Aug. 7, 1934. G. S. KELLEY 1,969,513

DUST DEFLECTOR

Filed July 27, 1932

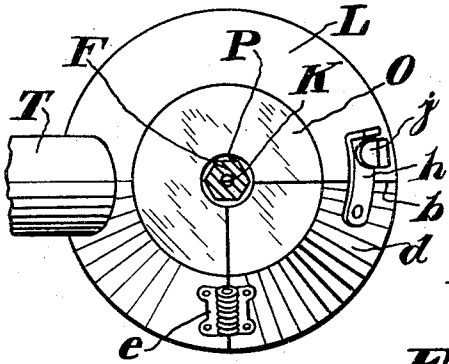

FIG.-3.

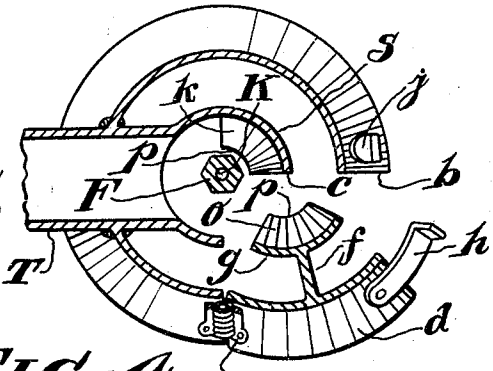

FIG.-4.

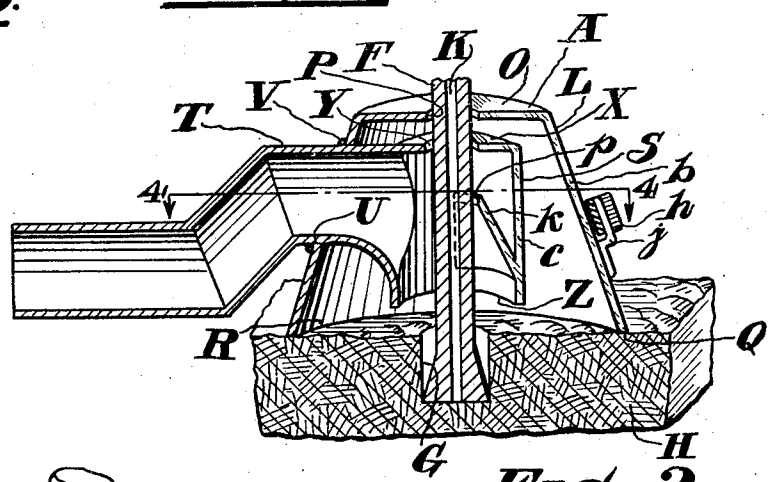

FIG.-2.

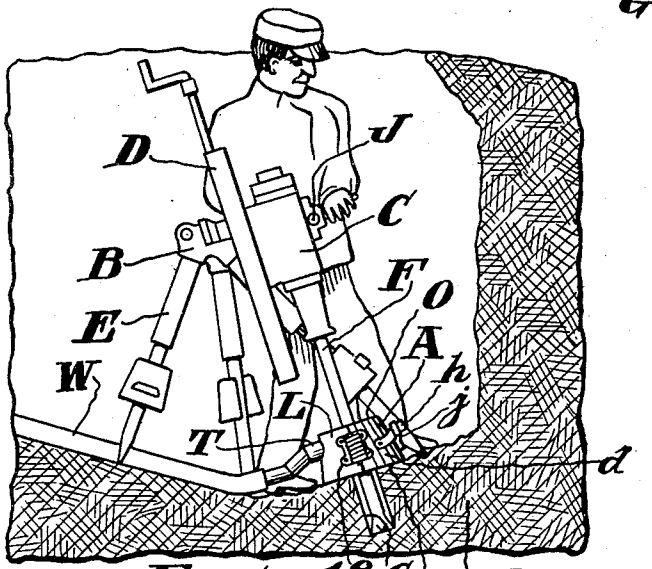

FIG.-1.

INVENTOR.
George S. Kelley.
BY
HIS ATTORNEY.

Patented Aug. 7, 1934 1,969,513

UNITED STATES PATENT OFFICE

1,969,513

DUST DEFLECTOR

George S. Kelley, Mount Vernon, N. Y., assignor to Kelley-Atwell Development Corporation, New York, N. Y., a corporation of New York

Application July 27, 1932, Serial No. 624,989

7 Claims. (Cl. 255—50)

This invention relates to dust deflectors, and more particularly to a dust deflector adapted for use in connection with rock drilling apparatus during the operation of which the cuttings and dust created in the drill hole are expelled therefrom in a dry state.

More particularly, the invention relates to a dust deflector of the general character of that illustrated in my copending application for Dust deflector, Serial No. 585,065, filed January 6, 1932, but differs therefrom in that it comprises a nozzle arranged within the deflector hood, whereby it is supported and retained in the most suitable position with respect to the point of origin of the dust.

