

No. 631,130.

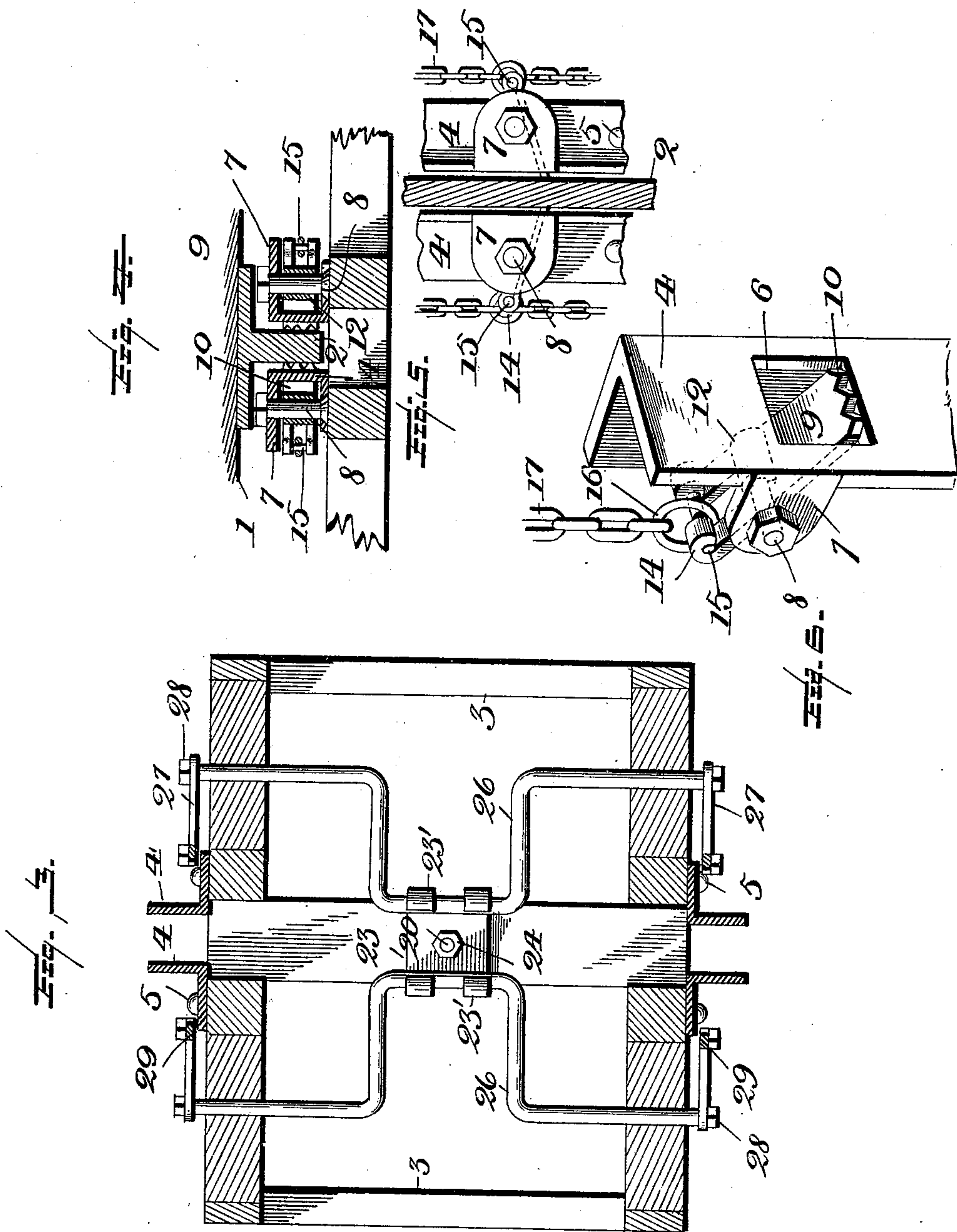
Patented Aug. 15, 1899.

G. SCHULZE.
SAFETY ELEVATOR.

(Application filed June 10, 1899.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

GOTTFRID SCHULZE, OF MAYVILLE, WISCONSIN.

SAFETY-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 631,130, dated August 15, 1899.

Application filed June 10, 1899. Serial No. 720,075. (No model.)

To all whom it may concern:

Be it known that I, GOTTFRID SCHULZE, a citizen of the United States, residing at Mayville, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Safety-Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in safety-elevators.

The invention has for its object to provide, in connection with the elevator car or cage, novel means whereby the said car or cage will be automatically locked in the elevator shaft or well and prevented from dropping in event of the parting of the suspending cord or cable.

