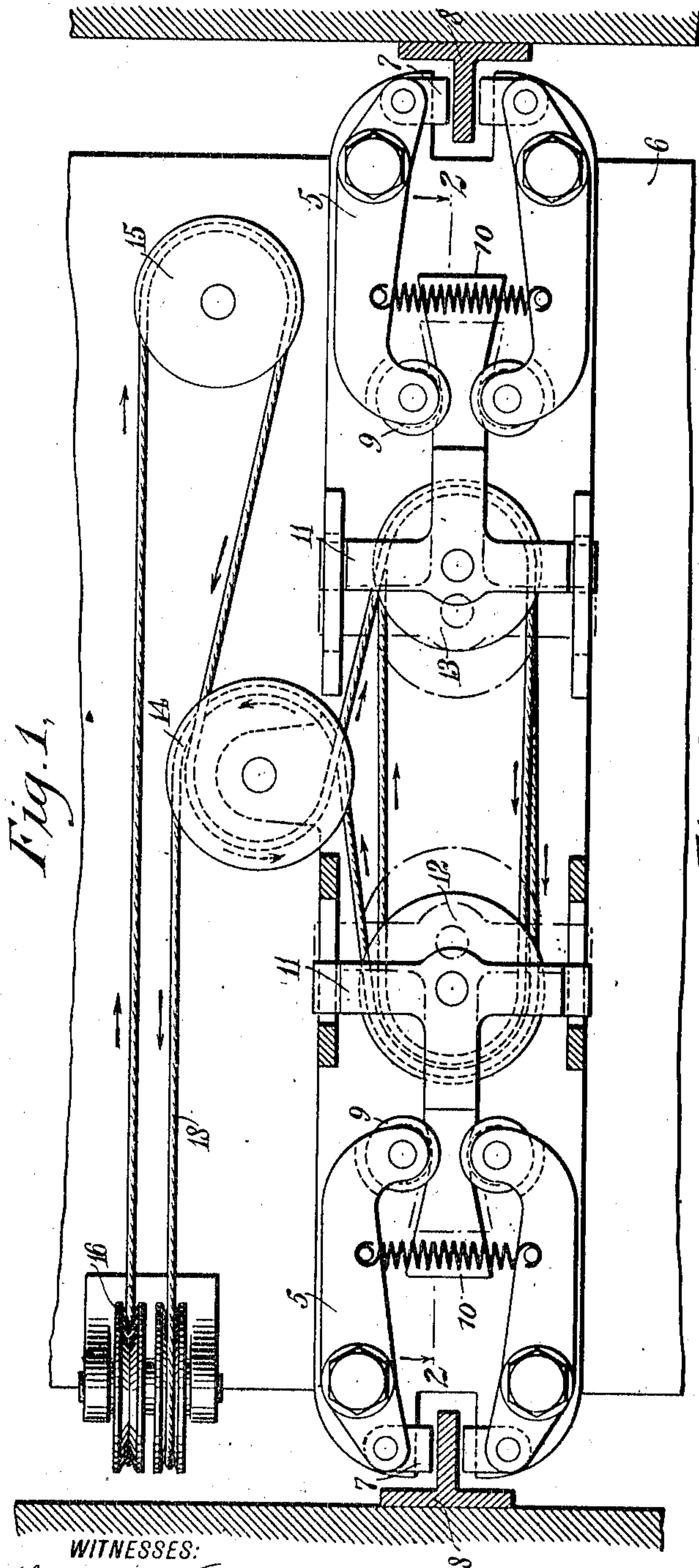


990,052.

