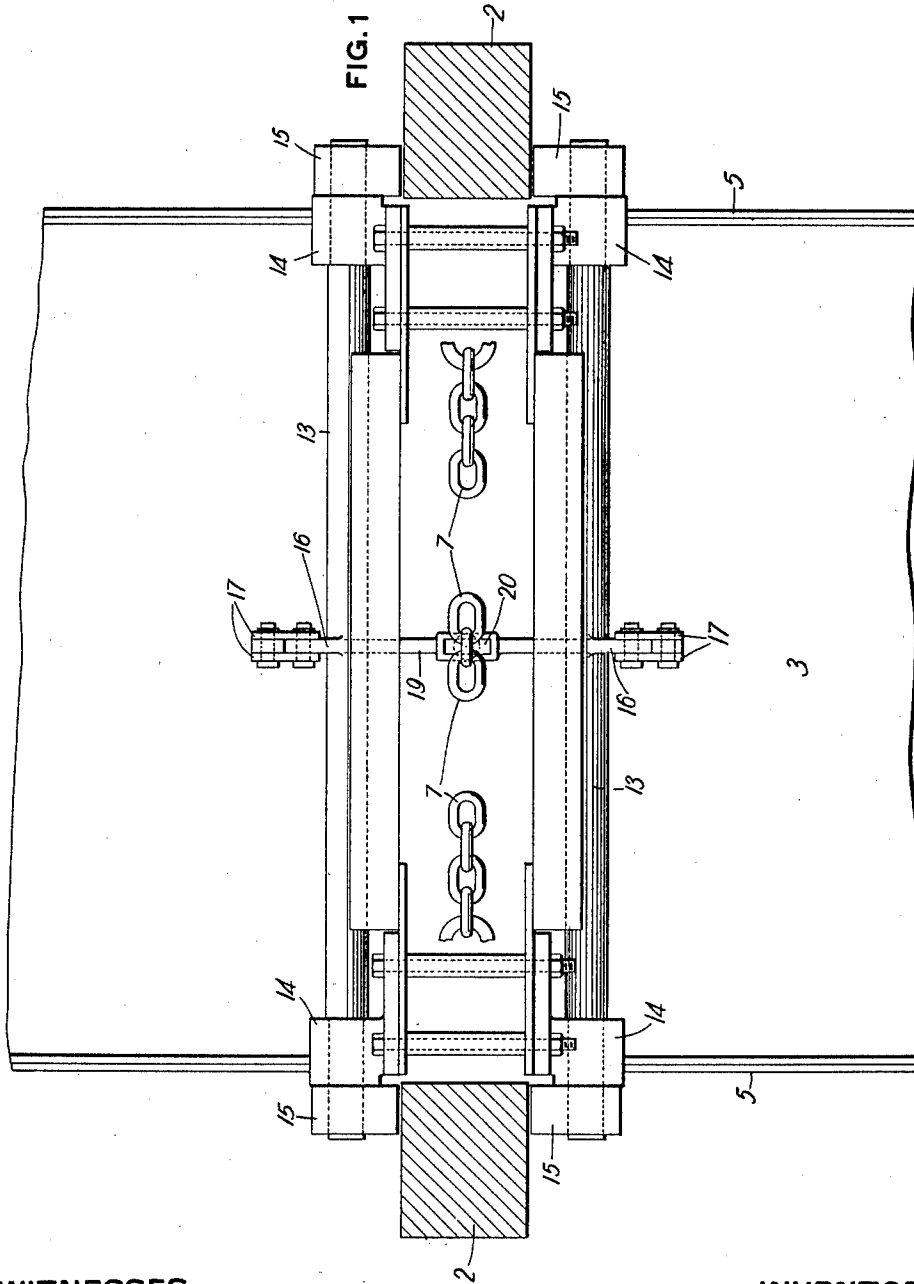


G. E. HUTTELMAIER.
SAFETY APPLIANCE FOR MINE CAGES.
APPLICATION FILED FEB. 24, 1912.

1,061,747.

Patented May 13, 1913.

