H. C. GUFFEY.

SAFETY APPLIANCE FOR ELEVATORS.

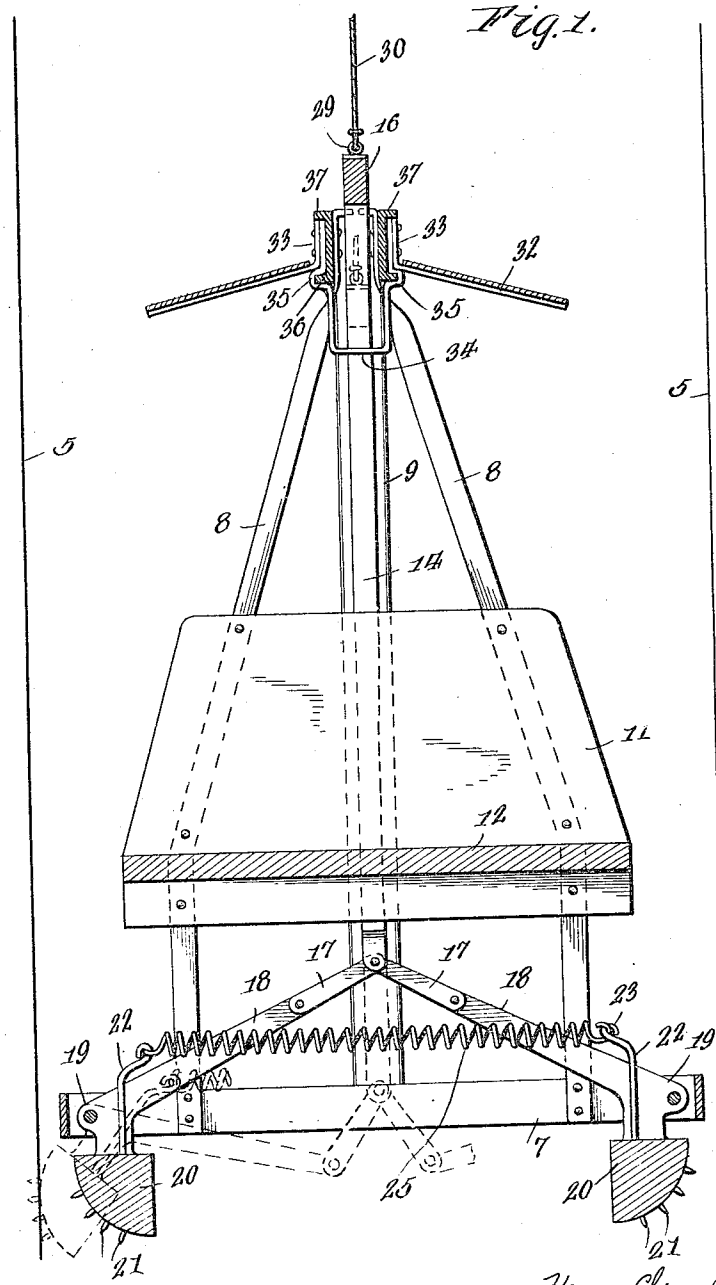
APPLICATION FILED JULY 18, 1913.

1,124,609.

