No. 744,568. PATENTED NOV. 17, 1903.

W. LASAR.

SAFETY APPLIANCE FOR ELEVATORS.

APPLICATION FILED JUNE 15, 1903.

NO MODEL.

Fig. 1.

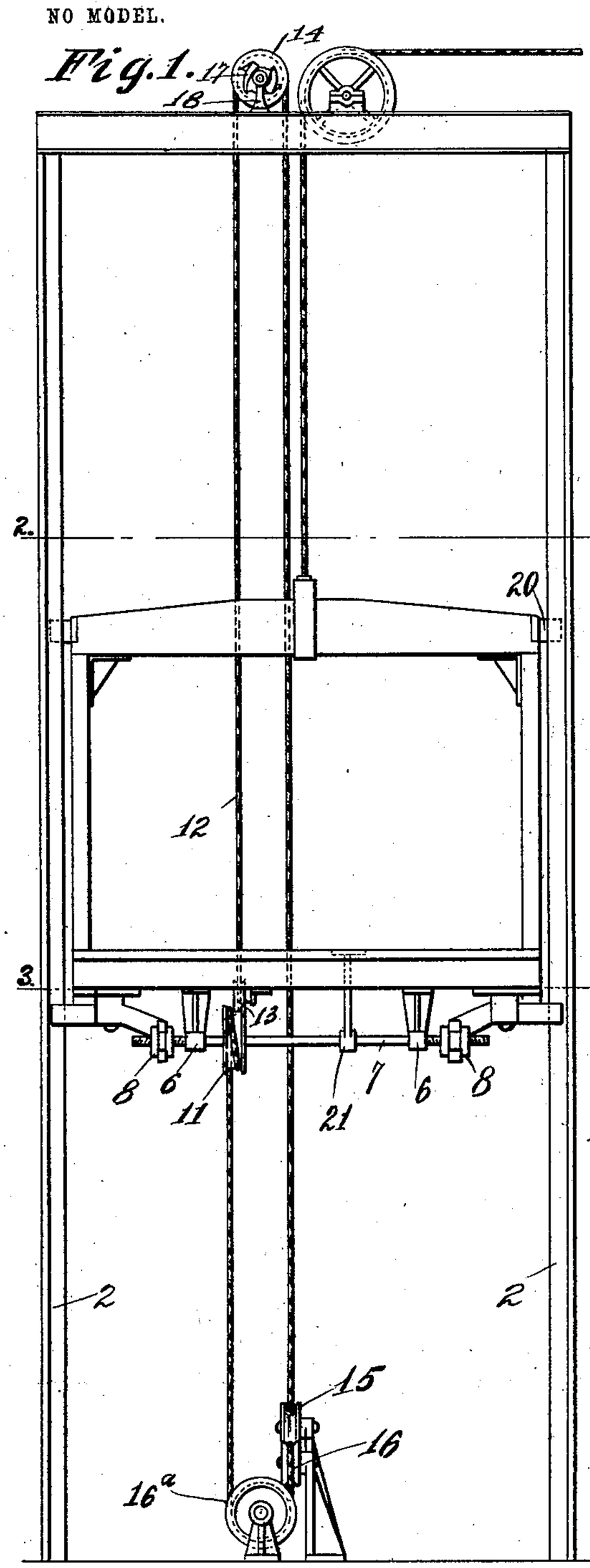


Fig. 2.

