

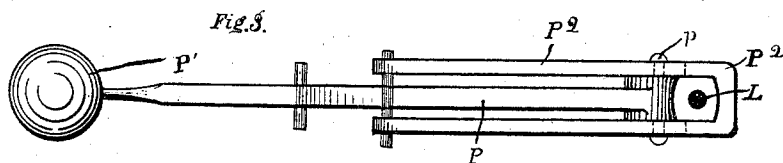
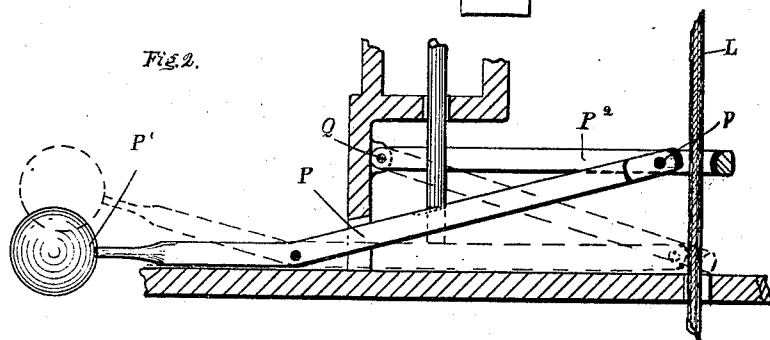
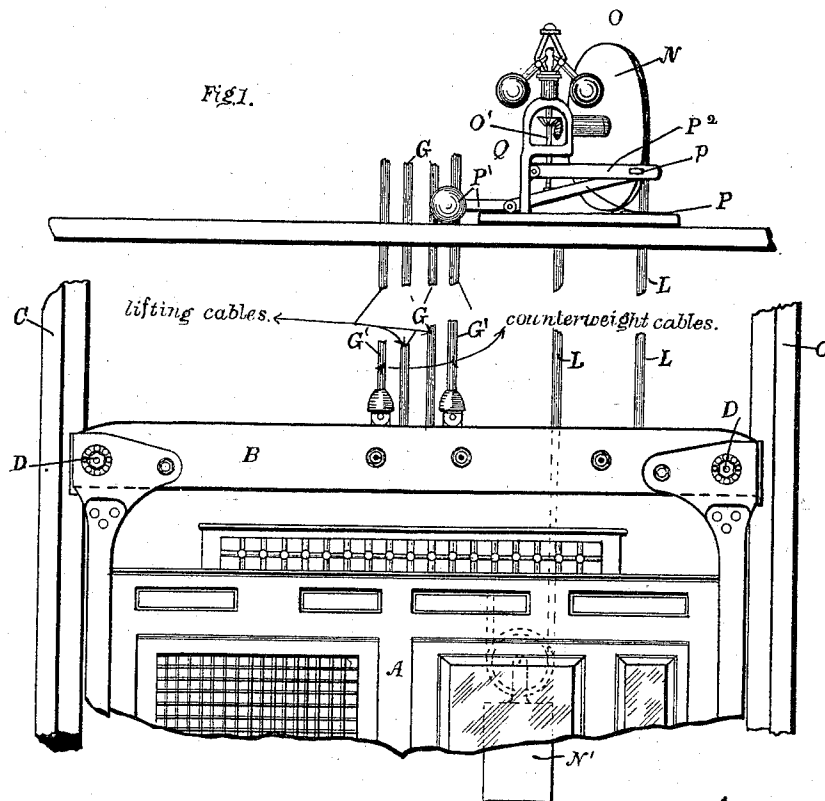
(No Model.)

2 Sheets—Sheet 1.

C. A. MACY.
SAFETY APPLIANCE FOR ELEVATORS.

No. 537,469.

Patented Apr. 16, 1895.



Witnesses:

Thomas Durant
Anna Kelly

Inventor:

