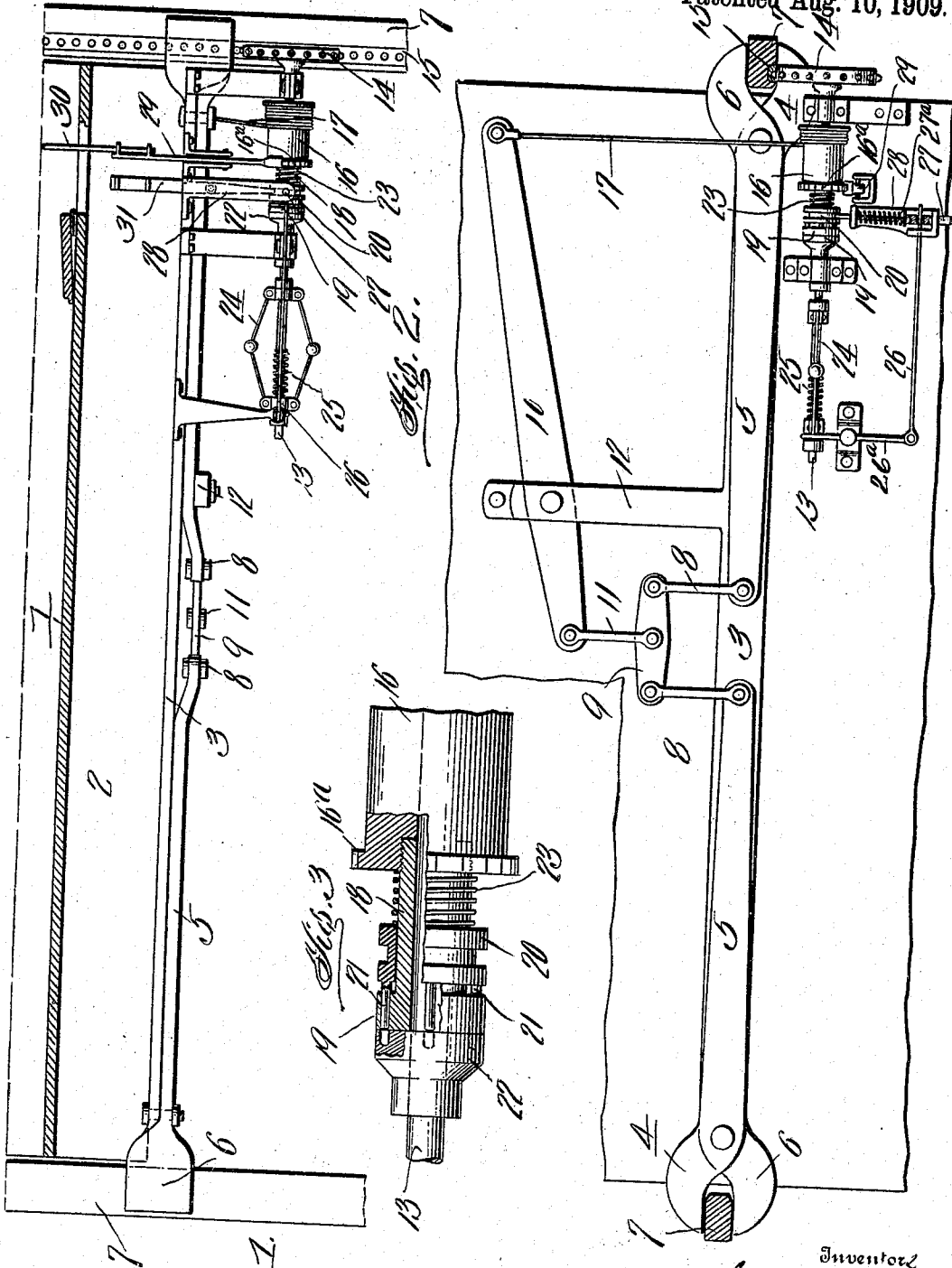


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ELEVATOR CLAMP.
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Witnesses

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UNITED STATES PATENT OFFICE.

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ELEVATOR-CLAMP.

No. 930,412.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, SIMON P. NUNNINK and FRANK L. MILLER, citizens of the United States, residing at Rosedale, in the county of Wyandotte and State of Kansas, have invented a new and useful Improvement in Elevator-Clamps, of which the following is a specification.

This invention relates to a safety clamp for elevators, and the object of the invention is to stop an elevator when its speed exceeds a certain pre-determined limit.

The invention consists in the novel features of construction hereinafter set forth, pointed out in the claims and shown in the accompanying drawings, in which—

Figure 1 is a side elevation, the floor of an elevator cage being shown in section. Fig. 2 is an inverted plan view of my device. Fig. 3 is a detail sectional elevation showing a clutch mechanism.

In these drawings 1 represents the bottom of an elevator cage and 2 one of the bottom sills which supports the floor 1. It will be understood that while I have shown the device as applied to the bottom of an elevator it could also be applied to the top where preferred without any material change in any of the parts. Extending lengthwise of the sill 2 and secured thereto is a bar 3 having at each end a projecting fixed jaw 4. Pivotally mounted upon said bar are levers 5 which at their outer ends carry movable jaws 6, the jaws 4 and 6 working upon opposite sides of vertically arranged guides 7. The remainder of the mechanism employed by me is for the purpose of causing these jaws to grip the guides 7 and thus act as brakes for the purpose of stopping the elevator should it exceed a certain speed. To accomplish this result, the levers 5 have their inner ends pivotally connected, by means of links 8, to a bar 9 which in turn is pivotally connected to the inner end of a lever 10 by means of a link 11, said link being pivotally connected to the bar 9 midway the links 8, the said bar forming an equalizing bar so that both jaws 6 will be acted upon with the same force. The lever 10 can be pivoted directly to the bottom of the elevator if desired, but I prefer to pivot the same upon a bracket arm 12 carried by the bar 3.

