(No Model.)

R. T. CRANE.

ELEVATOR SAFETY DEVICE.

No. 591,210. Patented Oct. 5, 1897.

Fig. 2.

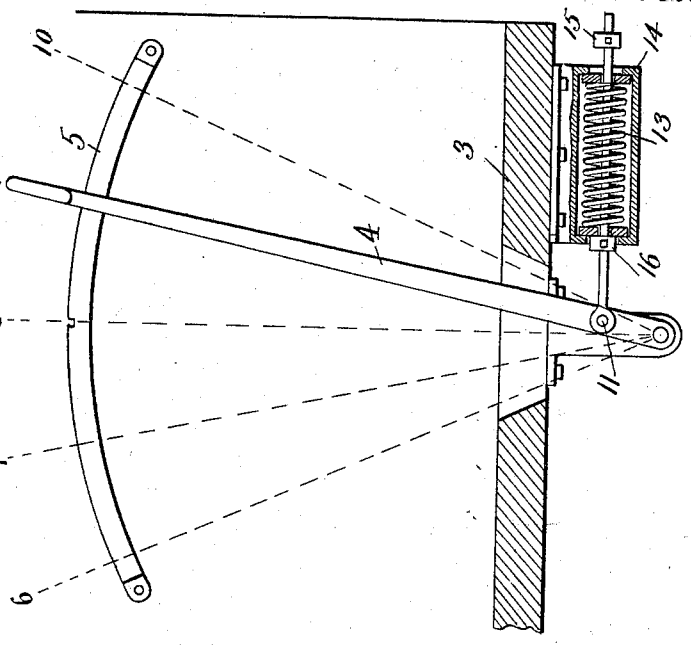
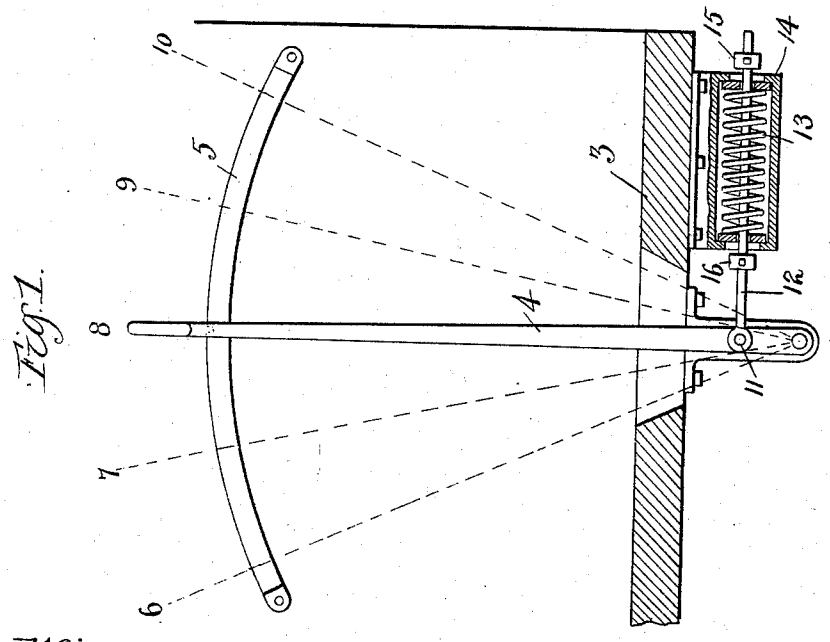


Fig. 1.



Witnesses.

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by Paul Symmestvedt. Atty.

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UNITED STATES PATENT OFFICE.

RICHARD T. CRANE, OF CHICAGO, ILLINOIS.

ELEVATOR SAFETY DEVICE.

SPECIFICATION forming part of Letters Patent No. 591,210, dated October 5, 1897.

Application filed May 26, 1897. Serial No. 638,314. (No model.)

To all whom it may concern:

Be it known that I, RICHARD T. CRANE, a citizen of the United States, residing in Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Elevator Safety Devices, of which the following, taken in connection with the accompanying drawings, is a specification.

It is well known to all familiar with elevator service in high buildings that if the operator in charge of the car be a little careless in his manipulation of the controlling-lever disagreeable and dangerous results are sometimes obtained through an indiscriminate use of too high a rate of speed. Thus if a car be descending from one of the upper floors very heavily loaded it is not uncommon for the operator to throw the controlling-lever to the limit of its movement and allow the elevator to descend with dangerous rapidity checked only by the governing operation of the speed-regulating devices, or, in the absence of any such, by the capacity of fluid-pressure ports to accommodate the rapid discharge of pressure. It is also well known to all who have occasion to ride in these elevators that something of the same difficulty is encountered during the upward travel of the car when it has little or no load upon it, the careless handling of the operator at such times frequently producing dangerous and disagreeable results.