Clarence A. Macy
by Church & Church
Solicitors

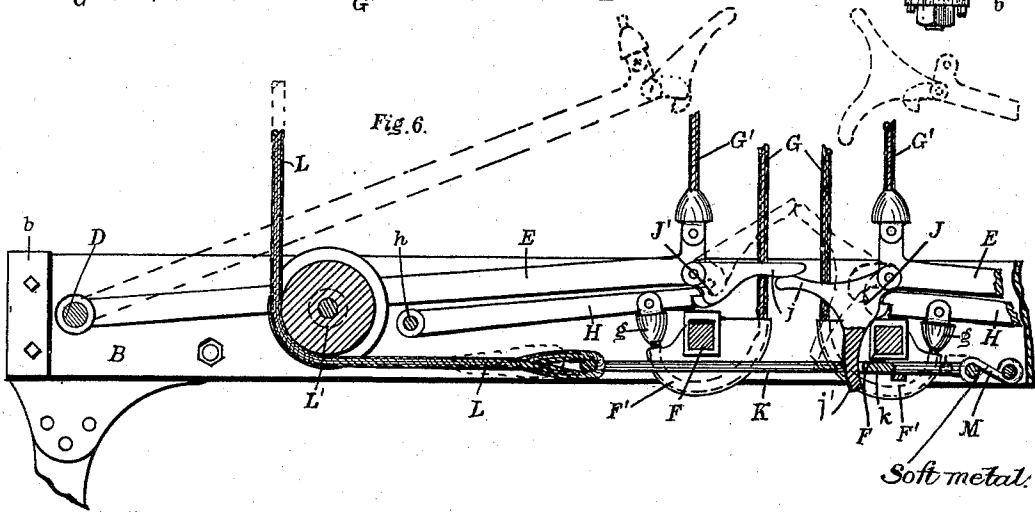
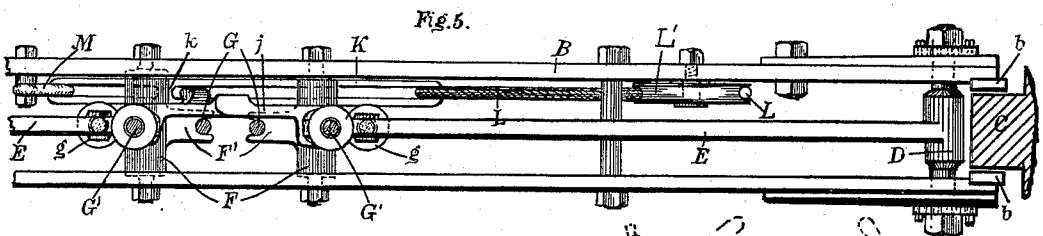
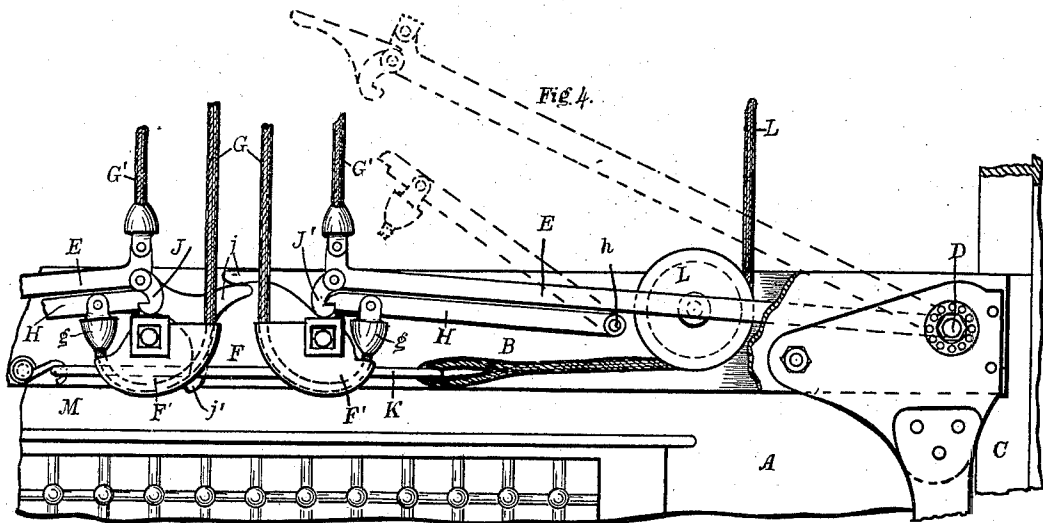
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Solicitor

UNITED STATES PATENT OFFICE.

CLARENCE A. MACY, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE
GRAVES ELEVATOR COMPANY, OF SAME PLACE.

SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 537,469, dated April 16, 1895.

Application filed November 30, 1894. Serial No. 530,424. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE A. MACY, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Safety Appliances for Elevators; 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-letters marked thereon.

My present invention has for its object to provide improved safety appliances for elevators particularly adapted for use in connection with such devices as are shown in Letters Patent No. 520,160, granted May 22, 1894, to L. S. Graves, but which are capable of application to other styles, and the invention consists in certain improved arrangements and combinations of parts, all as will be hereinafter fully described and the novel features pointed out in the claims at the end of this specification.

In the drawings:—Figure 1 is a side view of a portion of an elevator car provided with my improvements showing the well in which it operates and particularly the governor arrangement at the top of the well; Fig. 2, a sectional view of the rope gripping device of the governor; Fig. 3, a plan view of the same; Fig. 4, an elevation of the safety clamps showing one of the cross-beams broken away, and also showing in dotted lines the positions assumed by the parts when the lifting cable breaks; Fig. 5, a plan view of the same; Fig. 6, a longitudinal sectional view looking from the side opposite that shown in Fig. 4.