In suitable bearings carried by the bottom of the elevator cage I journal a shaft 13 which carries at one end a toothed wheel 14

the teeth of which work upon a rack bar 15 carried by one of the guides 7. This gives the shaft 13 a speed proportional to the rate of travel of the elevator up and down the elevator shaft. Upon the shaft 13 is loosely mounted a drum 16 upon which winds a cable 17 secured at one end to the drum and at the opposite end to the end of the lever 10 opposite the link 11. This shaft carries a sleeve 18 also loose upon the shaft and threaded into the inner end of the drum. This sleeve has an enlarged perforated head 19 and also carries a grooved clutch collar 20, slidably mounted on the sleeve and carrying pins 21 working through the perforations of the sleeve head, and adapted to enter sockets formed in the face of a clutch member 22 keyed to the shaft 13. A spring 23 surrounding the sleeve 18 and arranged between said sleeve and the collar 20 tends to slide the collar into engagement with the head and to force the pins 21 into the sockets of the clutch member 22, thus locking the collar, sleeve and drum to the shaft 13. Upon the shaft is mounted also a governor 24 of the usual type, said governor being provided with a tension spring 25, and by regulating said spring, as for example, securing one end of the same to different points along the shaft, the governor may be set so that it will bring into operation the clutch releasing mechanism when a certain speed has been given the shaft 13. This operating mechanism consists of a rod 26 pivoted at one end to a lever 26^a connected to the governor and having the opposite end resting loosely in a slidable tripping rod 27 which works longitudinally through a flanged bracket 28 carried by the bottom of the elevator, the free end portion of the rod 27 normally resting in the groove of the collar 20 and holding the same in the position shown in Fig. 3, that is away from the head 19.

It will be obvious that when the speed of the governor reaches a certain limit the turning of the lever 26^a upon its pivotal point will withdraw the rod 26 from the rod 27 and a spring 27^a will withdraw rod 27 from the collar groove, and the spring 23 will force the collar against the head 19, causing the pins 21 to enter the sockets formed in the clutch member 22, thus causing the rotation of the drum and winding the cable 17 upon it. This will draw the long arm of the lever 10 toward the drum

and through the links 11 and 8 and the bar 9 will rock the levers 5 upon their pivotal points causing the jaws 6 to close upon the guides 7 which will be firmly gripped between the jaws 4 and 6, such closing and gripping movement increasing in force as long as the drum continues to rotate, and it will be obvious also that the cable will be wound upon the drum until the elevator stops. A pawl 29 operable by a removable handle 30 from within the elevator engages ratchet teeth 16^a upon the drum and prevents reverse rotation of the same.

A pivoted resetting lever 31, which can also be operated by the handle 30, engages the groove of the collar 20, and is employed in resetting the device after it has been tripped by the governor.

As the mechanism is tripped only at long intervals, as when some accident occurs to the machinery employed in running the elevator, the device is reset by hand, the operator descending into the pit, and the lever 31 being employed to overcome the spring 23.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with an elevator car and vertical guides between which said elevator car runs, of gripping jaws acting upon said guides, a lever operating said jaws, a drum, a cable connected to said lever and winding upon the drum, and means for causing rotation of the drum when the speed of the car exceeds a pre-determined limit.

2. In an elevator car clamp of the kind described, a rotatable shaft, a clutch member fixed thereon, a drum loosely mounted on said shaft, a sleeve having a perforated head at one end and threaded into the drum at the other end, a grooved collar sliding upon said sleeve, pins carried by the collar, said pins working through the perforations of the sleeve head and engaging the clutch

member, a spring arranged between said drum and collar, means for rotating said shaft during travel of the elevator, and means for releasing said collar so that the spring will throw it into operative engagement with the clutch when the speed of the car exceeds a pre-determined limit.

3. A device of the kind described comprising clamping mechanism, a rotatable drum for operating said mechanism, a shaft carried by the elevator car, means for giving said shaft a rotation proportional to the speed of the elevator car, a governor on the shaft, spring pressed clutch mechanism for connecting said shaft and drum, means for normally holding said clutch mechanism in an inoperative position, and means for releasing said clutch through action of the governor when a certain speed limit is reached.

4. A device of the kind described comprising vertical guides arranged on an elevator car shaft, an elevator car, fixed jaws carried by the elevator car and traveling adjacent said guides, movable jaws carried by the car and traveling along the guides and on opposite sides from the fixed jaws, a shaft carried by the car, a rack bar carried by one of said guides, a toothed wheel fixed on the shaft and traveling on said rack bar, a drum loosely mounted on the shaft, means operable by rotation of the drum for causing the movable jaws to grip the guides, a governor arranged upon the shaft, spring actuated clutch mechanism for locking said drum to the shaft, and means controlled by the governor for holding said clutch mechanism inoperative until a pre-determined speed of rotation of the shaft is reached.

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