The invention further consists in the novel features of construction, combination, and arrangement of parts, as will be hereinafter more specially described and then particularly pointed out in the appended claims, and in describing the invention in detail reference will be had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference will be employed to designate similar parts throughout the several views, in which—

Figure 1 is a side elevation of a car or cage with my improvement attached thereto, the grips being held in their normally-inoperative position and a portion of the guideway or slide-rail being shown in vertical section. Fig. 2 is a vertical sectional view of the car or cage with my improvement attached thereto. Fig. 3 is a horizontal sectional view taken on the line 3 3 of Fig. 1, looking in the direction of the arrow. Fig. 4 is a horizontal sectional view of a part of the cage and well, showing the toothed grips in locking engagement with the slide-rail or guideway. Fig. 5 is a side view of a portion of the angle-bars, showing a pair of the toothed grips in locking engagement with the slide-rail or guideway, the latter being shown in vertical section. Fig. 6 is a perspective view of a part of one of the angle-bars, showing one of the toothed grips, the manner of mounting same in the angle-bar, and its chain connection.

Referring now to the drawings by reference-

numerals, 1 designates the wall of the elevator shaft or well, to two opposite sides of which are secured, in any suitable manner, the slide-rails or guideways 2 2, which require no especial construction to permit the operation of my device.

The reference-numeral 3 indicates the carriage, car, or "cage," as it is indifferently termed, and to the framework thereof, at the sides adjacent to the slide-rails or guideways 2 2, is attached a pair of angle-bars 4, which are preferably extended the entire length of the cage proper. These angle-bars serve as the guides for the cage and may be secured thereto by bolts 5 5, as shown, or in any desirable manner, and they are spaced apart, so as to permit the free operation of the slide-rail or guideway between them. These angle-bars forming the guides are provided in that portion thereof that projects outwardly from the cage and is adjacent to the slide-rails or guideways 2 2 with openings 6 6, and also have formed integral with or secured to this outwardly-extending portion a series of ears or lugs 7, projecting horizontally of the well or shaft and at right angles to the outwardly-extending portion of the guides. These lugs or ears are formed at positions partially opposite to the openings 6 6 and are adapted to assist in supporting the bolts 8 8, journaled therein and in that portion of the guides that is secured to the cage. The heads of these bolts may be countersunk in the guides 4, as shown in Fig. 4 of the drawings, in order to allow the guides resting flush against the cage, or other equivalent construction may be devised and employed. These bolts 8 8 are adapted to support and also form a fulcrum for the grips or catches by means of which the cage is locked and supported in the shaft or well and prevented from falling when the suspending cord or cable has parted.

The grips or catches may for convenience in manufacture be formed as I have herein illustrated them, in which construction I employ a jaw 9, the one end of which is serrated or toothed, as at 10, and is held normally within the opening 6. The other end of this jaw 9 is slit, and the portion thus cut away is wrapped, as at 12, to form a sleeve for the reception of the bolt 8 to support the grip or catch. The ends 14 14 of this jaw are also

wrapped to form eyes for the reception of the pin or bolt 15. This pin or bolt 15 of each of the grips or catches carries a ring 16, to which is connected a chain or cable 17, the lower end thereof being attached to the spring 18, while the upper end is attached through intermediate connections with the suspending cord or cable 19. The lower ends of the springs 18 are suitably connected to the cage at any desirable point.

The car or cage 3 is suspended from the cable 19 by a rod 20, to which the said cable is attached and which operates loosely through the cross-bars 21 and 22 of the cage. This rod 20 has arranged on its lower end a plate 23, secured and held thereon by a nut 24, engaging the screw-threaded lower end of the rod, said plate being provided with a pair of projections on each side thereof which are wrapped, forming the eyes 23'.

Arranged upon the rod 20, between the plate 23 and the cross-bar 22, is a stiff tension-spring 25, which acts in conjunction with and assists the springs 18 in forcing the grips or catches into engagement with the slide-rails or guideways 2 upon the parting of the suspending-cable 19.

Journaled in the framework of the cage, a short distance beneath the cross-bar 22, is a pair of bell-cranks 26, the U portion of which engages the underneath face of the plate 23 and are held and retained in their position by means of the downwardly-projecting eyes 23'. The ends of these bell-cranks project slightly beyond the walls of the cage and have secured thereto cranks 27, the free end of which are attached by bolts 28 to the upper ends of links 29, the other ends of said links being connected either direct to the upper pair of pins or bolts 15 or to the upper pair of rings 16, carried by said pins or bolts.

