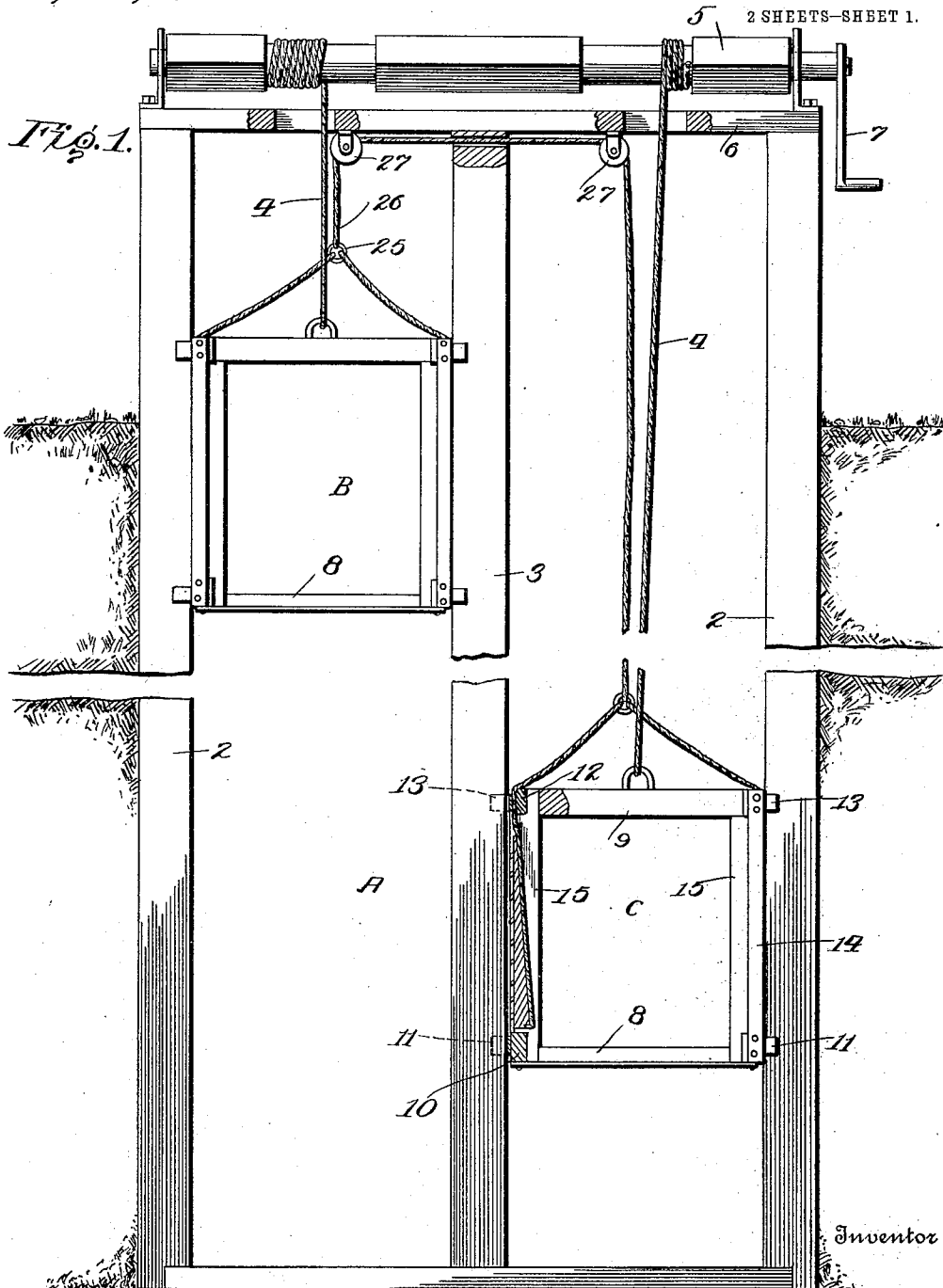


M. F. LAWSON.
SAFETY ATTACHMENT FOR ELEVATORS.
APPLICATION FILED FEB. 25, 1911.

1,007,579.

Patented Oct. 31, 1911.

