No. 699,375. Patented May 6, 1902.

J. E. ERICSSON.

SAFETY APPLIANCE FOR ELEVATORS.

(Application filed Feb. 24, 1902.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

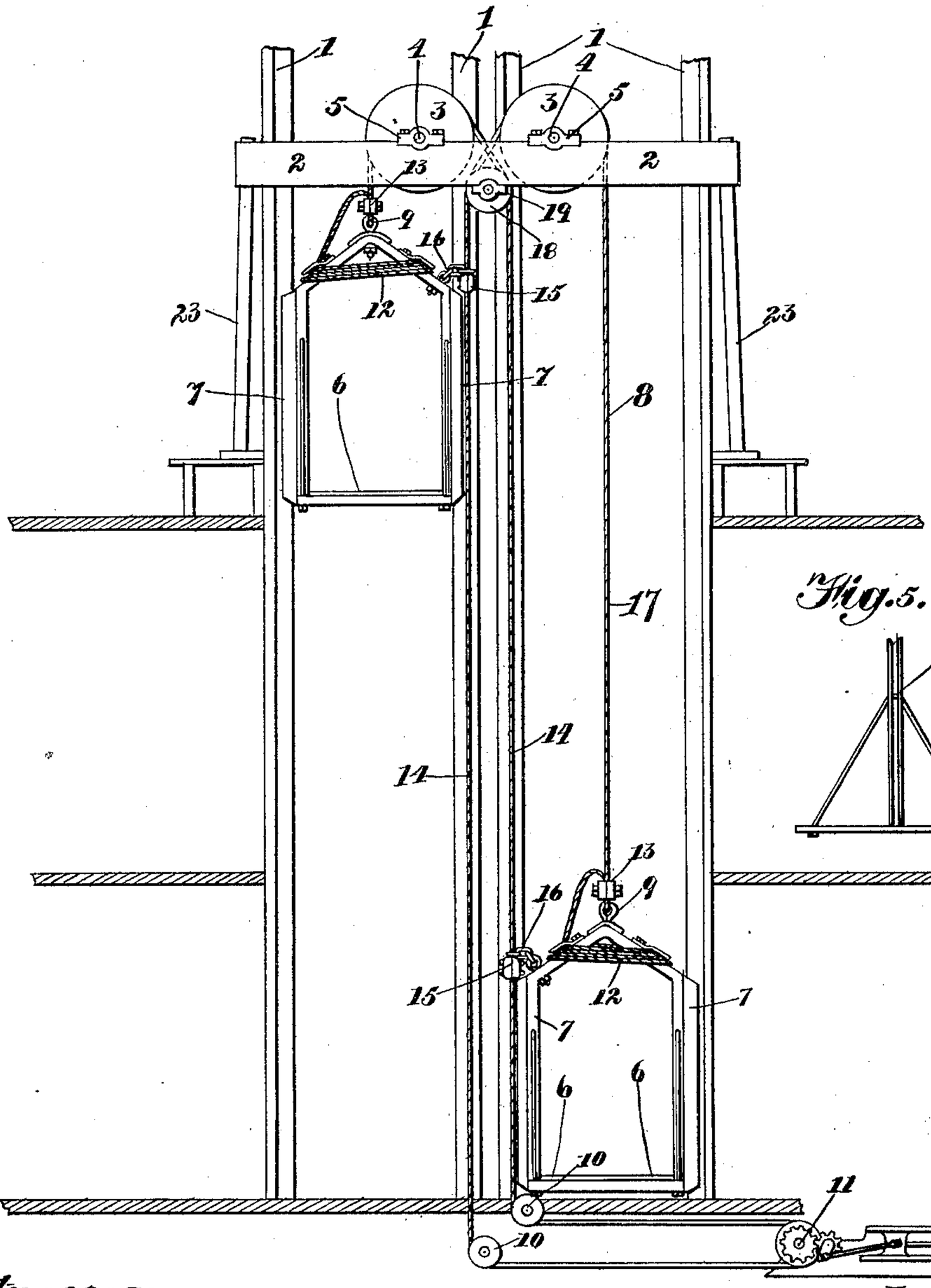

Fig. 5.

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Fig. 2.

