. The guides carry the series of arrester-cables 22^a, the same being disposed in horizontal positions and in vertical series across the space between the guides. The cables gradually increase in diameter from the uppermost cable toward the lowermost cable, and these cables are secured in the guides to have their free ends 23^a disposed in the channels *c* of the guides and in the path of the projections *a* on the hoist A'. The hanging ends 23^a of the different cables vary in size from the top toward the bottom, and these ends 23^a are adapted to successively engage with the projections of the hoist on the rapid descent of the latter, whereby the frictional engagement between the cable ends 23^a and the projections *a* will retard and arrest the hoist without rebounding of the car. I may employ two series of these cables 22^a, as shown by Figs. 3 and 4, or I may employ one series of the cables, as represented by Fig. 5.

The arrester devices may be placed in a pit at the bottom of the elevator-shaft in an obvious manner; but the particular place of using the devices is immaterial and may be modified by a skilled constructor within the scope of the annexed claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A means for arresting an elevator-hoist, having a series of anchored cables with loose ends, and suitable projections on the hoist.
2. A means for arresting an elevator-hoist, having a series of anchored cables in the path of the hoist, and projections movable with the hoist for coöperation with said cables.
3. A means for arresting an elevator-hoist, consisting of a series of cables strung one above the other and in the path of a hoist, said cables increasing in size from the top toward the bottom of the series.
4. A means for arresting an elevator-hoist, consisting of two series of cables strung across the path of a hoist and disposed in crossing relation.
5. A means for arresting an elevator-hoist,

consisting of two series of cables individually anchored in place and disposed in crossing relation and in the path of said hoist.

5 6. The combination with an elevator-cage, of a striking member attached to said cage and depending therefrom, and a series of arrester-cables strung across the path of said hoist and in the path of the striking member thereof.

10 7. The combination with an elevator-cage, of striking members attached to said cage and disposed in crossing relation at the bottom thereof, and two series of arrester-cables strung in crossing relation and across the path of the cage and in the path of the striking mem-
15 bers thereon.

8. The combination with elevator-guides, of a series of arrester-cables individually anchored to said guides and disposed in the path of a cage, and a striking member carried by

said cage and arranged to successively engage 20 with the cables of the series on the rupture thereof due to the impact of a weighted cage.

9. The combination with elevator-guides, and a cage, of a series of cables individually anchored to said guides, anchor-posts disposed 25 in a plane across that of the series of cables, and another series of cables attached to said anchor-posts and crossing the cables of the first-named series, the two series of cables being disposed in the path of an elevator-hoist. 30

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 24th day of March, 1903.

PATRICK FALCONER HALLOCK.

Witnesses:

T. F. ROBINSON,
FRANK R. DENTZ.