2 SHEETS-SHEET 1.



Witnesses
W. P. Woodson
Juana M. Fallin

By

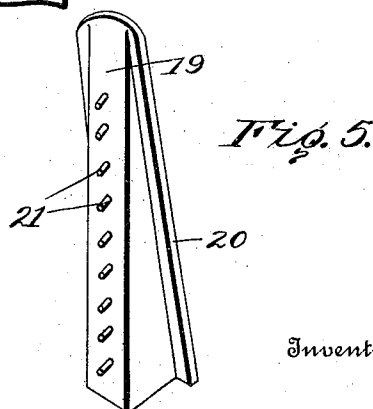
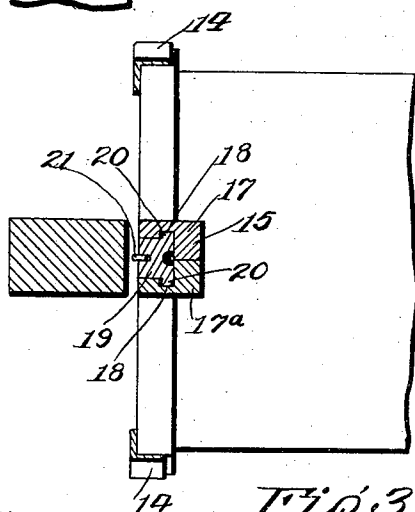
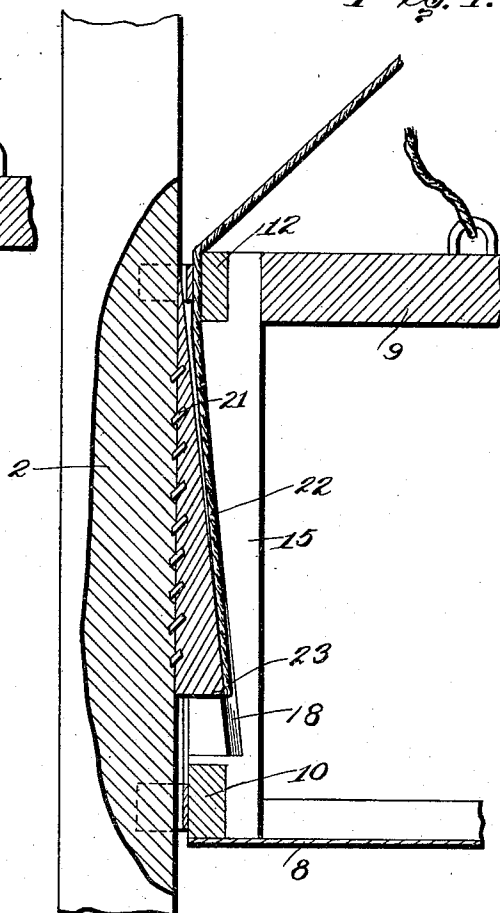
M. F. Lawson

H. A. Saenger

Attorneys.

1,007,579.

2 SHEETS—SHEET 2.



Witnesses 74
W. N. Woodson.
Juana M. Gallin.

By

Hammacy, Attorneys.

UNITED STATES PATENT OFFICE.

MOSES F. LAWSON, OF STONEGA, VIRGINIA, ASSIGNOR OF ONE-FOURTH TO JOSEPH MATZ, OF STONEGA, VIRGINIA.

SAFETY ATTACHMENT FOR ELEVATORS.

1,007,579.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed February 25, 1911. Serial No. 610,877.

To all whom it may concern:

Be it known that I, MOSES F. LAWSON, citizen of the United States, residing at Stonega, in the county of Wise and State of Virginia, have invented certain new and useful Improvements in Safety Attachments for Elevators, of which the following is a specification.

My invention relates to safety appliances for elevators and while particularly applicable to elevators designed to be used in mines, is capable of more extended application.

The primary object of the invention is to provide a very simple and efficient safety appliance which may be applied to elevators, and designed to stop the elevator cage in case the hoisting rope breaks.

This safety device or appliance includes wedge-shaped grooved slides arranged upon opposite sides of the elevator cage and capable of engagement with the guide rails that run from top to bottom of the shaft, these slides being normally in such position that they do not engage the guide beams, but being provided with mechanism whereby, when the hoisting rope breaks, the slides will exert a wedging action against the guide beams, the slides being provided with projecting teeth which bite into the guide beams, thus holding the elevator cage suspended and preventing its further descent.

