
Charles Shewan, of Plymouth, Pennsylvania.

Safety Device for Mine-Cages.

No. 889,408.


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To all whom it may concern:

Be it known that I, Charles Shewan, a citizen of the United States, residing at Plymouth, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Safety Devices for Mine-Cages; and do hereby declare the following to be 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 safety devices for supporting a mine cage when detached from the lifting-rope and for preventing overwinding; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a front view of the cage, showing the safety devices under normal conditions. Fig. 2 is a front view of a portion of the apparatus, showing the lifting-rope disconnected from the cage. Fig. 3 is a front view of a portion of the device, showing the action of releasing the lifting-rope. Fig. 4 is a vertical section through the cage, taken on the line x-x in Fig. 1.

A is a mine cage of any approved construction, provided with a crosspiece B at its upper part. C are vertical guides at the sides of the shaft, and c are shoes on the sides of the cage which slide upon the said guides. D is a main frame secured to the top of the crosspiece B, and d is a slidable auxiliary frame which moves vertically in the said main frame. E are two jaws for engaging a bulb or block F on the end of the lifting-rope f. These jaws are pivoted together and to the auxiliary frame d by means of a pin e, and they are provided with lugs e' which project outwardly from their upper ends. G is a stem secured to the bottom of the auxiliary frame d, and which slides in a hole in the crosspiece B. A spring g is connected to the lower end portion of the stem G so as to pull the auxiliary frame d downward in the main frame D, and g' is a protecting casing for the said spring to work in.

H are two parallel tappet-rods which are slidable vertically in guide holes in the said main and auxiliary frames and in the said crosspiece. Stops h are secured on the rods H inside the auxiliary frame d, and h' are springs interposed between the said stops and the bottom member of the said auxiliary frame, and normally holding the said stops in engagement with the lugs e' of the jaws E so that the bulb or block F is clamped tightly by the said jaws.

There are two leaves pivoted on fulcrum-pins i carried by brackets j' which are secured to the crosspiece B. These leaves are provided with slots for engaging with the fulcrum-pins i, so that the said leaves may have a slight longitudinal movement when turned on their fulcrum-pins. The leaves I are pivoted at their inner ends to the lower ends of the rods H by means of pins j, and J are connecting-rods pivoted to the outer ends of the said leaves by means of pins j'.

K are slidable serrated jaws arranged in pairs, and having the lower ends of the connecting-rods J connected to them by pins k. The serrated jaws K are provided with inclined slots k' which are slidable upon guides L secured to the side portions of the mine cage. The serrated jaws are arranged upon opposite sides of the vertical guide cages C, and when the cage is being raised by the lifting-rope the parts are in the positions shown in Fig. 1, the jaws being held clear of the guides. A stationary tappet or tappets t is arranged at the top of the mine shaft in the path of the rods H, and these tappets are supported in any convenient way.

When the lifting-rope breaks, the spring g pulls down the auxiliary frame and forces the serrated jaws into engagement with the cage guides, so that the parts assume the positions shown in Fig. 2, and the cage is prevented from falling. When the rods H strike the stationary tappet at the top of the mine shaft, the said rods are forced downward relatively to the cage against the tension of the springs k', and the stops h are moved out of engagement with the lugs e' of the rope-clamping jaws E, as shown in Fig. 3. This permits the bulb or block F of the lifting-rope to be drawn out of engagement with the clamping jaws E, and serrated jaws then engage with the cage guides and support the cage as hereinbefore described.

What I claim is:

1. The combination, with a mine cage, and its guides; of a vertically slidable frame carried by the said cage, a lifting-rope, a pair of jaws pivoted at their lower ends to the said frame, slidable stops carried by the said frame and normally holding the upper end portions of the said jaws in engagement with the said lifting-rope, safety-clutch mechan-
ism for engaging with the said cage guides operatively connected with the said stops, and means for sliding the said frame and applying the said clutch mechanism automatically when the cage is detached from the lifting-rope.

2. The combination, with a mine cage, and its guides; of a vertically slidable frame carried by the said cage, a lifting rope, a spring for depressing the said frame when the cage is detached from its lifting-rope, a pair of jaws pivoted to the said frame, spring-pressed stops for normally holding the said jaws in engagement with the lifting-rope, and safety-clutch mechanism for engaging the said cage-guides operatively connected with the said frame.

3. The combination, with a mine cage, and its guides; of a vertically slidable frame carried by the said cage, a lifting-rope, a spring for depressing the said frame when the cage is detached from its lifting-rope, clamping-jaws carried by the said frame, spring-pressed tappet-rods slidable in the said frame and provided with stops which normally hold the said jaws in engagement with the lifting-rope, safety-clutch mechanism for engaging the said cage-guides connected to the said tappet-rods, and a stationary tappet arranged in the path of the said tappet-rods.

4. The combination, with a mine cage, and its guides; of a main frame secured to the said cage, a lifting-rope a slidable frame movable vertically in the said main frame, a spring for depressing the said slidable frame in the said main frame, clamping-jaws for the lifting-rope pivoted to the said slidable frame, spring-pressed tappet-rods slidable in the said frames and provided with stops which normally hold the said jaws in engagement with the lifting-rope, safety-clutch mechanism for engaging the said cage-guides connected to the said tappet-rods, and a stationary tappet for actuating the said tappet-rods.

5. The combination, with a mine cage provided with a crosspiece, and guides for the said cage; of a main frame secured above the said crosspiece, an auxiliary frame slidable in the said main frame and provided with a stem which projects below the said crosspiece, a spring for depressing the said auxiliary frame connected to the said stem and arranged below the said crosspiece, a lifting-rope, jaws for coupling the said auxiliary frame to the lifting-rope, spring-pressed tappet-rods slidable in the said frames and provided with stops which normally hold the said jaws in engagement with the lifting-rope, safety-clutch mechanism for engaging the said cage-guides connected to the said tappet-rods, and a stationary tappet arranged in the path of the said tappet-rods.

In testimony whereof I have affixed my signature in the presence of two witnesses.

CHARLES SHEWAN.

Witnesses:
RALPH COOPER,
HARRY SORBER.