

C. W. LANE.  
 Safety Attachment for Hoisting Cages.

No. 209,903.

Patented Nov. 12, 1878.

Fig. 1.

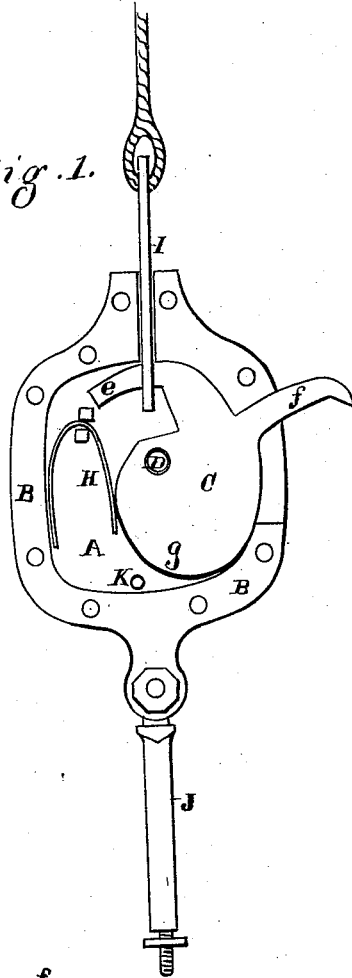
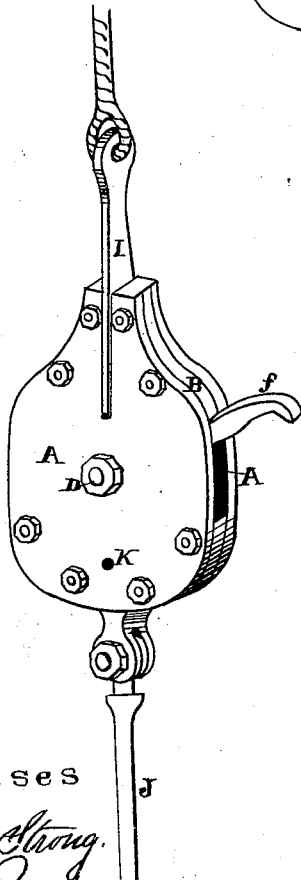


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SAFETY ATTACHMENTS FOR HOISTING-CAGES.

Specification forming part of Letters Patent No. 209,903, dated November 12, 1878; application filed May 16, 1878.

*To all whom it may concern:*

Be it known that I, CHARLES WILLIAM LANE, of Aurora, county of Esmeralda, and State of Nevada, have invented a Safety Attachment for Mine-Cages; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings.

My invention relates to a novel device for disconnecting a mining-cage or giraffe from the cable by which it is hoisted or lowered in a shaft or on an incline.

It consists of a device which is placed between the end of the cable and the cage, connecting them together, formed of a box or casing, in which is inclosed a latch having a hook formed on its upper end and a trigger projecting through the side of said case. This hook engages with a link on the end of the cable, and in case the cage is raised too high above the surface the trigger engages with a projecting bar or lug, placed in the proper position, so that the hook is disengaged from the link and the cage is released from the cable, being held in the guides by the usual safety appliances. The hook and trigger are formed in one piece, made in a peculiar shape, as hereinafter described, and a spring holds the catch, so that it can only be disengaged by means of the trigger.

Serious accidents often occur by a mining-cage being drawn up too far and going into the sheaves in the gallows-frame over the shaft, and very frequently lives are lost in this way. Many devices have been tried for the prevention of this kind of accident; but they are most of them either too complicated or necessitate material changes in the mechanism already constructed. My device is intended to act automatically when the cage is raised to any given point above the mouth of the shaft, its object being to disconnect the cable from the cage when it is raised too high and is in danger of being drawn into the sheaves. The usual safety apparatus for holding the cage on the guides catches the cage after the cable is disengaged from it. With this device no alterations whatever are made in the existing conditions of hoisting machinery, my device being applied to the cable just above the cage.

Referring to the accompanying drawings, Figure 1 is a sectional view of my apparatus. Fig. 2 is a perspective view of the same.

Let A A represent the sides of my device, and B B the edges, the sides and edges being made in separate pieces and joined together by bolts, so as to form one strong solid piece. The insertion of the edge-piece B between the sides A A leaves a cavity in the center between the sides, in which the operating mechanism, hereinafter described, is inclosed. In the center of this cavity is placed the latch C, which is held in place by the pin D, passing through the sides A. This latch C is formed of three parts in one—the hook *e*, trigger *f*, and cam *g*—and the latch revolves on the pin D, as shown. The trigger *f* projects through the edges B, outside of the sides, as shown. Inside of the case, and on the opposite side from the trigger, is secured the spring H, which presses against the cam-shaped portion *g* of the latch C.

Through the upper end of the edges and sides of the case is cut a slot, as shown, to admit the link I, connecting with the cable which holds the cage. This link has a slot formed in its lower end, through which the curved hook *e* of the latch C passes.

To the lower end of the safety device is the king-bolt J, connecting the safety device with the cage.

The operation of my device is as follows: The safety device is attached to the cage by means of the king-bolt J. By pressing down on the trigger *f* of the latch C said latch is revolved on the pin D until the end of the hook *e* is thrown back past the opening formed by the slot in the top of the sides and edges. Then the link on the cable is placed in the slot and the trigger released, when the spring H will close the latch and the hook *e* will pass through the slot in the lower end of the link I, and the cable and cage are connected.

At some convenient place on the gallows-frame, over the shaft, is placed a lug or projection, so arranged that in case the cage is hoisted too far this lug or projection will come in contact with the trigger *f* of the latch C. Depress it, and this releases the cage from the cable by drawing the hook *e* out of the slot in the lower part of the link on the cable. The

cage will then be held in the guides, and be prevented from falling down the shaft by the usual appliances for this purpose, now made to such perfection that the cage is held firmly at any point where the cable may be disengaged from it.

It will be seen that this appliance, which I have perfected, causes no changes in the essential features of hoisting apparatus, it being attached to the link at the end of the cable, where the cage is usually attached. The form of construction is such that it possesses great strength and comparative lightness. The edges and sides are solidly bolted together, and even should the pin D, on which the latch swings, break, the cage would not be separated from the cable, as the latch could not get out of the casing and release the link. The hook *e* on the latch is made with such a curve that it cannot be disengaged from the link except by means of the trigger *f*, as herein described.

By the lower part of the latch C being made cam-shaped, as shown, the spring operates in revolving it and throwing the latch back into position, as well as in holding it there when in place. The peculiar shape of the latch is such that the link cannot be disengaged from it by any other means than the trigger striking a projection, as described.

Holes K are formed in the lower part of the sides, so that any water which may run down

the cable in wet shafts and get into the center of the case will run out.

This device may be applied to cages in shafts, giraffes, or inclines, or any place where it is desired to disengage a cage or car from a cable or rope before it reaches any given point.

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

1. The case formed of the sides A A and the edge-piece B, to contain the latch C and connect the cage with the hoisting-rope, said sides being perforated at K, substantially as shown, and for the purpose herein described.

2. The latch C, composed of the hook *e*, the cam *g*, and the trigger *f*, formed in one piece, and mounted upon the pivot-pin D within the case A, in combination with the spring H, substantially as herein described.

3. The latch C, with the hook *e*, projecting trigger *f*, and cam G, in combination with the spring H, link I, and king-bolt J, and the inclosing and uniting case A, substantially as shown, and for the purpose herein described.

In witness whereof I hereunto set my hand and seal.

CHARLES WM. LANE. [L. S.]

Witnesses:

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