

(No Model.)

L. S. GRAVES.  
ELEVATOR SAFETY DEVICE.

No. 520,160.

Patented May 22, 1894.

Fig. 1.

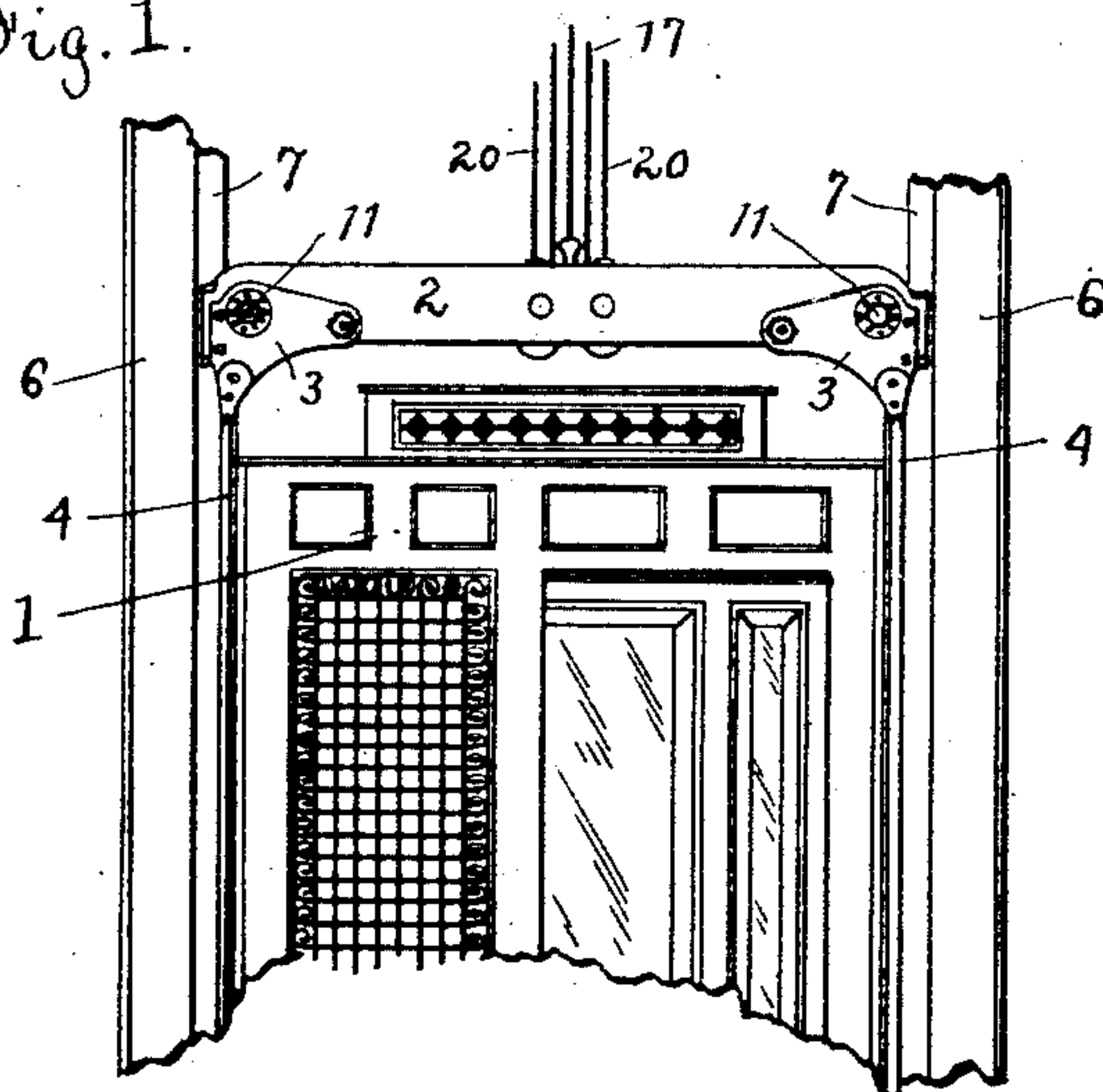


Fig. 2.