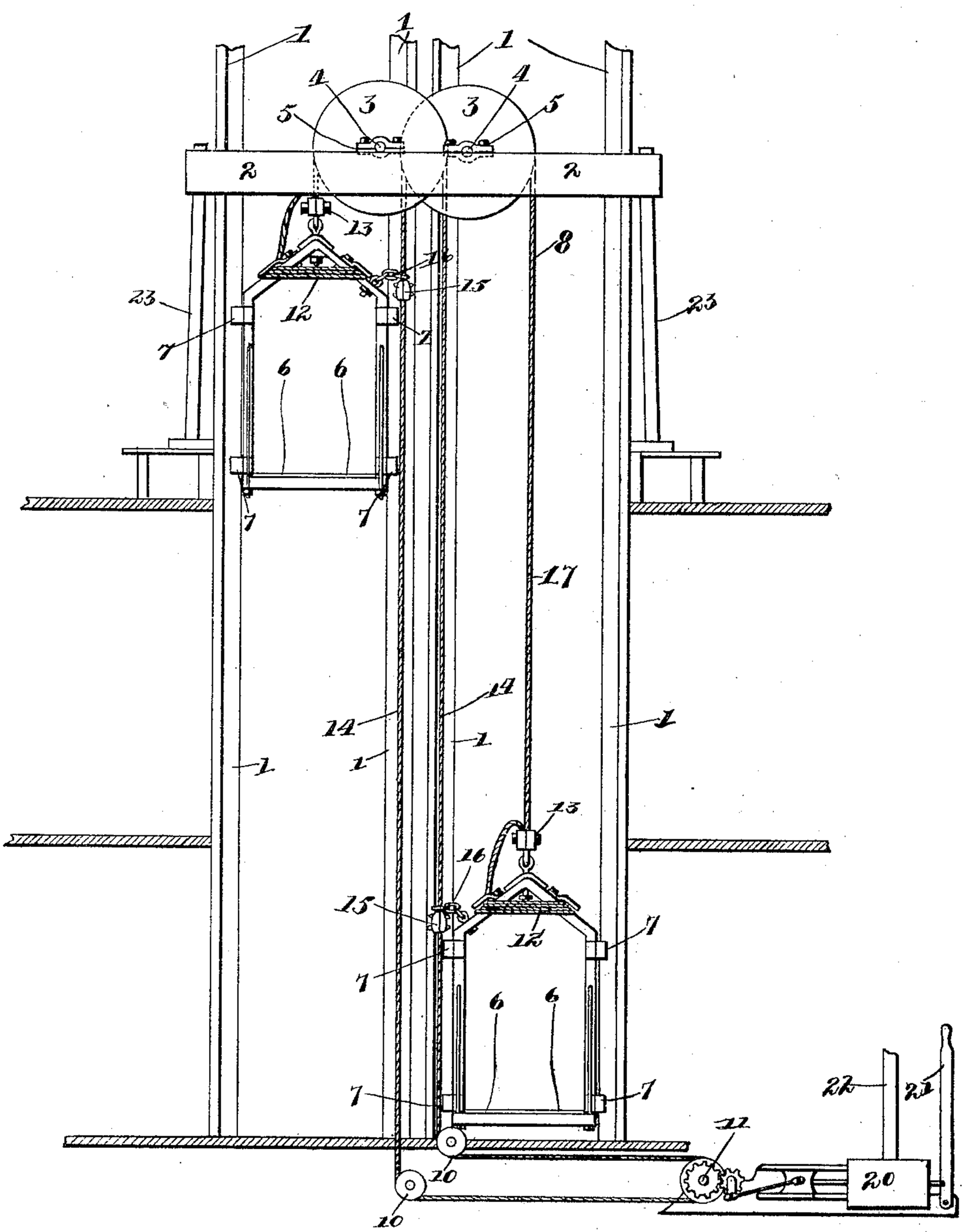

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Fig. 4.