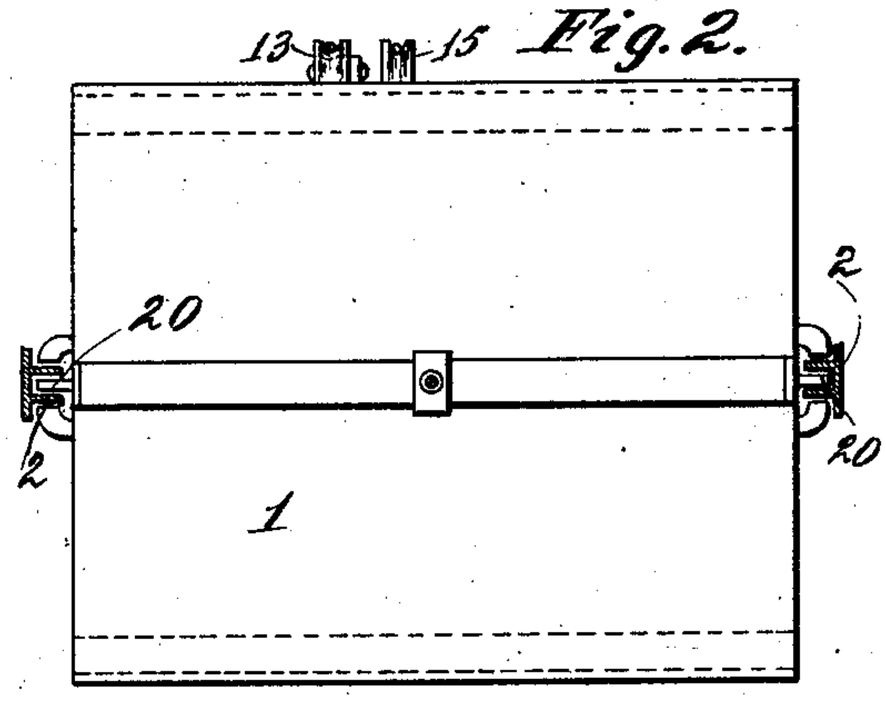


Fig. 3.

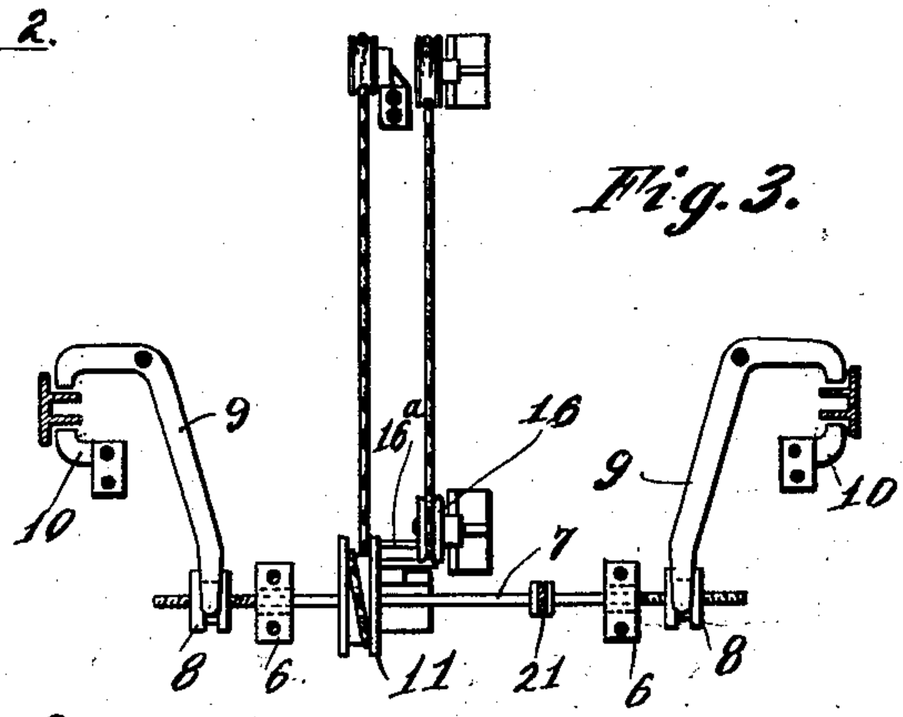


Fig. 4.

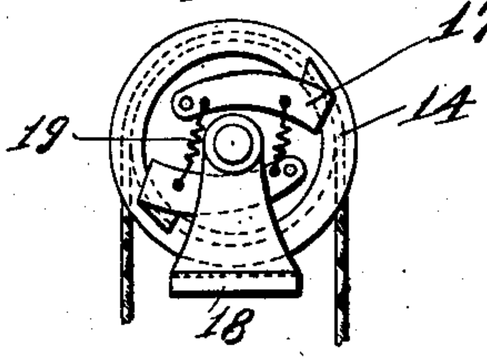


Fig. 7.

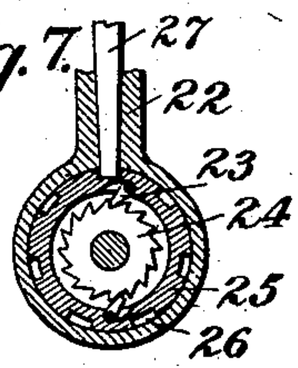
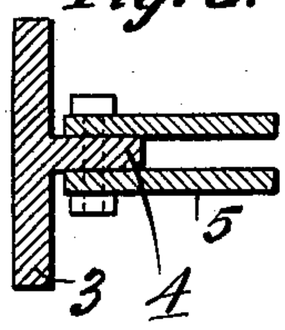
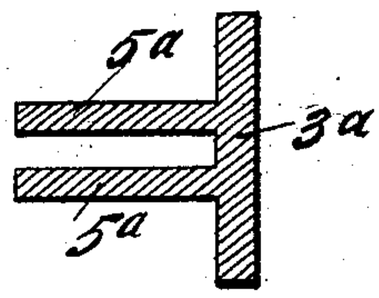


Fig. 5

Fig. 6.





