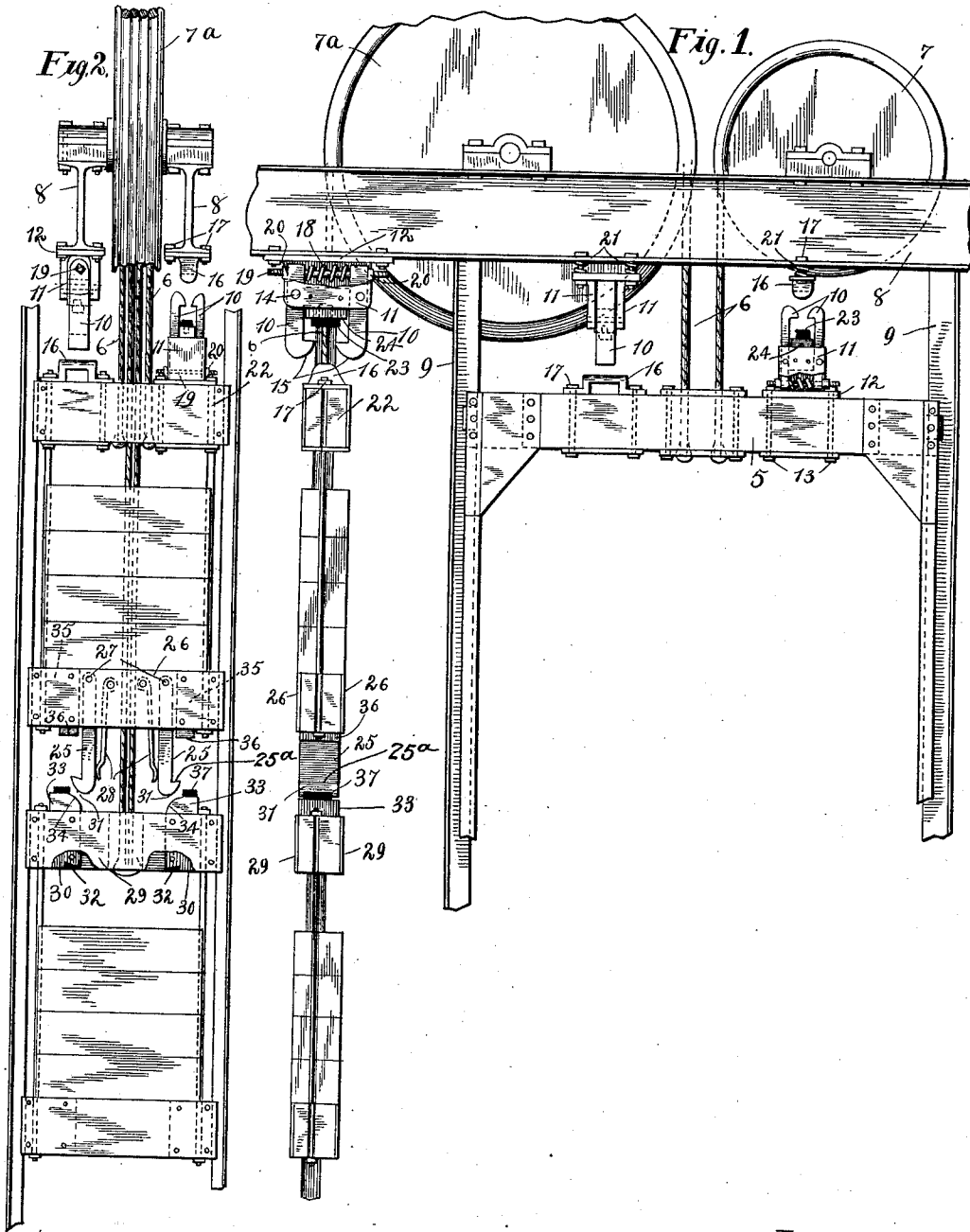


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SAFETY ATTACHMENT FOR ELEVATORS.

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1,002,881.

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UNITED STATES PATENT OFFICE

WALTER B. THOMAS, OF CHICAGO, ILLINOIS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER B. THOMAS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety Attachments for Elevators, of which the following is a specification.

My invention relates to that class of elevators in which a car or cage is employed for transporting passengers or freight, and has particular reference to safety appliances designed to prevent accident or injury to the car or its occupants when for any reason the car or weights pass beyond the prescribed safety limit in their upward travel.

It is well known that a large percentage of elevator accidents are caused by the failure of the mechanism to act properly as the car approaches the top of the shaft, causing the hitch beam to strike against the supporting beams thus breaking the cable or tearing it from its fastenings, and allowing the car to fall. Another class of accidents is caused by the striking of the weights against the overhead beams when the hoist carries them beyond the safety limit, or the colliding of the drum weight with the counter weight when the system installed requires the use of such independently moving units. In the second class of accidents the car being at or near the bottom of the shaft the direct injury thereto may be of minor importance but the danger lies in the loosening of the heavy weights from their attachments and as they fall they are deflected from their proper channel and may be hurled within the shaft and upon the car with disastrous results.

The chief objects of the improvements which form the subject matter of this application are:—to provide gripping mechanism adapted to instantly seize and hold the car when it has passed above a certain predetermined safety point in its upward travel and thus prevent it from falling in case the hoisting cable should part, or from descending, if the cables remain intact, until the said gripping devices are manually released; to furnish similar gripping devices in combination with the weights whereby the latter will be, in like manner, seized and held whenever they reach a certain elevation, and to arrange cooperating devices attached to the approximated ends of the drum and counter weights that will mutu-

ally interlock when brought together, and prevent separation of the weights until properly released.