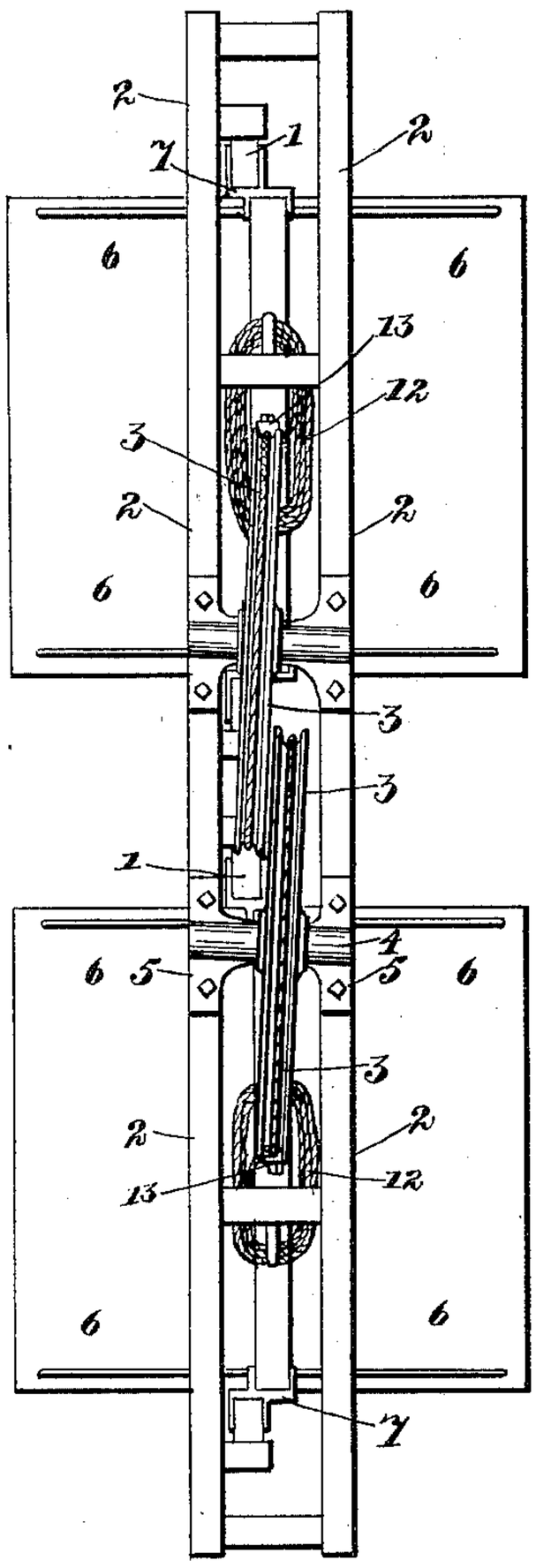
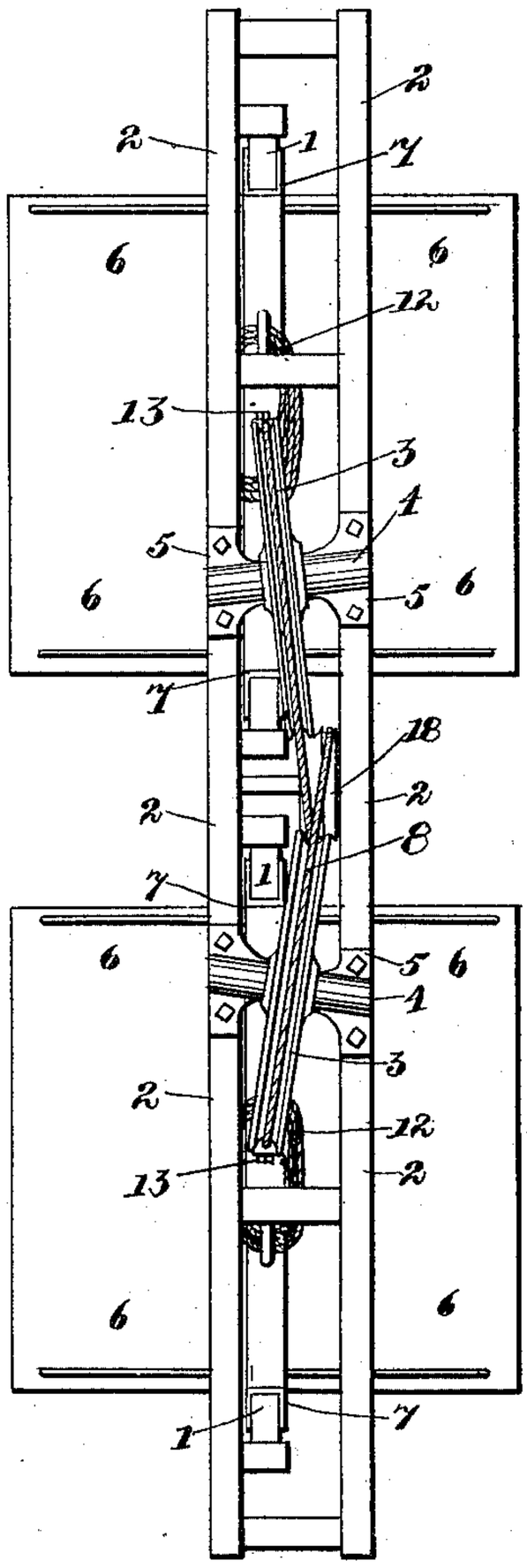


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 699,375, dated May 6, 1902.

Application filed February 24, 1902. Serial No. 95,221. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. ERICSSON, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety Appliances for Elevators, of which the following is a description.

My invention relates to that class of elevators in which the cars are operated in pairs, one ascending as the other descends. This class of devices is largely employed in the erection of buildings and similar structures for raising the building material.

The object is to eliminate one great source of danger in the use of such devices in a simple and efficient manner.

To this end my invention consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts, Figure 1 is a side elevation of my invention. Fig. 2 is a similar elevation of a modification of the same. Fig. 3 is a top plan view of the form shown in Fig. 1. Fig. 4 is a similar view of the form shown in Fig. 2, and Fig. 5 is a side elevation of a common form of car.