Attest:
Edw. L. Dillon
Julia B. Megonn.

Inventor:-
Walter Lasar,
by Cairn & Cairn,
Att'ys.

No. 744,568. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

WALTER LASAR, OF ST. LOUIS, MISSOURI.

SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 744,568, dated November 17, 1903.

Application filed June 15, 1903. Serial No. 161,409. (No model.)

To all whom it may concern:

Be it known that I, WALTER LASAR, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Safety Appliance for Elevators, of which the following is a specification.

My invention relates to elevators, and has for its principal objects to prevent the descent or ascent thereof becoming too rapid and to hold the car in case the hoisting-cable should break.

The invention consists principally in making the track or rail for the safety-clutch or guide-shoe so that it may be crimped laterally when the clutch is applied, but will resume its normal position when the clutch is released.

It also consists in the parts and in the arrangements and combination of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a diagrammatic elevation of an elevator system embodying my invention. Fig. 2 is a horizontal section of said system on the line 2 2 of Fig. 1. Fig. 3 is a horizontal section thereof on the line 3 3 of Fig. 1. Fig. 4 is a detail view of the centrifugal clutch, and Fig. 5 is a cross-sectional view of one form of guide track or rail for the locking-clutch, and Fig. 6 is a similar view of a modified form thereof. Fig. 7 is a sectional view of the clutch-releasing device.

The elevator car or platform 1 is located in an ordinary elevator-shaft and is provided with suitable hoisting mechanism for actuating it. Extending vertically along opposite sides of the elevator-shaft are guide-rails 2. These guide-rails 2 are preferably made in the form illustrated in Fig. 6, wherein the base is a T-bar 3, on the opposite sides of whose medial rib or flange 4 resilient steel plates 5 are mounted flatwise, so as to constitute extensions of the rib 4, which separates or spaces them. In the construction illustrated in Fig. 5 the base-plate 3^a has two parallel ribs 5^a extending longitudinally thereof and integral therewith, and said ribs are made sufficiently thin and resilient to crimp or yield to the pressure of the clutches applied transversely thereto, as hereinafter described.

The elevator car or platform 1 has journal-hangers 6 fixed to the bottom thereof, in which is journaled a shaft 7, which is screw-threaded in opposite directions at its respective ends. Each of the threaded ends has a threaded nut 8 working thereon. The intermediate portion of each nut 8 is reduced in diameter and flattened at opposite sides, whereby the end portions of the nut constitute shoulders. Over the flat portion of the nut fits a fork or yoke formed in the end of a lever 9, pivotally mounted on the bottom of the elevator-platform. The other end of the lever 9 lies close to one of the resilient plates 5 or 5^a of the guide-track. Also mounted on the bottom of the elevator-platform is an abutment-piece 10, whose end lies close to the second resilient rib. As the yoke of the lever 9 fits over the flattened portion of the nut 8 and is held there by the shoulders on the nut said lever prevents the nut 8 from turning on the shaft 7, so that the turning of the shaft causes the movement of the nut lengthwise of the shaft. This endwise movement of the nut causes the lever 9 to turn upon its fulcrum, and the turning of the lever causes its outer end to bear transversely against the resilient rib 5 or 5^a of the guide track or rail. The pressure of the lever against the resilient rib crimps or deflects from its normal vertical plane the portion of the resilient rib close to the end of the lever as well as the part directly opposite thereto. In like manner the second rib is deflected by being jammed against the abutment-plate 10 provided therefor. In consequence of the lever 9 and the abutment-piece 10 (which together constitute a safety-clutch) thus pinching toward each other the portion of the resilient ribs immediately adjacent to them and the adjacent faces of the lever and of the abutment-piece thereby being closer together than the normal distance between the outer faces of the respective ribs the further descent or ascent of the elevator-car necessitates the continuous bending or crimping of the ribs from the point where the clutch is first set to the point where the elevator stops. The force thus applied to stop the elevator-car is not only the friction between the

clutches and the guide-tracks or rails, (which is commonly relied upon,) but the resistance of the resilient ribs to the continuous crimping thereof. This last-mentioned force is particularly advantageous on account of the fact that in ordinary elevator construction the guide track or rail is usually covered with grease or otherwise lubricated.