E. KOPPELL.
SAFETY STOP FOR ELEVATORS.
APPLICATION FILED AUG. 11, 1910.

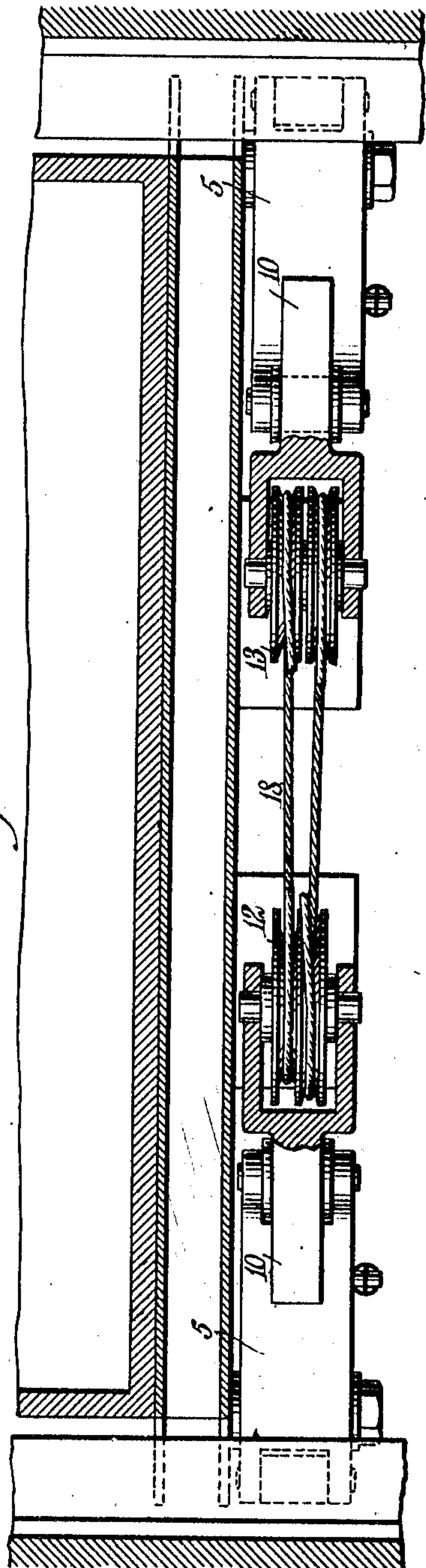
Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.



WITNESSES:
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Fig. 2.



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2 SHEETS-SHEET 2.