The operation of my improved safety-elevator is as follows: Assuming all parts to have been assembled in their respective positions, as herein shown and described, with the elevator-cage suspended from the cord or cable 19, when in this position the spring 25 will be compressed by reason of the rod 20 being drawn upwardly through the cross-bars by the weight of the cage to the full limit of its movement. When in this position, the plate 23 will have so moved the bell-cranks 26 as to operate the cranks 27, links 29, and chains or cords 17 to withdraw the grips or catches within the openings 6 and hold the same in the inclined position and out of engagement with the slide-rails or guide ways 2 2, as shown in Fig. 1 of the drawings, permitting the free and uninterrupted movement of the cage, the grips or catches being always in the inoperative position as long as the weight of the cage is suspended from the cord or cable 19. In case, however, this cord or cable 19 parts or breaks, which would allow the cage to fall within the well or shaft, the pressure upon the springs 18 and 25 being relieved these springs

instantly act in conjunction and through their connections with the grips or catches force the toothed or serrated ends 10 of these grips or catches through the openings 6 6 and into impinging engagement with the sides of the slide-rails or guideways 2 2, as shown in Figs. 4 and 5 of the drawings, immediately arresting the downward movement of the cage and retaining the same suspended in the well from the slide-rails until the cord or cable 19 can be again connected to the rod 20 and the weight of the cage suspended from the said cord or cable to permit the release of the grips or catches.

While the construction as herein shown and described appears to embody the preferable form of my invention, yet I do not wish to unduly limit myself to such construction, but desire to make changes in the various details such as will clearly come within the scope of my invention without departing from the general spirit thereof.

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

1. In a safety-elevator, the combination with an elevator-cage and a pair of vertical slide-rails, of a pair of elongated vertical angle-irons forming guides secured to each of the two opposite sides of said cage and provided with a series of suitably-disposed openings, a series of ears formed integral with the said guides, a spring-actuated suspending-rod loosely mounted in the said cage, a suspending cord or cable connected to the said rod, a pair of bell-cranks journaled in the cage and connected to the said supporting-rod, a series of grips or catches pivotally connected to the said guides and ears and adapted to operate through said openings, a spring-actuated chain or cable connected to the said grips and cage, and connections between the bell-cranks and said chain or cable, substantially as set forth.

2. In a safety-elevator, the combination with an elevator-cage and a pair of vertical slide-rails, of a pair of elongated vertical angle-irons forming guides secured to each of the two opposite sides of said cage and provided with a series of suitably-disposed openings, a series of ears formed integral with the said guides, a series of grips or catches pivotally connected to the said guides and ears and each formed with an eye on its outer end, a pin or bolt secured in the said eye, a spring-actuated chain connected to the said pin or bolt and the said cage, a pair of bell-cranks mounted in the said cage, connections between the said cranks and the said chain, a plate connected to the said cranks and a spring-actuated supporting-rod connected to the said plate, substantially as set forth.

3. In a safety-elevator, the combination with an elevator-cage and a pair of vertical slide-rails, of a pair of elongated vertical angle-irons forming guides secured to each of the two opposite sides of said cage and pro-

vided with a series of openings, a spring-actuated supporting-rod loosely mounted in the said cage, a suspending cord or cable connected to said rod and adapted to normally support the cage, a pair of bell-cranks journaled in the cage, a plate connecting said bell-cranks to the supporting-rod, a series of grips or catches pivotally mounted in the said guides and adapted to operate through said openings, and a spring-actuated chain connecting the grips or catches to the supporting-rod, substantially as set forth.

4. In a safety-elevator, the combination with an elevator-cage and a pair of vertical slide-rails, of guides secured to two opposite sides of said cage and provided with a series of vertical openings adjacent to the slide-rails, a spring-actuated supporting-rod loosely mounted in said cage, a suspending cord or cable connected to said rod, a pair of bell-cranks journaled in the cage near the top thereof, a plate mounted on said supporting-

rod and engaging said bell-cranks, a series of inclined grips or catches pivotally mounted in said guides and disposed vertically on each side of the slide-rails adjacent to the opening therein, chains connecting the grips or catches on each side of the slide-rails together, springs connected to the lower ends of said chains and to the cage, and connections between the upper ends of said chains and the bell-cranks whereby the free ends of the grips or catches are thrust through the openings in the guides and into impinging engagement with the slide-rails upon the removal of the weight of the cage from the supporting-rod and cable, substantially as described.

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

GOTTFRID SCHULZE.

Witnesses:

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W. C. SCHULZE.