Further objects of the invention are to provide means for relieving the shock of the impact when the car or the weights are carried, in the manner set forth, beyond the safety limits and into contact with the fixed portions of the structure, such means consisting of resilient buffers combined with the gripping devices and cooperating therewith to safeguard the mechanism and prevent injury to the occupants of the car, the lessening of the shock at the moment of impact serving to insure the proper action of the gripping device. I accomplish the desired results by employing the devices illustrated in the accompanying drawing, which forms a part of this application, the important details of construction being disclosed in the following views:—

Figure 1 is a partial view showing in side elevation the hitch beam of an elevator with hoisting cables and counter weights to which are applied my improved safety devices only so much of the supporting structures being shown as will suffice to clearly illustrate the novel features of the invention; Fig. 2 is an elevation of the counterbalancing apparatus.

Referring to the details of the drawing, the numeral 5 indicates a hitch beam for an elevator car supported by the ordinary cables 6, passing over sheaves 7, 7^a, carried on overhead beams 8, the usual guide rails 9 being provided for the ends of the said hitch beam. Between the latter and the overhead beams 8, I mount gripping devices having cooperating parts fixed to said beams. I prefer to install two of these devices made in duplicate, but arranged in reverse position and located upon opposite sides of the suspension cable. Each device consists of a pair of vertical gripping members or jaws 10 arranged parallel to each other between side plates 11, formed integral with a base plate 12, secured by bolts 13. The said gripping members are pivoted at 14 in the side plates 11 and are furnished with the usual shoulder and have beveled faces 15 adapted to engage a bracket 16 secured by bolts 17 to the opposing structural member, said engagement taking place when the parts are approximated, and thus separating the said jaws so that they will engage the bar in the manner common in

gripping devices. The jaws 10 are held in their initial position by a spiral spring 18, embracing a double ended bolt 19 which transfixes the ends of said jaws and has threaded ends to receive nuts 20, by means of which the relative positions of the jaws may be adjusted.

In order to relieve the shock of impact when the gripping members come together under the conditions stated, I provide buffers in the form of spiral springs 21 interposed between the base plate 12 and its support, and also between the bracket 18 and the part upon which it rests. As an additional means of precaution and to insure the proper action of the gripping devices, I provide another form of shock absorber comprising a solid block of rubber or other suitable resilient material 23 mounted in a block 24, secured between the upper margins of the side plates 11. Gripping devices similar to those above described are placed between the upper member 22 of the counter weight frame and the overhead beams 8, as shown in Fig. 2. The buffers 21 are not employed in this case dependence being placed upon the rubber shock absorbers 23, the spiral springs, however, may be used if found desirable. The gripping devices arranged between the drum weight and the counter weights are somewhat modified, consisting of single jaws 25 pivoted between the side plates 26 of the lower member of the weight frame, the pivots 27 being arranged at the extreme ends of the jaws 25. The latter are each provided with a shoulder 25^a, and an inclined face 31, and are held in operative position by flat springs 28. The said jaws extend to within a short distance of the upper member of the lower or drum weight frame, and are arranged so that they will enter the space between the parallel frame plates 29, when, for any reason aforesaid, the upper and lower weight frames become approximated, and will pass entirely through said frame member, the springs 28 causing the shoulders 25^a to engage the underside of spreader blocks 30, which space the said plates 29 apart. In order to afford a more secure hold for the jaws, the under surfaces of the said blocks 30 are supplied with inclined notches 32. For the purpose of retracting the jaws 25 as they engage the spreader blocks 30, each of said blocks is furnished with a boss 33 having a suitably inclined face 34 adapted to engage the inclined face 31 of the jaws.

The corresponding spreader block 35 in the frame above is furnished with a similar boss 36 so arranged that these projections or bosses will engage when the weights come together under the conditions stated, and to reduce the force of impact I furnish some of said blocks, preferably the lower, with shock absorbing members consisting of a rubber facing 37, so placed as not to interfere with the jaws 25.

The functions of the various mechanisms having been explained in connection with the details of construction, a brief description of the operation of the device will suffice to give a clear understanding of the appliance.

Should the operator be inattentive and allow the car to ascend beyond the safety point or the mechanism fail to respond properly to an attempt to stop the car at said point, the latter will ascend until the rubber blocks 23 and brackets 16 collide, the shock of impact being materially absorbed by the said buffers 23 and 21, and the jaws 10 will grip their cooperating members 16 holding the car securely. The gripping members attached to the weights operate in a similar manner, the shock in this case also being lessened through the operation of the buffers 23 and 37.

Having thus described my invention, what I claim as new, is:—

1. In combination with an elevator car and counterweights for same, safety devices connected with said elevator car and counterweights and the overhead beams supporting same, said devices consisting of yielding expansible jaws, a rubber cushion arranged between said jaws, and a bracket arranged in the path of said jaws and adapted to expand same and to strike said cushion.

2. In combination with an elevator car and counterweights for same, a safety device comprising yielding expansible hooked jaws, brackets arranged in the path of said jaws and adapted to expand same and to be engaged thereby, means for controlling the tension of said jaws, and shock-absorbing means arranged between said jaws and adapted to receive the impact of said brackets.

In testimony whereof I affix my signature in the presence of two witnesses.

WALTER B. THOMAS.

Witnesses:

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