Fig. 3,

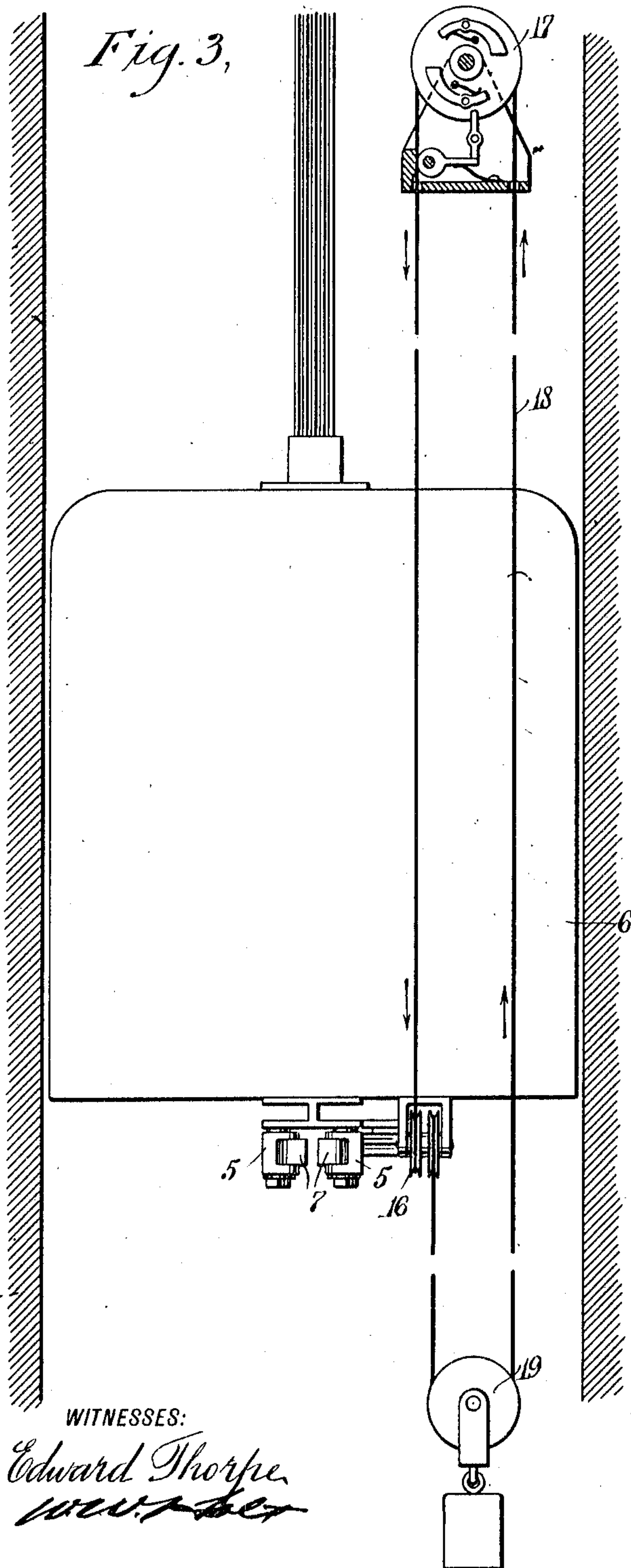
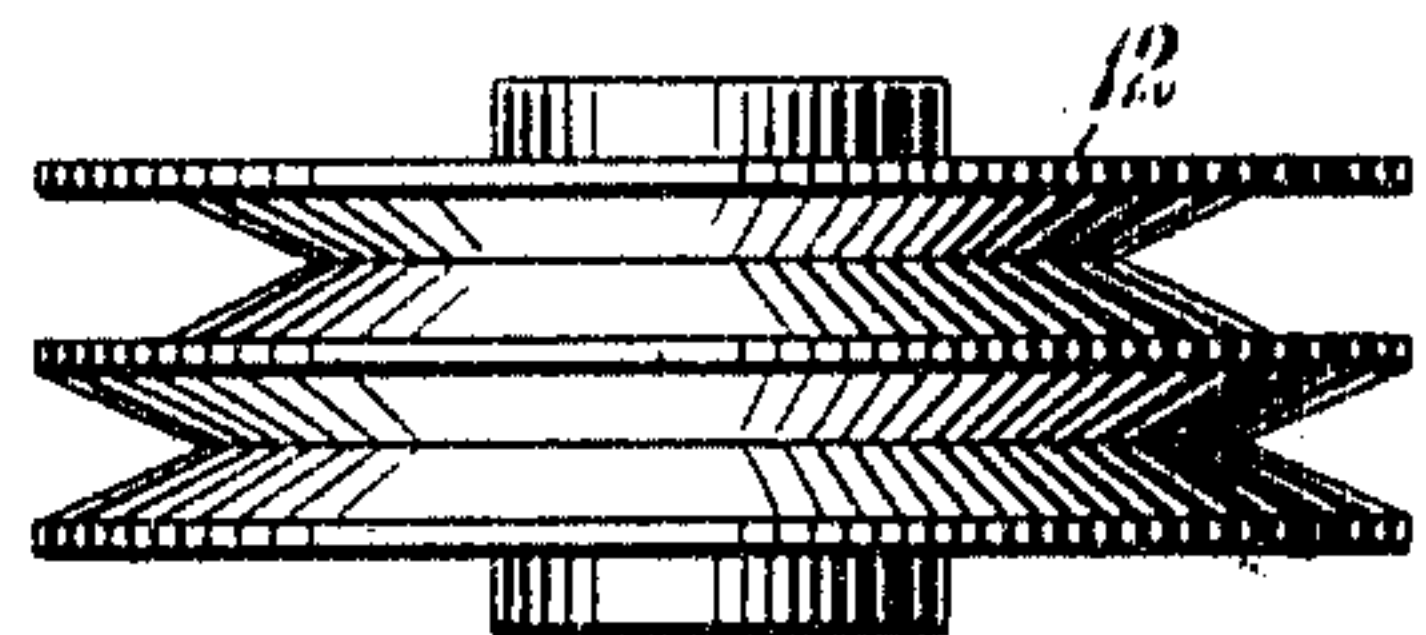