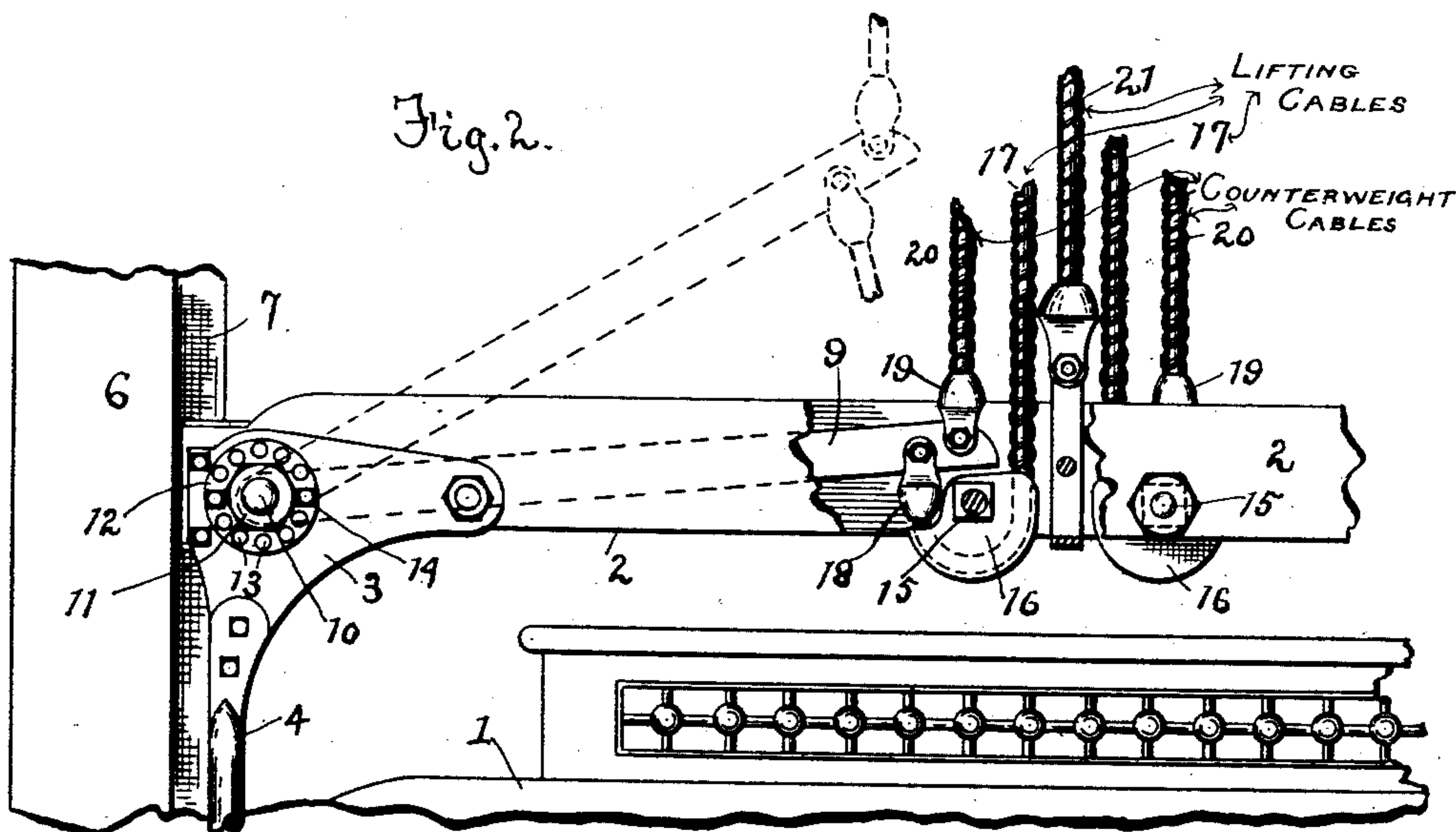
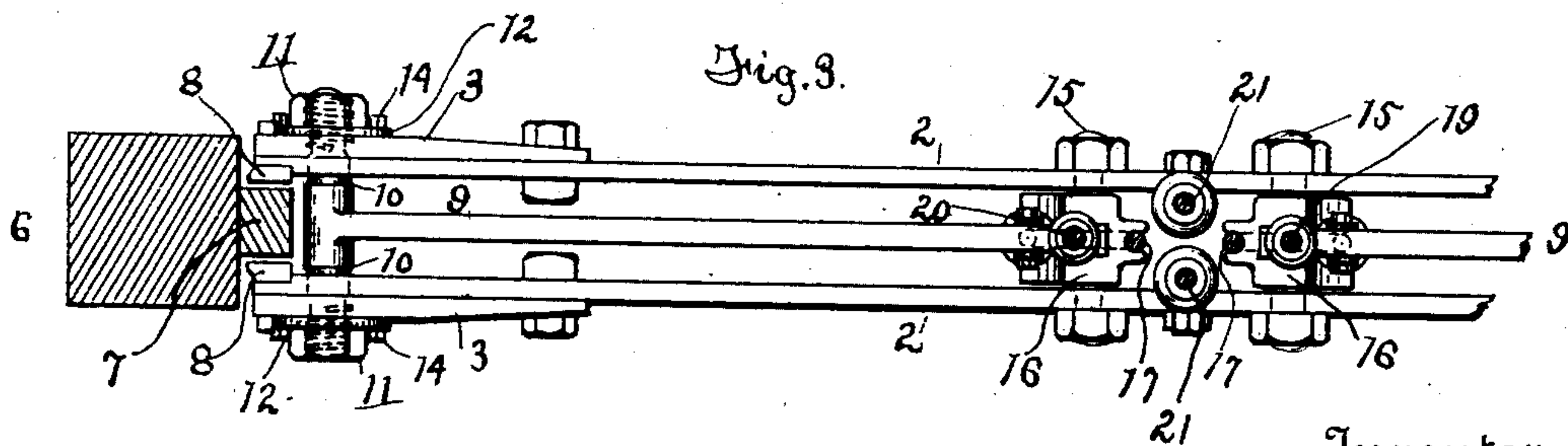