Similar reference-letters in the several figures indicate similar parts.

The car, indicated by A, is provided at the top with the usual cross-beam or head, composed of the two plates B, B fastened together by suitable bolts, the ends of said plates being preferably movable and having shoes b thereon arranged to grasp the guide-way C and hold the car firmly when the lifting cables break, or when the safety appliance is otherwise operated.

In the present embodiment of my invention I have shown substantially the same gripping

jaws that are contained in the patent before referred to, and they are operated by means of the right and left threads formed upon a bolt D forming part of or attached to an arm or lever E, the construction being such that when the levers E are moved to the position shown in dotted lines in Figs. 4 and 6, the cross-head will be clamped to the guide-way, as will be understood.

As far as my present invention is concerned, it is immaterial what form of clamping device is operated by the lever E which constitutes broadly a movable clamp operating member, but I prefer that shown.

Near the center of the cross-head on the car are provided cross-bolts or braces F having formed upon or secured to them guides F' beneath which the lifting cables G pass, the ends of said cables being connected by clevises g with levers H pivoted at h between the sides of the cross-head. Pivoted to the ends of levers E operating the clamps are hooks or catches J, J', each of said hooks engaging the lower side of its corresponding lever H and having extensions j, the one on the catch J' being arranged above the one on the catch J, and said catch J is provided with a downwardly extending arm j' projecting into a slot formed in a link K having a cross-bar or engaging lug k, one end of said link being connected to the governor-cable or rope L, and the other end being attached to a small hook M pivoted to the cross-head and preferably made of soft iron or of such material that it may break or become disengaged when straightened by a pull upon the governor cable L.

In Figs. 4, 5 and 6, the parts of the clamping device are shown in their normal position in full lines, the lifting cables G, G holding the ends of the levers H down upon the cross-bolts F or other suitable stops, while the usual car counterweights are attached to the cables G' fastened to the upper side of the levers E; said levers being engaged with the levers H by means of the catches J, J'. The car is operated by means of the cables G in the ordinary manner, the counterweight cables being prevented from independent action, but if from any cause the operating cables G should break

the counterweight cables will move the levers E to the position in dotted lines moving also the levers H, which retain them, the short arc through which the ends of said levers H move, insuring the disengagement of the catches, and this movement of the levers E will clamp the cross-beam of the car to the guide-way holding it firmly and preventing its descent.

The governor rope L passes around a pulley L' on the cross-head, thence upwardly and over a pulley N, downward again and beneath a counterweight pulley N', as shown in dotted lines in Fig. 1, and its end is secured to any suitable stationary object or anchor, or it could be secured directly to the said counterweight which simply operates to keep the rope taut. The pulley N is connected to or forms a part of the governor O, which may be of any desired or suitable construction, the movable rod O' thereof bearing at its lower end upon a lever P having a counterweight P' on one end and connected by a slot and pin connection *p* with the end of a lever P² pivoted at Q to the frame of the governor, the outer end of said lever P² being arranged to encircle the governor rope L, the inner side of said encircling portion and the outer end of the lever P constituting a rope-clamp. When the car is moved up and down by the lifting cables in the ordinary manner, the rope L, which is attached to link K on the car, will move up and down with it, rotating the pulley N of the governor; said rope moving freely between the jaws of the clamp formed by the levers P² and P. When, however, the speed of the car in descending exceeds that for which the governor is adjusted, the balls of the latter will fly out moving the rod O' downward and causing the levers P P² to grasp the rope L and prevent its movement, as shown in dotted lines. The further downward movement of the car will straighten out the hook M and cause the link K to move to the position shown in dotted lines in Fig. 6, the cross-bar *k* on said link operating the projection *j* of the dog J, disengaging both catches from the levers H by reason of the connection shown and allowing the car-counterweights to pull the levers E to the position shown in dotted lines in said figure, thereby operating the clamp and arresting the descent of the car. Thus it will be seen that the car will be arrested when moving downward at excessive speed without disconnecting the lifting cables G, G from it, the levers H to which they are attached being held against the cross-bolts F.

It will be understood that instead of employing the hook M for retaining the link K any other suitable frangible connection may be employed, as a break-pin, and also that while I prefer to connect the lifting cables to the levers H in order that the difference in movement of the ends of the levers E and H may insure the disengagement of the catches J, J', as described, other means for holding the ends of the lifting cables may be used so long as the catches J, J' or their equivalents

serve to connect the levers E and the ends of the lifting cables by a detachable connection.

In the present instance, the catches J, J' constitute a detachable connection between the two levers and therefore between the lifting cables and the clamp operating member.

Various modifications of the construction shown will readily occur to those skilled in the art, and I do not therefore desire to be confined to precisely the arrangement shown.