As shown in the drawings, 1 1 1 1 represent vertical ways commonly joined in sections, (not shown,) so that they may be lengthened as the building or structure increases in height. 2 2 are horizontal beams secured in position to form a support for the pulley wheels or sheaves 3 3. Any preferred means may be employed to maintain the beams 2 2 position. As commonly used in the erection of large buildings and similar structures the beams are raised from one floor to another as the latter is prepared to sustain them and their connected parts. The wheels 3 3 are suitably mounted on shafts 4 4, supported in boxes 5 5, carried by the beams 2 2. The cars 6 6 are provided with U-shaped guides or shoes 7 7, preferably extending the full length of the side of the car, as shown, and loosely embracing the side of the ways in the usual manner. In the preferred construction the frame of the cars is composed of a channel-iron frame, to which the guides or shoes 7 7 are secured. Lightness and strength are gained by such construction. As shown, the line or cable 8 is secured to one of the cars, as at 9, thence extends upward over one of the pulleys or sheaves 3, thence downward around an idler 10, thence to the driven drum 11, about which it is usually wound a plurality of times, thence around a second idler 10, upward over the second pulley 3, and thence extending downward is secured to the top of the second car 6. It is obvious as the drum 11 is rotated alternately first in one direction and then the other the cars will in all cases simultaneously move in opposite directions with the same speed. To provide for extending the ways 1 1 and increasing the height traveled by the elevators, the cable 8 is generally of a length to provide for the greatest height, and in the lesser heights the free or loose ends of the cable may be coiled about the tops of the cars, as shown at 12. Adjustable clamps 13 13 provide for readily adjusting the length of cable employed. It will be seen the cable, as shown, consists of two dependent ends, which I term "supporting-sections," and an extending bight 14 14, which may be termed "supplemental supporting means." As thus arranged the bight is a crossed loop, so that the section of the bight nearest a supporting-section moves in unison therewith. Near each car I secure a clamp 15 or its equivalent for the purpose to the bight 14 and permanently secure the cars thereto. This may be done in any preferred manner, the relative positions of the clamp and the car remaining the same throughout the operation of the device. As shown, a chain 16, firmly secured to the car, extends to and loosely embraces the cable above the clamp. If the supporting-sections of the cable should accidentally break or be parted—for example, as at 17 or at any point between the car and the supporting-pulley 3—the tendency of the car to fall will be arrested by the connection of the chains 16 with the bight 14 above the clamps 15. The cars will therefore counterbalance and sustain one another, the one being supported on the supporting end of the cable and the other on its bight. The engagement and friction of the broken cable with the drum 11 will tend to offset the added weight of a loaded car over an unload-

ed one and to hold the cars stationary until released.

In the preferred form spacing-wheels 18 18, suitably supported upon a shaft 19 or equivalent means, are employed, thus permitting the use of smaller wheels 3 3, as shown in Figs. 1 and 3. It is obvious, however, that the spacing means may be dispensed with, as shown in Figs. 2 and 4, the pulleys 3 3 being of suitable diameter to extend the supporting-cable vertically from the connection to the car and properly space the bight of the cable. 20 is a suitable engine or equivalent power device controlled by levers 21 22. Supports 23 23 may be employed to aid in supporting the ends of the beams 2 2.

It is obvious after having described my improvement immaterial modification may be made without departing from the spirit of my invention. Hence I do not wish to be understood as limiting myself to the exact construction shown.

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

1. In a device of the kind described, elevator-cars arranged in pairs to simultaneously move in opposite directions, and means for so operating them, in combination with supplemental supporting means connecting the cars, whereby upon the parting of either of the supporting-cable sections the cars will mutually sustain one another.

2. In a device of the kind described, elevator-cars arranged in pairs each secured to a dependent supporting end of a common cable, having a central crossed bight, and means for operating the cable, in combination with means securing the cars to the proximate line of the bight, whereby upon the parting of either of the supporting ends of the cable, the cars will be connected and mutually sustain each other.

3. In a device of the kind described, elevator-cars arranged in pairs each secured to a dependent supporting end of a common cable, spacing-wheels 18, 18, spacing the lines of a crossed central bight, and means for operating the cable, in combination with means for securing the cars to the proximate line of the bight, whereby upon the parting of either of the ends of the cable the cars will be connected and mutually sustain each other.

4. In a device of the kind described, vertical ways 1, 1, provided with transverse supporting-beams 2, 2, and wheels or sheaves 3, 3, in combination with cars 6, 6, provided with guides or shoes 7, engaging the ways 1, a cable 8, having its free ends secured to the cars and thence extended upward over the wheels 3, a central crossed bight 14, 14, causing the proximate lines of the bight and supporting end 8, to simultaneously move in the same direction, clamps 15, 15, secured to the bight as indicated, and means connecting the cars with the proximate line of the bight 14, above said clamp, whereby the cars are supplementally connected, substantially as described.

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