Patented Jan. 12, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

G. M. Spring.

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Inventor

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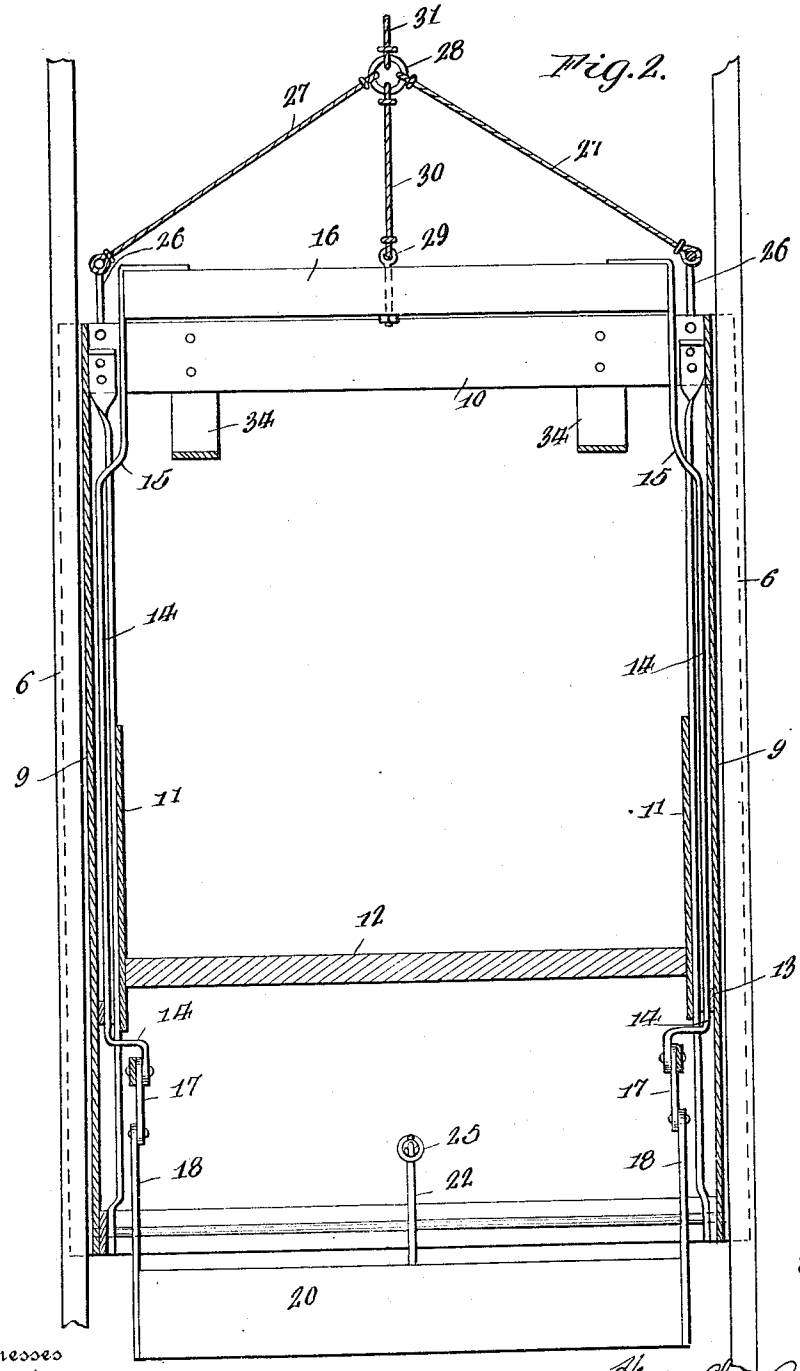
APPLICATION FILED JULY 18, 1913.

1,124,609.

Patented Jan. 12, 1915.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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SAFETY APPLIANCE FOR ELEVATORS.

1,124,609. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed July 18, 1913. Serial No. 779,689.

To all whom it may concern:

Be it known that I, HENRY CLAY GUFFEY, a citizen of the United States, residing at Herrin, in the county of Williamson and State of Illinois, have invented certain new and useful Improvements in Safety Appliances for Elevators, of which the following is a specification.

This invention relates broadly to elevators and more particularly to safety appliances which are especially adapted for use in connection with elevator cages and has for its primary object to provide a novel and useful form of safety catch for automatically retarding the movement of the cage when tension is released from the elevating element due to breakage or the like.

Another object of this invention is to provide a safety appliance which is slidably mounted in the elevator cage, one end thereof extending beyond the upper end of the cage, and having engagement with a power element which is used for elevating the cage in the shaft, the opposite end of the appliance extending below the cage, being in engagement with suitable catches which are thrown laterally beyond the sides of the cage into engagement with the curbing of the shaft when tension is released from the upper end of the appliance as by the breaking of the cables or the like which are engaged therewith and the power element.

A further object of the invention resides in a peculiar formation of top or cover for the cage, which is detachably associated therewith and has formed thereon a suitable element which engages with the one end of the safety appliance, when the same is operated in the cage, for limiting the movement thereof.

Other objects as well as the nature, characteristic features and scope of my invention will be more readily understood from the following description taken in connection with the accompanying drawings and pointed out in the claims forming a part of this specification.

Referring to the drawings:—Figure 1 is a transverse longitudinal sectional view of my improved device showing the relative positions of the safety appliance, the one being shown in dotted lines. Fig. 2 is a sectional view taken through the longitudinal center of my improved device disclosing the connection of the cage with the elevator shaft, one of the safety catches being shown in elevation.

In the drawings wherein is illustrated the preferred form of my invention in order to properly illustrate the application of the same, a shaft curbing 5 is provided which is made of a suitable penetrable material preferably wood, and has arranged on two of the opposite sides thereof vertical guide bars 6.