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD KOPPELL, OF NEW YORK, N. Y.

SAFETY-STOP FOR ELEVATORS.

990,052.

Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed August 11, 1910. Serial No. 576,731.

To all whom it may concern:

Be it known that I, EDWARD KOPPELL, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Safety-Stop for Elevators, of which the following is a full, clear, and exact description.

The invention is an improvement in safety stops for elevators, and has in view a relatively simple and reliable appliance to operate the clamping jaws or apply the brakes, the same embodying as a prime feature a compound sheave, the sheaves of which are of relatively different diameters, this compound or set of sheaves and another set of sheaves being operatively connected to the elevator brakes, and having the safety stop cable looped thereabout, so that in the operation of the appliance the cable is drawn from the large sheave of the compound sheave and causes the two sets of sheaves to approach each other, the sheaves of the compound sheave preferably having gripping runways so that it is impossible for the cable to slip thereabout.

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 views.

Figure 1 is an inverted plan of the elevator car, showing that portion of the safety stop carried thereby embodying my improvements, the elevator guides and the guides for one set of the brake sheaves being shown in section; Fig. 2 is a vertical section substantially on the line 2—2 of Fig. 1; Fig. 3 is a side view of the car, showing that portion of the stop device arranged in the elevator shaft; and Fig. 4 is an edge view of a sheave which forms a prime feature of my invention.

In the construction of a safety stop for elevators in accordance with my invention, any suitable clamping or braking mechanism may be provided. For convenience of illustration I have shown such to consist of pairs of levers arranged at each side and beneath the elevator car 6, each lever 5 of each pair having a clamping jaw or brake shoe 7, arranged at one side of its fulcrum to bind against one side of the usual guide rail 8; and a roller 9 at the opposite side of its fulcrum, between which and the roller

of the opposite lever passes the customary expanding wedge 10, in connection with the movably-supported strap or frame 11. In accordance with my invention, I provide the strap 11 with sets of sheaves 12 and 13 respectively, the sheave 12 being in the nature of a compound sheave and comprising two sheaves of relatively different diameters. The set of sheaves 13 is shown to be of the same diameter and independently revoluble. Opposite the interval between the two sets of sheaves 12 and 13 is carried on the car a compound idler sheave 14, also embodying sheaves of relatively different diameters arranged similarly to the sheaves of the compound sheave 12, shown in the present embodiment of the invention, with the smaller sheave arranged above the larger. The guide or idler sheave 15 is also carried by the car, shown to be adjacent to one of the brakes; and at the opposite side of the car adjacent to the other brake is a set of two guide sheaves 16.

I have shown in Fig. 3 at the top of the elevator shaft a safety stop governor 17 for elevators, the governor being of well-known construction and operation in the art and not requiring a specific description, the governor operating, when the down speed of the car exceeds a predetermined rate, to clamp the downwardly-moving length or branch of the safety stop cable 18. This cable, as shown, is looped about the governor sheave and a weighted sheave 19 at the bottom of the shaft, the downwardly-moving length of cable, when the car is dropping, passing underneath one of the sheaves of the set of guide sheaves 16; thence about the larger sheave of the compound idler guide sheave 14; thence around the large sheave of the compound sheave 12; thence around one of the sheaves of the set of sheaves 13, thence around the small sheave of the compound sheave 12; thence around the other sheave of the sheave 13; thence about the small guide sheave of the compound sheave 14 from which the cable passes successively about the idler sheave 15 and over the other sheave 16 to the weighted sheave 19 to the governor 17 of the governor. By this construction and arrangement of the several parts, when the elevator car exceeds a rate in its downward travel beyond a predetermined speed, the governor throws in the clamp, stopping the further movement of the downwardly-traveling length of the cable