Of course the above-enumerated difficulties may be overcome by so arranging the controlling mechanism of the elevator that it would not be possible under any circumstances to exceed such a limit of speed as would be obtainable with safety; but such an arrangement would necessarily unduly retard the movement of the car when it was ascending with a heavy load or descending with a very light load.

The object of my invention, briefly stated, is to overcome the above-mentioned difficulties by the provision of means whereby such movement of the controlling mechanism as is necessary to secure a reasonable or moderate speed of the car either up or down may be made as heretofore by the operator; but such movement of the controlling mechanism as is necessary to attain the greater speed can only be secured by the operator by the exertion of a material degree of force against a yielding resistance, such as a spring or weight. By this arrangement as soon as the controlling device in the hands of the operator encounters such yielding device a resistance is placed upon further movement, and if, as when the car is descending with a very light load or ascending with a very heavy load, it be deemed necessary or advisable by the operator to add to the force exerted or to increase the speed somewhat it is within his power to do so by exerting a force against the controlling mechanism sufficient to overcome the pressure of such yielding resistance and move the controlling mechanism to the limit of its stroke.

To afford a better understanding of my invention, I have in the accompanying drawings illustrated it in preferred form in connection with a controlling-lever such as is commonly used on elevator-cars.

Figure 1 shows the lever in the central or stop position, and Fig. 2 represents the parts in the moderate-speed position.

Referring now more particularly to Fig. 2, it will be seen that to the floor of the car 3 is bracketed the lever 4, and near the upper end of the lever is arranged the usual quadrant 5. The various positions of the lever are indicated by the dotted lines, 6 being high ascending speed position, 7 being moderate ascending speed position, 8 being stop position, 9 being moderate descending speed position, and 10 being high descending speed position.

To the lever 4 at a point 11 is attached a rod 12, which passes through a spring 13, inclosed in a case 14. Upon the rod 12 are fastened two collars 15 and 16, adjusted to come into action against the spring 13 when the lever 4 has reached either the position 7 or 9 and resist further movement of the lever in either direction, while at the same time the spring 13 will yield and permit a movement of the lever to its extreme position in either direction, provided sufficient force be exerted by the operator upon the handle of the same.

In Fig. 2 the lever 4 is shown in the moderate descending speed position, the collar 16 just beginning to act against the spring 13. If now the car be descending, but has little or no load upon it, and in consequence of this the speed is not as great as seems desirable, the operator can secure a greater speed, to

any degree he may desire, by greater or less movement of the lever 4 farther to the right or up to the position 10, which is that of the highest descending speed. If, however, the operator desires to maintain that speed continuously, he must hold the lever 4 in the position 10 during the whole of such time, for if he were to let go of the lever it would be immediately returned to the position 9 by means of the spring 13, the speed of the car being thus automatically reduced.

In ascending the operation of the spring and lever is substantially exactly the reverse of that just described and need not here be explained more in detail.

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

1. In an elevator, the combination with its controlling mechanism of a yielding-resistance device and means whereby said resistance device is adapted to oppose movement of such controlling mechanism beyond a position of moderate speed and whereby free movement of the controlling mechanism is permitted up to this point, substantially as described.

2. In an elevator, the combination with its controlling mechanism of a spring and means whereby said spring is adapted to offer yielding resistance to the movement of such controlling mechanism beyond a position of moderate speed, and whereby free movement of the controlling mechanism is permitted up to this point, substantially as described.

3. In an elevator, the combination with its controlling-lever, of a spring and means whereby said spring is adapted to offer yielding resistance to movement of such controlling-lever beyond the position of moderate speed, and whereby free movement of the controlling-lever is permitted up to this point, substantially as described.

4. In an elevator, the combination of a controlling-lever 4, a case 14, a spring 13 within said case, and a rod attached at one end to said lever and passing through said spring, said rod also being provided with stops, said stops being at a distance respectively from the ends of the spring when the lever is in stop position whereby said spring is adapted to offer yielding resistance to movement of such controlling-lever beyond a position of moderate speed and whereby free movement of the controlling-lever is permitted up to this point, substantially as described.

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Witnesses:
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