In the drawings I have shown my improved safety appliance as being applied to a pair of mine cages disposed in a mining shaft, but I wish it understood that the device might be applied to any form of elevator.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is an elevation of a mining shaft equipped with cages, the elevators having my appliance attached thereto, one of the cages being partly in section. Fig. 2 is a fragmentary sectional view of one side of a cage showing the safety appliance in its normal position, the guide being in elevation. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a like view to Fig. 2, the guide-beam being partly in section

however, and the slide-block of the safety appliance being engaged with the guide to support the cage. Fig. 5 is a perspective detail view of one of the gripping blocks.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

The shaft in which the elevators move is designated A and may be of any suitable or ordinary construction, this shaft being provided at opposite sides with the vertical guide beams 2, and at its middle with the guide beam 3. Between the guide beam 3 and the guide beams 2 move the elevator cages B and C. These are each supported by a hoisting rope 4. These hoisting ropes 4 extend upward through the shaft of the elevator and are connected at their upper ends to any suitable hoisting apparatus. Preferably, and as usual in mining elevators the hoisting ropes of both cages are passed over a winding drum or shaft 5, the respective hoisting ropes being wound thereon in reverse directions, so that as the shaft 5 is rotated in one direction one of the cages will descend and the other rise and as it is rotated in the reverse direction, a reverse action will take place. I have shown these hoisting ropes 4 as passing over a drum 5 having a crank 7 and mounted upon a suitable beam 6, but I do not wish to be limited to any construction of this character.

Both cages are alike, and hence description of one cage will be sufficient. Each cage consists of a platform 8 of any suitable character supported from a transverse beam 9, the platform being provided at its ends with transverse braces 10 having outwardly turned ears 11 for engagement with the guides 2 and 3 while the beam 9 is also provided with transverse braces 12, each having outwardly projecting ears 13 engaging with the guides 2 and 3. The hoisting rope 4 is attached in any suitable manner to the middle of the beam 9. The braces 12 are connected to the braces 10 by means of downwardly extending supporting bars 14.

Extending between the platform 8 and the beam 9 and connected to the platform 8 and beam 9 are the vertical members 15, these members being cut away on their lower ends

so as to fit over the beams 10 and at their upper ends being cut away so as to fit behind the braces 12, the beam 9 being recessed upon its face as at 16 to accommodate the vertical members 15. Preferably, the vertical member 15 on each side is formed in two sections 17 and 17^a, the sections being connected by straps or in any suitable manner. The sections on their inside faces are provided with upwardly and outwardly inclined grooves 18, the groove 18 of one section being oppositely disposed to the groove in the other section. These grooves, as will be seen from Fig. 4, approach the outer surface of the members 15 as they extend upward and form upwardly and outwardly inclined guideways. Mounted in each of these guideways and freely movable therein is a wedge-block 19, illustrated in detail in Fig. 5, this block tapering upwardly toward its upper end and being provided at its base with the laterally projecting flanges 20, which are adapted to be received within the guide grooves 18. The face of each wedge-block is provided with outwardly and downwardly projecting teeth 21 preferably formed by driving sharp pointed pins into the face of the block, these pins being downwardly turned. When the slide or block is forced outward, these pins will be forced into the wood of the guide beams 2 and 3. The rear face of the slide or block 19 is longitudinally channeled as at 22 and attached to the lower end of the block, as at 23, is a flexible connection 24 which is carried in the grooves 22. The flexible connections 24 extend from the slide blocks on opposite sides of each elevator cage and are connected at 25 to a flexible connection 26 which is designed to move in unison with the hoisting rope 4. The upper end of the flexible connection 26 might be connected to any suitable means for letting out or taking in the flexible connection 26, providing said device, while permitting the movement of the connection in unison with the hoisting rope retarded the movement of the flexible connection 26 from a speed greater than the normal movement of the hoisting rope, but I have shown for this purpose the flexible connection as being attached to two independent elevator cages located in separate shafts, one elevator cage acting therefore like a counterweight upon the rope and causing the connection 26 to move in unison with the hoisting rope, the two cages moving in opposite directions.