2 SHEETS—SHEET 1.



WITNESSES

R. D. Little
Chas. Lorterman

INVENTOR

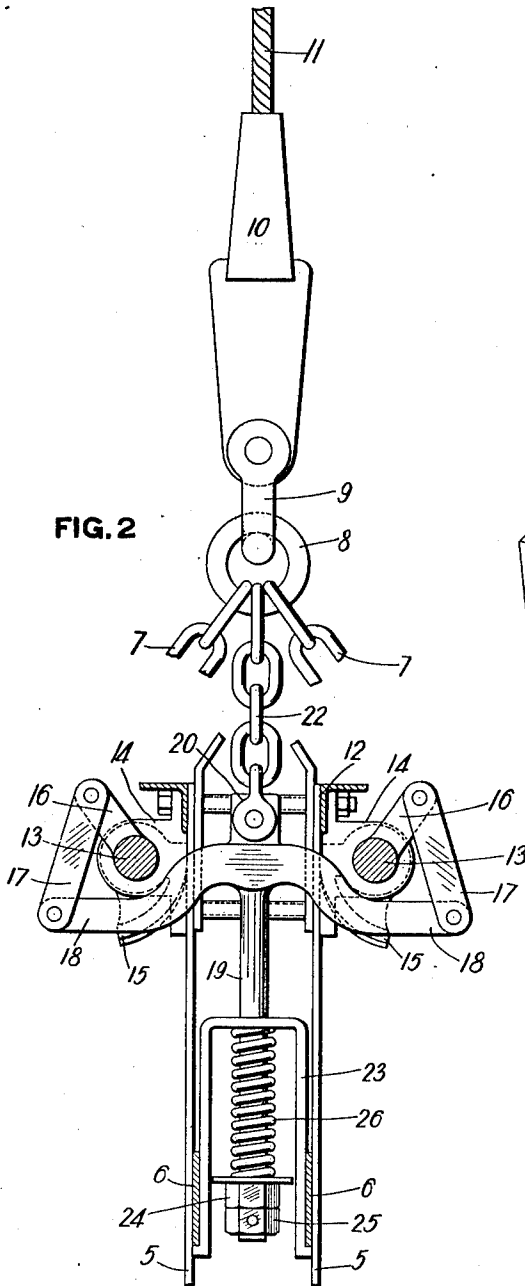
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by Luthin, Beck & Fuller
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WITNESSES

A. Little
Chas. Foersterman

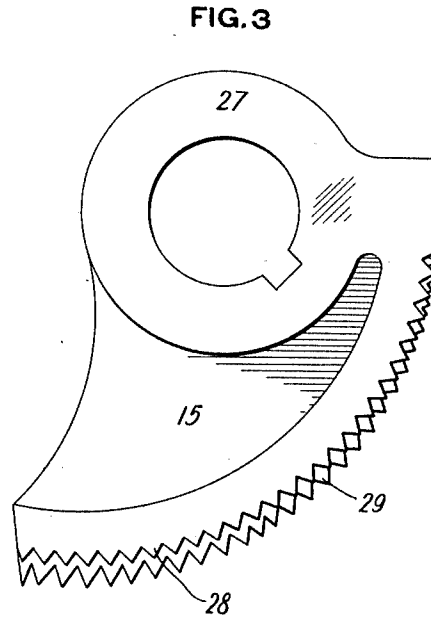


FIG. 3

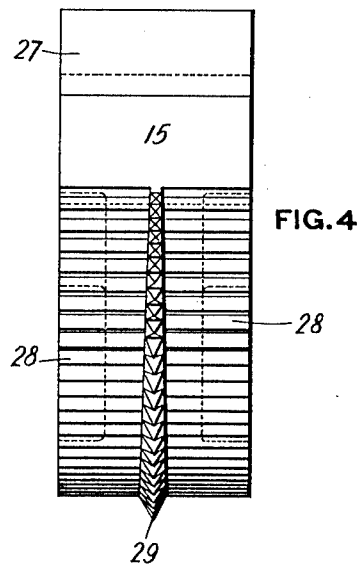


FIG. 4

INVENTOR

G. E. Huttelmaier
by Luthrium Best & Fuller
his Attorneys

UNITED STATES PATENT OFFICE.

GUSTAVE E. HUTTELMAIER, OF SCOTTDALÉ, PENNSYLVANIA.

SAFETY APPLIANCE FOR MINE-CAGES.

1,061,747.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed February 24, 1912. Serial No. 679,581.

To all whom it may concern:

Be it known that I, GUSTAVE E. HUTTELMAIER, a citizen of the United States, residing at Scottdale, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Safety Appliances for Mine-Cages, of which the following is a full, clear, and exact description.

10 My invention relates to the safety catches employed in connection with the mine cages or hoists used in mine shafts in preventing accidental dropping of the mine cages to the bottom of the mine shaft and the avoidance
15 of damage to the hoisting apparatus and possible loss of life resulting from such dropping of the mine cage as would possibly be occasioned by breakage of the hoisting cables or accident to the hoisting mechanism.

20 One object of my invention is to provide a safety catch for mine cages having novel means whereby the operation of the safety catch is furthered and insured and liability
25 of slippage of the safety catches in case of breaking of the hoisting rope of the mine cage or other accident to the hoisting mechanism is overcome and prevented.

Referring to the accompanying drawings,
30 Figure 1 is a plan showing the safety catch forming this invention as applied for use to the hoisting cage of a mine shaft. Fig. 2 is a sectional end elevation of a part of the apparatus shown in Fig. 1. Fig. 3 is a
35 side elevation, on an enlarged scale, showing a detail of the safety cam as constructed in accordance with this invention. Fig. 4 is a detail front elevation, on an enlarged scale, of the cam shown in Fig. 3.