The clutch-operating shaft 7 is operated by any suitable mechanism arranged to be set in operation automatically whenever the elevator-car acquires too rapid a speed, whether ascent or descent. For instance, as shown in the drawings, the clutch-operating shaft 7 has a sheave or drum 11, around which passes an endless rope 12. This rope 12 passes from the drum 11 around a pulley 13, mounted on the bottom of the platform 1, and thence over a pulley 14, journaled at the top of the elevator-shaft, and thence over pulleys 15 16 16^a at the bottom of the shaft, and thence to the drum 11. The pulley 14 at the top of the elevator-shaft has pawls 17 pivotally mounted thereon and arranged to coöperate with a stationary housing 18 provided therefor. Said pawls 17 are normally held toward their shaft or spindle by means of springs 19; but when its speed becomes too great the centrifugal force causes the ends of said pawls to strike against the stationary housing 18, and thereby stop the movement of the pulley 14 at the top of the elevator-shaft. When the pulley 14 at the top of the elevator-shaft stops turning, the tension on the endless rope 12 increases very greatly. In the normal operation of the parts the force required to drive the clutch-operating shaft 7 is much greater than the force required to drive the several pulleys; but when the uppermost pulley is locked by the pawl 17 the force required to drag the rope around said pulley 14 exceeds the force required to drive the clutch-operating shaft. It results from this arrangement that when the topmost pulley is locked the rope, which normally runs about the several pulleys, but is stationary around the drum 11, becomes stationary around the pulleys and runs around the drum. Consequently the rope turns the drum 11 and with it the clutch-operating shaft 7, so as to set the clutches against their guide tracks or rails. The clutch-operating shaft is shown threaded, so as to set the clutches upon too rapid descent of the car; but it is obvious that by reversing the direction of the threads on the shaft too rapid ascent of the car may be provided against.

Preferably the elevator-car is provided with a tooth or projecting lug 20 on each side in position to slide up and down in the space between the longitudinal ribs 5 and 5^a of the guide-track, and thereby not only guide the car, but keep the space free from pieces that might prevent the proper crimping of the ribs. For the latter purpose this space may be closed with wood or other compressible material.

Obviously the construction hereinbefore described admits of considerable modification without departing from my invention, and I do not wish to be restricted to said construction. Obviously also any suitable device 21 may be mounted on the car for releasing the clutch from its engagement. For instance, the car may have a hand-lever 22, provided with a pawl 23, arranged to actuate a ratchet-wheel 24, fixed to the clutch-operating shaft.

The lever 22 is enlarged at its lower end and loosely surrounds the clutch-operating shaft. It is hollowed out and receives within it the pawl-ring 25, upon which the pawls 23 are mounted and which surrounds the ratchet-wheel 24, fixed to the clutch-operating shaft. The pawl-ring is provided with a number of indentations 26, which receive the end of the rod 27, which is inserted in the hollow lever-arm 22. Normally the rod 27 is withdrawn and the pawl-ring is free to rotate within the chamber in the lower end of the lever 22; but when it is desired to operate the clutch-operating shaft to release the clutch the rod 27 is inserted and locks the pawl-ring and the lever 22, and the device operates as though the pawls were mounted directly upon the lever.

What I claim is—

1. In an elevator construction, a car, a guide engaged by said car and having a resilient rib, and a clutch on said car to engage and crimp said resilient rib.

2. In an elevator construction, a safety appliance comprising a clutch, and a track therefor, said track comprising a base and two longitudinal parallel ribs thereon arranged to be crimped by said clutch.

3. In an elevator construction, a safety appliance comprising a clutch on the car, and a track therefor, said track comprising a T-bar and two resilient plates mounted on opposite sides of the rib of said bar.

4. In an elevator construction, a safety appliance comprising a clutch, and a track therefor, said track comprising a base and two longitudinal parallel ribs thereon arranged to be crimped by said clutch, and a lug on said car projecting into the space between said ribs.

5. An elevator construction comprising a car, a guide engaged by said car and having a resilient rib, a clutch on said car arranged to engage and crimp said resilient rib, and automatic means for operating said clutch.

6. An elevator construction comprising a car, a clutch therefor and a track having a resilient member arranged to be crimped by said clutch, said clutch comprising an abutment-piece and a lever opposite the same and means for actuating said lever, said means comprising a threaded shaft, a nut on said shaft arranged to engage said lever, a winding-drum on said shaft, and an endless rope arranged to normally move with the elevator and to bind when the car moves too fast.

7. An elevator construction comprising a

car, a clutch thereon comprising a lever, a threaded shaft, a nut working on said shaft and engaging said lever, and means for actuating said shaft, said means comprising a drum on said shaft, a pulley on the stationary portion, an endless rope winding about said drum and said pulley to stop the same automatically and thereby cause the turning of the drum, and a track for said clutch, said track comprising a resilient member arranged to be crimped thereby.

WALTER LASAR.

Witnesses:
JAMES A. CARR,
JULIA B. MEGOWN.