over the governor sheave. The further descent of the car then draws on this length of the cable and pulls it from the loop arranged about the sets of sheaves 12 and 13. As the
 5 sheaves of the compound sheaves 12 and 14, from which the cable is drawn, are relatively larger than their companion sheaves, by which the cable is applied, the two sets of
 10 sheaves 12 and 13 will travel toward each other and apply the clamp or brake to the guide rails. In order, however, that this operation may take place with certainty, it is essential that the cable does not slip on the
 15 compound sheaves. To insure this, I construct the runway of each sheave in the form of a relatively deep V-shaped groove, whereby the opposite faces of the runway will bind the cable with a grip which increases with the pull on the cable.

20 It is obvious that the set of sheaves 14 could be made up of sheaves independently revoluble and of the same diameter. However, by constructing it as the sheave 12, the slipping of the cable is further guarded
 25 against.

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

1. The combination of an elevator brake,
 30 two sets of sheaves relatively movable to and from each other to operate the brake, with one of said sets embodying two relatively fixed sheaves of different working diameters, and a safety stop cable looped about the
 35 sheaves.

2. The combination of an elevator brake, two sets of sheaves relatively movable to and from each other to operate the brake, one set of said sheaves embodying two relatively
 40 fixed sheaves of different working diameters having gripping runways, and a safety stop cable looped about the sheaves.

3. In an elevator safety stop, an elevator brake, a safety stop cable, and means to ap-
 45 ply the brake through the operation of the cable, having a compound sheave, with the sheaves thereof of relatively different diameters and over which the cable passes.

4. The combination of an elevator brake,
 50 two sets of sheaves relatively movable to and from each other to operate the brake, with one set of sheaves embodying two relatively

fixed sheaves of different diameters, and a safety stop cable looped about the two sets of sheaves and arranged to draw the cable
 55 from the larger sheave of the last-named set of sheaves in the operation of the brake.

5. The combination of an elevator brake, two sets of sheaves relatively movable to and from each other to operate the brake, a
 60 third set of sheaves, the sheaves of one of said sets and third set of sheaves each embodying two relatively fixed sheaves of different working diameters, and a safety stop
 65 cable looped about the two sets of sheaves, and passing about the third set of sheaves, with the cable extending from the larger sheave of that set of sheaves of the two sets
 70 having different diameters, around the larger sheave of the third set of sheaves.

6. The combination of an elevator car, a brake carried by the car, two sets of sheaves relatively movable to and from each other to operate the brake, carried by the car, one set of the said sheaves embodying two relatively
 75 fixed sheaves of different working diameters, guide sheaves, a governor, a weighted sheave, and a stop cable carried by the governor, with the downwardly-moving length of said cable, when the car is traveling downwardly,
 80 passing over one of the guide sheaves; thence looped about the two sets of sheaves and passing therefrom over the other guide sheave to and about the weighted sheave.

7. The combination of an elevator car, a
 85 brake carried by the car, two sets of sheaves relatively movable to and from each other to operate the brake, one of the sheaves of one set relatively fixed to the other sheave of
 90 the said set and of relatively larger diameter, and a safety stop cable wound about the two sets of sheaves, with the windings arranged to cause the sheaves to approach each other and apply the brake when the cable is
 95 drawn from the set of sheaves having the sheaves of different diameters.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD KOPPELL.

Witnesses:

W. W. HOLT,
 JOHN P. DAVIS.