In mining shafts there are usually provided two cages which are connected to a common windlass or winding drum, as previously described, so that as one cage rises the other descends. Where this arrangement is used, the cable 26 preferably passes over pulleys 27 attached to the beam 7 and disposed above each elevator or cage, and

the ends of the flexible connection 26 are each attached to the flexible connections 24 passing to the sliding blocks of each cage.

The operation of the invention is described as follows:—Under normal circumstances when one cage rises the other cage descends. As a consequence, the flexible connection 26 is constantly moving in unison with the rise of one cage and the descent of the other cage, and in unison with the hoisting ropes 4. When one of the hoisting ropes breaks, and the cage starts to fall, the flexible connection 26, not moving in unison with the falling cage will act to draw the slide blocks 19 upward. As they are drawn upward they move outward and the wedging action of the guide grooves 18 forces the slide blocks into binding engagement with the guides 2 and 3, thus arresting the further descent of the cage and holding it suspended. It will be seen from the drawings that the slide-blocks are approximately as long as the distance between the platform and the beam 9 and that, as a consequence, the slide blocks will have a very extended area of engagement with the guide beams and that the wedging action will force these slide-blocks into positive engagement with the guide beams. The cage will not be supported merely at one point by the slide-blocks, and furthermore, the slide blocks being provided with projecting pin-like teeth there will be a positive engagement between the slide-blocks and the beams. The supports or casings 15 are made in two sections so that the side-blocks may be readily put in place, and these casings or members 15 are prevented from any inward movement by their engagement at one end with the beam 10 and at the other end with the beam 9.

My invention is simple, can be easily applied to elevators now in use, and is particularly advantageous in that it does not depend upon springs, weights, or other like devices for its actuation. If, for any reason a descending cage falls more rapidly than the ascending cage rises, the slide-blocks may be drawn into place, and without any manual actuation and without any complicated system of levers or governors.

Having thus described the invention what is claimed as new is:—

1. In an elevator mechanism, the combination with oppositely disposed vertical guide beams, of a platform, a hoisting rope connected therewith, oppositely disposed vertically recessed supports on the platform, each having an outwardly and upwardly inclined guide, upwardly tapering wedge shaped slide blocks disposed one in each recess opposite to the face of the guide beam, a flexible connection independent of the hoisting rope passing over the upper ends of the vertical supports and extending into said re-

cesses and attached to the lower end of each slide block, and means for raising or lowering the flexible connection to the slide blocks in unison with but independent of the hoisting rope.

2. In an elevating apparatus, the combination with oppositely disposed guide beams, of a platform, a hoisting rope connected thereto, oppositely disposed vertically recessed supports on the platform, each recess having oppositely disposed outwardly and upwardly inclined grooves in its side walls, upwardly tapered wedge-shaped slide-blocks disposed in each recess and located opposite to the guide-beams, each guide block having rear flanges at its base engaging said grooves and being provided on its outer face with downwardly projecting teeth, the rear faces of the slide blocks being vertically grooved, a flexible connection attached to the lower end of each slide-block and disposed in said groove therein, means for raising or lowering the hoisting rope, and means for raising and lowering the flexible connection in unison with the hoisting rope.

3. In an elevating apparatus, the combination with a middle guide beam and lateral guide beams forming separate elevator shafts, of elevator platforms disposed one in

each shaft, a hoisting rope connected to each elevator platform, a winding drum to which the hoisting ropes are connected, the hoisting ropes being so arranged upon the drums that as one platform is lowered, the other platform is raised, oppositely disposed vertically recessed supports on each platform, said supports being located opposite to the adjacent guide beam, each recess of each support having oppositely disposed outwardly and upwardly inclined grooves in its side walls, tapering wedge-shaped slide-blocks disposed in each recess, and having base flanges engaging said grooves, each slide block being provided on its outer face with a plurality of downwardly projecting pins forming teeth engageable with the guide beams, the rear faces of each slide block being grooved, and a flexible connection connected to the lower end of each slide-block and extending upwardly through said groove, the flexible connections of one pair of slide-blocks being connected to the pair of slide-blocks on the other platform.

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

MOSES F. LAWSON. [L. s.]

Witnesses:

W. D. STEVENS,

W. A. JOHNSON.