Fig. 3.



Witnesses  
H. E. Bates.

Thomas Durant

Inventor  
Lorenzo S. Graves  
by *Chas. H. Church*  
his Attorneys



# UNITED STATES PATENT OFFICE.

LORENZO S. GRAVES, OF ROCHESTER, NEW YORK.

## ELEVATOR SAFETY DEVICE.

SPECIFICATION forming part of Letters Patent No. 520,160, dated May 22, 1894.

Application filed December 21, 1893. Serial No. 494,331. (No model.)

*To all whom it may concern:*

Be it known that I, LORENZO S. GRAVES, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Elevator Safety Devices; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to improved elevator safety devices and has for its object to improve the construction and operation particularly of that class of devices illustrated in my prior patent, No. 319,840, dated June 9, 1885, whereby the construction is simplified and the parts are rendered more certain in operation, and to these and other ends the invention consists in certain improvements in construction and combinations of parts, all as will be hereinafter fully described and the novel features pointed out particularly in the claims at the end of this specification.

In the accompanying drawings: Figure 1 is a side elevation of the upper portion of an elevator car provided with my improvements; Fig. 2, an enlarged view of the operating parts with a portion of one of the cross-beams broken away to show the construction of the parts and showing also in dotted lines the operation of the device; Fig. 3, a plan view of the same.

Similar reference numerals in the several figures indicate similar parts.

The elevator car 1 is of the usual or any preferred construction provided at the top with the cross-beams 2 and to the ends of these beams are attached plates or castings 3 to which the rods 4 attached to the body or bottom of the car are bolted, as shown in Fig. 2.

6 indicates the usual guide posts at the sides of the elevator well or shaft provided with the guide ways 7 and the ends of the cross-beams are preferably provided with shoes 8 arranged on opposite sides of said guide-way and secured in position by bolts, as shown, or otherwise. The outer ends of the cross-beams are capable of moving toward and from each other, and constitute clamps. Located between the cross-beams are levers 9

provided with rounded T-ends or studs 10 journaled loosely in the ends of the beams, and preferably also in the plates 3, and having the rather coarse right and left threaded ends screwing into nuts 11 on the outer sides of the beams. These nuts are held in place and prevented from turning by plates 12 having a series of apertures 13 with which cooperate bolts 14, from which, it will be seen that the nuts may be rotated and held with the shoes 8 nearer to or farther from the guides, as may be desired.