My improved cage comprises a base portion, which is made of a rectangular metal frame 7, being of such a dimension as to be freely operable in the elevator shaft, and has extending therefrom a plurality of standards 8, a pair of which are arranged on two of the opposite sides of the rectangular member 7, said rectangular member having likewise extending upwardly therefrom vertical channel irons or shoes 9 which are slidably engaged with the vertical guides 6. The standards 8 and the shoes 9, are secured at the upper end to a pair of horizontal bars 10, the horizontal bars being supported by the channel irons or shoes 9. Rigidly secured to the standards 8 are side plates 11, each of which has connection adjacent its lower end to a platform 12, as shown to advantage in Fig. 2 of the drawings. The platform 12 may be made of wood, metal or any suitable material and is secured to the sides 11 in any suitable manner as desired. Each of the sides 11 has formed on the outer face thereof a loop-strap 13, which is slidably engaged with the outer face of the channel shoes 9, the loop-straps 13 being for the purpose of facilitating the operating of the sides 14 of the safety appliance.

The safety appliance in the present instance comprises the sides 14 heretofore mentioned, the upper ends of which are offset as indicated at 15, and the terminals of the offset portion engaging with a horizontal bar 16. The opposite ends of the sides 14 are in engagement with a pair of links 17, the links being pivotally engaged with arms 18, and the arms in turn pivotally engaged with the rectangular frame 7. Each of the arms 18 has an ear 19 formed thereon through which is formed an aperture for engagement with a pivot pin, said arms 18 being deflected and extended downwardly from the ears 19, said extended ends having arranged thereon catches 20 which are

shown in the present instance to comprise segmental blocks, the curved face of each of which has formed thereon a plurality of teeth or spurs 21. Arranged approximately midway the ends of each of the segmental blocks 20 is a rod 22 which has formed on the upper end thereof an eye 23, each of the eyes 23 having engagement with a coil spring 25. Bridged between each of the horizontal bars 10 and secured adjacent the opposite ends thereof is a yoke member 26 which has extending therefrom cables 27, the cables having engagement at the center of the cage at a point above the same, with a ring 28. Secured to the horizontal bars 16 of the safety appliance is an eye-bolt 29, the eye of which is engaged by the one end of a cable 30, the opposite end thereof having engagement with the ring 28. The ring 28 has engagement with the elevating element, in the present instance being shown as a cable 31, which is secured to a suitable power element above the elevator shaft.

It is well known, that not only loads of coal, ore, etc., are carried on the platform 12, but likewise animals and persons working in the mines or the like, with which the elevator shaft communicates, and with this in view I have devised an improved cover for the cage as indicated at 32 which comprises a pair of metallic plates, each of which have secured to the bottom face thereof straps 33, the straps being engaged with a U-shaped element 34, said element being depressed adjacent each end thereof as indicated at 35, the depressed portions 35 being disposed over a flange 36 which is formed on each of the horizontal bars 10, and having engagement beneath the flanges 37, which are likewise formed on the horizontal bars 10 at a point above and in registering relation with that of said first mentioned flanges. The object in providing the U-shaped member 34 which extends inwardly toward the platform 12, is to provide a stop for limiting the movement of the horizontal bar 16 of the safety appliance, when the pressure has been released from the elevating cable 31, as it will be seen that the bar 16 descends and engages with the U-shaped members 34 as indicated by the dotted lines in Fig. 1.

In operation the load is placed on the platform 12 of the cage, and the same allowed to be operated in the elevator shaft, in the ordinary manner, through the medium of the power element which is secured to the cable 31. If during either the descent or ascent of the cage, the cable 31 is broken, it will be seen that the pressure is released from the bar 16, thereby allowing the same to drop, which operation will cause the segmental blocks 20 to be thrown outwardly into engagement with the penetrable sides 5 of the shaft in view of the fact that the spring 25 is constantly under tension while pressure is exerted on the cable 31. The teeth 21 which are formed on the segmental blocks 20 engage the sides of the shaft so as to retard the course of the cage, should the cable be accidentally broken, the inward movement of the bar 16 which forms the upper portion of the safety appliance, being limited in its downward course in view of the U-shaped elements 34, thereby preventing the turning of the segmental blocks 20 should undue pressure be exerted on the platform 12 during the accidental descent of the cage. As soon as it is desired to release the cage from within the elevator shaft, a suitable power element is placed in engagement with the ring 28 so as to cause the elevation of the bar 16, this operation disengaging the segmental blocks 20 from the penetrable sides 5, thereby allowing for the cage to be readily operated again either in an upward or downward course as desired, without the necessity of changing any of the parts or repairing the shaft in any way, which very often has to be done in safety appliances now in use. When the bar 16 is elevated as above stated, it is obvious that the spring 25 is again placed under tension, so as to automatically operate the brakes 20, should the elevating cable again be broken.