While it is eminently desirable that the governor mechanism and its cable should be employed for accomplishing the release of the levers E, it will be understood that the dogs J, J', could be released by hand or otherwise if preferred, the end *j'* of the catch J' being capable of a movement independently of the link K.

I claim as my invention—

1. The combination with an elevator car, a clamping device thereon adapted to engage a guide or way and having a movable operating member, of a counterweight cable connected to one side of said movable member, a lifting cable, and a detachable connection between the lifting cable and the other side of the member, capable of operation independently of the movement of said cable to disconnect them, substantially as described.

2. The combination with an elevator car, a clamping device thereon adapted to engage a guide or way and having a movable operating member, of a counterweight cable connected to one side of said movable member, a lifting cable connected to the other side of said member by a readily detachable connection, and a governor device for disconnecting the lifting cable from the clamp member when the car exceeds a predetermined speed, substantially as described.

3. The combination with an elevator car, a clamping device thereon adapted to engage a guide or way and having a movable operating member, of a counterweight cable connected to one side of said movable member, a detachable connection between said member and the car for holding the movable operating member and preventing the operation of the clamp, and a governor device for disconnecting said member when the car exceeds a predetermined speed, substantially as described.

4. The combination with an elevator car, a clamping device thereon adapted to engage a guide or way and having a movable operating member, of a counterweight cable connected to one side of said member, a lifting cable, a stop for limiting its movement relative to the car in one direction, a detachable connection between said cable and the operating member of the clamp, and a governor operating on the detachable connection for disconnecting it when the car exceeds a predetermined speed, substantially as described.

5. The combination with an elevator car, a clamp thereon adapted to engage a guide or way and having an operating arm or lever, of

the counterweight cable connected to one side of said lever, the lifting cable, and a detachable connection between the lifting cable and the other side of the lever capable of operation independently of the movement of the said cable to disconnect them, substantially as described.

6. The combination with the car, the clamp thereon adapted to engage a guide or way and having the movable operating lever, of the counterweight cable connected to said lever, the lifting cable, the lever to which it is connected, a stop for said lever, and a detachable connection between said levers capable of independent operation to disconnect them, substantially as described.

7. The combination with the car, the clamp thereon adapted to engage a guide or way, and having the movable operating lever, of the counterweight cable connected to said lever, the lifting cable, the lever to which it is connected, a stop for said lever, a detachable connection between said levers, a governor device operating on the detachable connection when the car exceeds a predetermined speed, substantially as described.

8. The combination with the car, a clamping device thereon, the two levers, one of them having the catch and connected to the counterweight cable, the other engaged by the catch and connected to the lifting cable, and the stop for said lever, of the counterweight and lifting cables, the movable link, the frangible retainer therefor, and the cable connected to said link, substantially as described.

9. The combination with the two clamp-operating arms or levers, the counterweight cables connected thereto, the catches on the levers connected for simultaneous operation, the levers engaged by the catches, and the lifting cables connected to them, and means for actuating one of the catches to disconnect them both from the last-mentioned levers, substantially as described.

10. The combination with the clamp lever E, the catch thereon having the projection j' , the lever H engaged by the catch, the counterweight cable connected to the lever E, the lifting cable connected to lever H, the movable link engaging the projection, the

rope connected to the link, and the frangible retaining hook M, substantially as described.

11. The combination with the car and a safety device on the car, a cable for actuating it having one of its ends traveling with the car, of a centrifugal governor actuated by said cable, a cable-clamp embodying two levers pivoted on different centers and adapted to grasp the rope between them when the cable and car exceed a predetermined speed, substantially as described.

12. The combination with the car, a safety device on the car, a cable for actuating it having one of its ends traveling with the car, of a centrifugal governor actuated by said cable, the levers P and P² connected for simultaneous operation and adapted to clamp the rope between them when the car exceeds a predetermined speed, substantially as described.

13. The combination with the car, a safety clamping device thereon adapted to engage a guide or way, a counterweight cable for operating the clamp, the lifting cable, a detachable connection between the lifting cable and clamp, a cable one end of which travels with the car cooperating with the detachable connecting devices, a relatively stationary governor actuated thereby, and a cable grip operated by the governor when the car exceeds a predetermined speed, substantially as described.

14. The combination with an elevator car, a clamping device thereon adapted to engage a guide or way and having a movable operating member, of a counterweight cable connected to one side of said movable member, a lifting cable, a stop for limiting its movement in the direction of draft, and a detachable connection between said lifting cable and the movable clamp member capable of operation independently of the movement of the lifting cable to disconnect the two and permit the operation of the clamp by the counterweight without releasing the lifting cable from the car, substantially as described.

CLARENCE A. MACY.

Witnesses:

F. F. CHURCH,
G. A. RODA.