40 In the drawings the numeral 2 designates timbers forming guides for the mine cage which are located on opposite sides of the mine shaft and which extend vertically downward within the shaft to the bottom of
45 the mine, and 3 is the platform of the mine cage which is suspended in the shaft so as to be raised and lowered therein. Oppositely facing angles secured on each of opposite sides of the platform 3 form slides or shoes
50 which engage with the sides of the timbers forming the guides 2 during the operation of the platform 3. The floor or platform 3 of the cage is connected by vertical members 5 on the sides of the platform 3 with the
55 horizontal cross frame 6 above the cage platform 3, and the frame 6 is connected by the

lifting chains 7 with the ring 8 to which one end of each diagonal chain 7 is attached. The chain ring 8 is connected by the clevis 9 to the rope socket 10 which is secured to one
60 end of the hoisting rope or cable 11.

Above the frame 6 and forming an auxiliary cross frame is the girder or beam 12 which is rigidly secured to the frame 6, and on the sides of the beam 12 are the parallel
65 horizontal shafts 13 mounted in bearings 14 which are secured to the beam 12.

Keyed or otherwise secured on each end of the shafts 13 is a safety cam 15, these cams when constructed in accordance with this
70 invention being arranged to engage with the sides of the guides 2 when freed, as for example, by breakage of the hoisting cable. The shafts 13 at about the middle of their
75 length each have a lever arm 16 formed integral therewith or otherwise rigidly fastened thereto, and the outer ends of the
80 lever arms 16 are connected by links 17 to the outer ends of the arms 18 forming part of the T shaped bolt 19. The T shaped bolt 19 has a lug 20 on its upper end to which
85 one end of a lifting chain 22 is fastened, the other end being secured to the ring 8 to which one end of the cage lifting chains 7 is fastened.

Secured to the frame 6 of the platform 3 is a U shaped yoke 23 having an opening in its upper end through which the shank of the T shaped bolt 19 extends.

Between the upper end of the yoke 23 and
90 the nuts 24, 25 on the lower end of the T shaped bolt 19 is a helical spring 26 which is of a length offering such resistance to being closed as to be very nearly compressed when the weight of the cage is being carried
95 by the lifting chain.

Referring now particularly to the safety cam 15, the construction of which forms an important and novel feature of this invention, it will be seen by reference to Figs. 3
100 and 4 that the cam 15 comprises a hub portion 27 by which it is secured on the shaft and the cam face which is constructed so as to be eccentric to the axis of the hub 27 and the shafts 13 on which the cams are
105 mounted. The outer surface of the cam face is provided with V shaped serrations or teeth 28 arranged to extend transversely across the width of the face of the cam and in about the middle of the width of the
110 toothed face of the cam is a series of spikes or spurs 29 forming feeding teeth, which

may be triangular, rectangular, or polygonal in cross section and have pointed outer ends and which are arranged to extend beyond the apex of the parallel V shaped serrations 5 28 on the face of the cams 15. The spikes or spurs 29 forming the feeding teeth vary in length and the length increases from the end one of the series of spikes toward the opposite end spike as will readily be seen by 10 reference to Figs. 3 and 4.

In the operation of my improved safety appliance the faces of the cams 15 forming part of the safety catch are held out of engagement with the adjoining faces of the 15 shaft guides by means of the weight of the cage on the chain 22 so long as the hoisting rope and other connecting hoisting mechanism remains intact.

In the event of breakage or accident to the 20 hoisting rope 11 or other part of the hoisting mechanism by which the cage 3 is raised and lowered in the mine shaft, the lifting chains 7 and 22 will be released, and when these chains are released the spring 26 on the 25 T shaped bolt 19 extends itself so as to increase in length and move the T shaped bolt 19 vertically relatively to the upper cross frame 12. This movement of the T-shaped bolt actuates the connecting links 17 and 30 through the lever arm 16 rocks the cam shaft on the auxiliary frame 12. The rocking movement of the cam shafts 13 moves the spurs 29 on the safety cams into contact with the faces of the timbers forming the guides 35 2, and the weight of the then free and dropping cage 3 brings the serrated cam faces into gripping engagement with the guides 2. When the toothed surfaces of the cams en-

gage with the guides, the pointed spikes or spurs 29 on the cam surfaces readily bite 40 into or enter the surfaces of the guides 2 and the farther the cams 15 are rocked, the deeper the projecting spikes 29 will enter the timbers forming the guides and in this way the possibility of the cam surfaces not 45 gripping the guides and of slipping thereon in the event of accident to the hoisting cable is prevented and rendered impossible.

The advantages of my invention will be apparent to those skilled in the art. The 50 safety cam as formed in accordance with my invention is simple and is easily kept in repair. Modifications in the construction and arrangement of the parts used in the operation of my improved cam or eccentric 55 may be made without departing from my invention as defined in the appended claim, since

What I claim is:—

In a safety appliance for mine cages, a 60 rotatable cam having an eccentric peripheral gripping surface, a series of V shaped serrations on said gripping surface, and a series of pointed spikes on said surface, said spikes 65 having a plurality of flat faces projecting outwardly beyond the apices of said serrations, and the length of said spikes increasing progressively from end to end of the gripping surface.

In testimony whereof, I have hereunto 70 set my hand.

GUSTAVE E. HUTTELMAIER.

Witnesses:

JESSE S. COOK,
J. W. SHERRICK.