It will be understood that the above description and accompanying drawings comprehend only the general and preferred embodiment of my invention and that various minor changes in detail of construction, proportion and arrangement of the parts may be made within the scope of the appended claims and without sacrificing any of the advantages of my invention.

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

1. In combination with an elevator shaft, a cage slidably mounted in said shaft, a safety appliance slidably mounted in said cage, the upper end thereof normally lying in a plane above that of the cage, catches engaged with the lower end of said appliance adapted to be swung laterally into engagement with said shaft when pressure is released from the upper end of said appliance, said catches comprising segmental blocks, teeth carried by said blocks, arms pivotally engaged with said cage having one end of each engaged with one of said blocks and the opposite end thereof in pivotal connection with the lower end of said appliance, means interposed between said blocks and having engagement therewith for forcing said blocks laterally beyond said cage when pressure is released from the upper end of said appliance, and U-shaped members depending from said cage for limiting the movement of said appliance therein.

2. In combination with an elevator shaft having a pair of vertical guides, a cage, two opposite sides of which slidably engage said vertical sides, a safety appliance mounted for movement in said cage, said appliance comprising a pair of vertical bars, arms pivotally engaged to said vertical bars, and segmental blocks secured to the terminals of said arms, teeth formed on said segmental blocks for engagement, at times, with the sides of said elevator shaft, a horizontal bar connected to said vertical bars at the upper end thereof, an elevating cable engaging with said horizontal bar for normally holding the same beyond the upper end of the cage, a spring arranged between said segmental blocks, approximately midway the ends thereof for engaging said teeth with the sides of said shaft when tension is released from said horizontal bar and means for limiting the downward movement of said bar.

3. In combination with an elevator shaft having penetrable sides and a pair of vertical guides arranged on two of the sides, of a cage, a safety appliance for said cage including bars vertically slidable in said cage, a horizontal bar connecting said vertically slidable bars at their upper ends, an elevating cable connected with said horizontal bar, links pivotally carried by said vertical bars, arms, the one end of each of which is pivotally engaged with said links, ears formed adjacent the opposite end of each for pivotal engagement with said cage, a catch carried by each of the opposite ends of said arms, said catches comprising segmental blocks, and teeth arranged on said segmental blocks for engagement with said penetrable sides when tension is released from said elevating cable.

4. In combination with an elevator shaft, penetrable sides in said shaft, and a pair of vertical guides arranged on the two opposite sides of said shaft, of a cage, channel shoes arranged on two of the opposite sides of said cage and extending the entire length of the same for engagement with said vertical guides, a safety appliance slidably arranged in said cage, said appliance comprising a pair of vertical bars, a horizontal bar connecting said vertical bars at the upper ends thereof, an elevating cable connected with said horizontal bar, links pivotally connected to said vertical bars at their lower ends, arms, the one end of each of which is pivotally engaged with one of said links, ears formed adjacent the opposite end of said arms for pivotal engagement with said cage, a catch carried by each of said arms, said catches comprising segmental blocks, teeth arranged on said segmental blocks, a spring extending transversally of said cage and having engagement with said catches midway the ends thereof for engaging said teeth in said penetrable sides when tension is released from said elevating cable, and means lying in the path of said horizontal bar for limiting its movement when tension is released therefrom.

5. In combination with a shaft having penetrable sides, of a cage comprising a frame, and a platform arranged in said frame adapted for transporting materials from one end of said shaft to the other, a safety appliance slidably mounted in said cage including vertical bars, arms pivotally carried by said vertical bars at the one end thereof, a horizontal bar connecting said vertical bars at the opposite ends thereof, an elevating cable secured to said horizontal bar for normally holding the same beyond the upper end of the cage, a segmental block carried by each of said arms, teeth formed on each of said blocks, said blocks normally lying within the plane of said cage, a spring arranged in said cage, the opposite ends thereof having engagement with said segmental blocks, for throwing the teeth thereof beyond the sides of the cage into engagement with the penetrable sides of said cage when tension is released from said elevating cable, means lying beneath said horizontal bar in the path thereof, for limiting its downward movement thereof when tension is released from said elevating cable.

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

HENRY CLAY GUFFEY.

Witnesses:
J. D. GUFFEY,
MAT THOMAS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."