SAFETY DEVICE FOR BLASTING CAPS

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1. This invention relates to a safety device or housing for blasting caps so that they are guarded against being detonated during the tamping operation when the explosive, such as dynamite, is being applied to a blast hole and during the time the tamping operation is proceeding which will pack the charge, as is usually done in such operations.

It is an object of this invention to provide a case in which the cap is installed, said case having a cavity into which the end of the cap projects slightly, it being the intention of the inventors that the said cavity shall be supplied with a priming charge of dynamite or the like, which, when it explodes, will cause the firing of the blasting charge which may be in immediate contact with the case, it being understood that the case has apertures through which fire from the priming charge escapes to the explosive charge. By reason of the protecting case, the tamping operation cannot result in pressure on or jarring of the cap which otherwise would and often has resulted in a premature ignition of the blasting charge.

A further object of this invention is to provide a case and cap which, when assembled, may be regarded as an article of commerce, readily available for use and in condition for use except for the installation of the priming charge; and it is furthermore the purpose of the inventors to provide a case of the character indicated having capacity for holding two caps and their conductors, making a more certain operation, for if one cap is impaired and does not function, the other cap may be electrified.

A still further object of the invention is to provide a device of this character comprising comparatively few, inexpensive parts which have proven efficient and satisfactory in use.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention on detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a sectional view showing a blast hole and a device embodying the invention applied thereto;

Figure 2 illustrates a sectional view on the line 2—2 of Fig. 1; Figure 3 illustrates a view in elevation of the case, showing the cover in section;
Figure 4 illustrates a view in elevation, showing the opposite side of the device shown in Figure 3;
Figure 5 illustrates an exploded view of the case, cover and cap, omitting the conductors to the cap;
Figure 6 illustrates a sectional view of a case embodying a modification where two caps are employed;
Figure 7 illustrates a sectional view on the line 7—7 of Fig. 6; and
Figure 8 illustrates a view in elevation, partly in section, showing the cap interposed between explosive charges.

In these drawings 10 denotes the blast hole in a wall of material 11, such as coal, and, in practice, a plurality of explosive charges 12 are lodged in the blast hole, the said charges usually being dynamite. After the explosive charge is installed, a case 13 containing a detonating cap 14 is lodged in the hole against the explosive charge. The case has a channel 15 in which the cap is lodged, and the cap has electric conductors 16 connected to it, the said conductors, in the present embodiment, being extended transversely of the end of the case in a channel 17 and longitudinally thereof in a longitudinal channel 18, so that the conductors may be extended to a location outside of the hole and to a safe distance therefrom where they can be electrified for detonating the charge. The case has a cavity 19 in its end enclosed by an apertured cover 20, and it is intended that the fire from a priming charge 21 shall escape through the apertures 22 of the cap to the explosive charge in the bore or hole in the coal, rock, or the like, to be blasted.

In the modification shown in Figure 6, the case 23 has provision for housing two of the detonating caps such as 14 with their accompanying electric conductors for detonating them, and the two detonating caps project into a cavity in one end of the case, which cavity may contain the priming charge, and the case has a cover 24 with apertures for the escape of fire from the priming charge so that the explosive charge will be fired; and furthermore, in Figure 8 a modified arrangement is shown in which a detonating cap and the encasing member is interposed between explosive charges such as 12, and when the cap is detonated, fire from the priming charge will travel in two directions from the ends of the case so that the dual charges will be practically
3 simultaneously exploded. In all of the installations of the explosive charges, packing bags of encased earth or the like are lodged in the hole and properly tamped so that proper resistance to the explosion is provided and the force of the explosion will not blow out of the hole but will serve to exert lateral force for dislodging or breaking up the coal, rock, or the like.

While in the specification the terms “case” and “housing” have been employed as referring to the member 13, either such term will appropriately define what applicants have provided as a safety guard for the explosive cap to prevent premature explosion, and it is to be understood that the member 18 and the covering therefor 15 may be of any appropriate material such as wood, gutta-percha or plastic composition.

We claim:

1. A safety device for blasting caps adapted to be used with an explosive charge comprising a housing having an end closure with apertures therein, the said housing being provided with a recess adjacent said apertured end for receiving a priming charge, and the apertures being in communication with said recess, a seat extending longitudinally of the housing and merging with said recess, a detonating cap disposed within said seat, a channel communicating with and extending axially of said seat, electric conductors extending through said channel and being attached to said detonating cap for igniting said priming charge whereby fire from the primer escapes from said housing through the apertures for detonating the explosive charge.

2. A protector according to claim 1 in which the cap is lodged in a seat in the housing, and electric conductors extend approximately axially to the exterior of the housing, the housing having a lateral channel through which the electric conductors extend, and a circumferential groove on the housing in which the said conductors are secured so that the housing, cap and conductors produce an article of manufacture in which the parts are assembled for use.

3. A device as specified in claim 1 in which two caps project into said recess and an electrical conductor secured to each of said caps.

4. A safety device for blasting caps adapted to be used with an explosive charge comprising a housing having an end closure with apertures therein, the said housing being provided with a recess adjacent said apertured end for receiving a priming charge, and the apertures being in communication with said recess, a seat extending longitudinally of the housing and merging with said recess, a detonating cap disposed within said seat, a channel in said housing in communication with said longitudinally extending seat, electric conductors extending through said channel and being attached to said detonating cap for igniting said priming charge whereby fire from the primer escapes from said housing through the apertures for detonating the explosive charge.

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