The inner ends of the levers 9 extend toward the center of the cross-beams and are there connected with the lifting and counterbalance cables in such manner that while they are normally held in the position in full lines holding the shoes 8 off the guides by the strain on the lifting cables if the latter should break or become unwound too rapidly, the strain on the counterweight cable would pull the lever to the position in dotted lines Fig. 2, turning the screw, drawing the shoes 8 tightly in contact with the guides and effectually holding the car.

In the drawings I have shown the preferred though not the only means of connecting the levers and cables to produce the desired result, though of course modifications could readily be made in this. Extending through the cross-beams 2 are bolts 15 upon which are mounted castings 16 having rounded grooves in their under sides for the accommodation of the lifting cables 17,—said castings being held from rotary movement on the bolts by having angular apertures fitting the angular bolts or otherwise. The ends of the lifting cables 17 are connected to the under sides of the ends of the levers 9 by means of clevises 18, or otherwise, and to the extreme ends of the levers are pivoted clevises 19 to which are connected the ends of the counterweight cables 20. If desired, additional lifting cables 21 may be employed connected to the centers of the cross-beams as shown. The ends of the levers 9 are held against the upper sides of the castings 16, or equivalent stops, by the pull on the lifting cables 17 and if by the breaking of said cables, or their undue slackening, the pull on the levers is released, the counterweights will immediately pull the levers 9 upward, drawing the shoes



inwardly by means of the screws, and causing them to grip the way and hold the car.

I find in practice that it is advantageous to employ the stationary curved guides or castings 16 instead of rollers, in order that the friction on the cables will prevent their slipping and causing the operation of the gripping devices when the car is started downward suddenly.

10 By providing the screws on the ends of the levers 9, as shown, not only is the construction of the parts simplified and cheapened, but they are more easily properly assembled than those of my previously patented device.

15 While it is desirable to have the nuts with which the threaded ends of the levers cooperate independently adjustable, for the purpose of regulating the movement of the ends of the beams or shoes, this is not absolutely essential as the apertures in the ends of the cross-beams could be threaded and substantially the same results obtained, the nuts, when secured, forming practically a part of the cross-beams.

25 I claim as my invention—

1. The combination with the elevator-car and the stationary guides, of the clamp on the car, the lever having the threaded ends for operating the clamp, and the lifting and counterweight cables connected to the opposite sides of said lever, substantially as described.

2. The combination with the elevator-car, the clamp thereon, and the stationary guide with which said clamp cooperates, of the lever having the right and left threads engaging the clamp, and the lifting and counterweight cables connected to the opposite sides of said lever, substantially as described.

3. The combination with the elevator-car, the clamp thereon, and the stationary guides with which it cooperates, of the lever having the right and left threads engaging the clamp, the lifting and counterweight cables connected to opposite sides of said lever, and the stop against which the lever is held by the lifting cable, substantially as described.

4. The combination with the elevator-car, the cross-beams having the relatively movable ends and the stationary guides with which they cooperate, of the levers arranged between the beams having the right and left threads thereon cooperating with their ends, and the lifting and counterweight cables connected to opposite sides of said levers, and stops against which the levers are held by the lifting cables, substantially as described.

5. The combination with the elevator-car, the cross-beams having the relatively movable ends, the nuts and their adjustable securing plates, of the levers having the right and left threads engaging the nuts, stops for the levers, and the lifting and counterweight cables connected to opposite sides of said levers, substantially as described.

6. The combination with the elevator-car, the cross-beams having the relatively movable ends, of the levers arranged between the beams, having the right and left threads cooperating with the ends of the latter, the bolts connecting the beams, and the stationary cable guides thereon, and the lifting counterweight cables connected to opposite sides of the levers, substantially as described.

LORENZO S. GRAVES.

Witnesses:

FRED F. CHURCH,  
GRACE W. RODO.