It is an object of this invention to retain the inlet opening or nozzle, through which the detritus is withdrawn from the drilling vicinity, at a point closely adjacent the entrance to the drill hole so that the major portion of the cuttings expelled from the drill hole may pass directly thereinto and at the same time to assure an adequate area or space between the nozzle and the surface upon which the device rests in order to avoid restriction of the air supply to the nozzle.

Another object is to prevent the expulsion of rock particles through the apertures in the nozzle and the hood through which the working implement, which creates the dust, extends.

Other objects will be in part obvious and in part pointed out hereinafter.

In the accompanying drawing forming a part of this specification and in which similar reference characters refer to similar parts,

Figure 1 is a side elevation of a deflector constructed in accordance with the practice of the invention and showing it applied to a rock drilling mechanism,

Figure 2 is a sectional elevation, in perspective, of the deflector,

Figure 3 is a top plan view of the deflector, and

Figure 4 is a transverse view taken through Figure 2 on the line 4—4 looking in the direction indicated by the arrows.

Referring to the drawing and at first more particularly to Figure 1, the dust deflector, designated in general by A, is shown applied to a drilling mechanism B comprising a rock drill C, a shell D upon which the rock drill may be slidably mounted and a tripod E connected to the shell D to support it and the rock drill.

The rock drill C, which is illustrated as being of the drifter type, is adapted to actuate a working implement F for drilling holes G in the rock H and is shown as being provided with the usual valve, indicated at J, whereby the admission of pressure fluid into the rock drill is controlled for actuating the hammer piston (not shown) and also for supplying pressure fluid to the drill hole G to expel the cuttings therefrom. For the latter purpose the drill steel F is provided with the usual passage K through which pressure fluid may flow constantly or intermittently into the bottom of the drill hole G.

As in the aforesaid application, the deflector comprises a casing or hood L of cup shape which, in its operative position, is inverted and encompasses the drill hole G. In the end wall O of the hood is an aperture P through which the drill steel F extends. The rim Q of the hood L which seats upon the rock H defines an opening R through which the dust expelled from the drill hole G passes into the hood.

The rim Q preferably consists of an even surface so that when the deflector seats upon the rough surface of the rock H sufficient voids or spaces will exist between the rock and the rim to afford free communication between the interior of the hood and the atmosphere. Preferably the aperture P in the end wall O is also of sufficiently larger diameter than the body portion of the drill steel F to permit of the free entrance of atmospheric air into the hood at that point.

In the form of the invention illustrated the deflector is provided with a nozzle S disposed within the hood L and having a lateral extension T projecting through an aperture U in the side of the hood L to the exterior of the hood to which it may be permanently secured in any convenient manner, as by welding as indicated at V. The extension T is hollow to form a continuation of the nozzle S, and to the outer end of the extension is secured a conduit W which may lead to a suitable evacuating device, as for instance a blower (not shown), whereby air and entrained dust are withdrawn from the drilling site.

The nozzle S is arranged intermediate the ends of the hood L, that is, an end wall X which forms the uppermost extremity of the nozzle, proper, is spaced a sufficient distance from the wall O of the hood L to permit the free passage of air therebetween, and in the wall X is an aperture Y which is suitably aligned with the aperture P to accommodate the drill steel.

The opposite or lower end of the nozzle S which defines the inlet opening Z of the nozzle

lies at a higher elevation than the rim Q of the hood in order that air may flow freely and in unrestricted volume around the rim of the nozzle to the interior thereof.

In order that the deflector may be conveniently disposed about the working implement F the hood and the nozzle are provided in their sides with openings *b* and *c*, respectively. The openings preferably lie in the same radial plane and extend through the end walls O and X to the apertures P and Y so that the deflector may be applied laterally to the drill steel.

Preferably the openings *b* and *c* are normally closed in order to restrict the admission of atmospheric air into the deflector to points where the current will be most efficacious for preventing the dissemination of dust to the atmosphere. To this end a cover *d* is pivotally connected to the hood L as by means of a spring-pressed hinge *e*. On the inner surface of the cover is a rib *f* which supports a cover *g* for the opening *c*. The covers *d* and *g* may be locked in their closed positions in any suitable manner, as for instance by a latch *h* pivotallly connected to the cover *d* and adapted to engage a clip or hook *j* on the side of the hood L.

To the end that the cuttings withdrawn from the hood may be conveniently directed from the inlet opening Z to the passage in the lateral extension T the nozzle S is provided in its interior with baffle means consisting, in the present instance, of a pair of deflectors *k* and *o* fastened to the nozzle and the cover *g*, respectively. The deflectors are inclined in the direction of the drill steel F. Their free ends *p* preferably terminate at points closely adjacent the drill steel to retain the heavier or coarser portions of cuttings in the air stream instead of being hurled therefrom at the point at which the air stream curves from the inlet opening Z to the lateral extension T and in which case, of course, a considerable amount of such cuttings would be expelled from the hood through the apertures Y and P. The deflectors *k* and *o* are shown as being in the form of quarter sections and, in the closed position of the covers *d* and *g*, seat against each other with their adjacent edges.

The operation of the device is as follows: With the deflector disposed about the drill steel F and the rock drill C and the evacuating apparatus in operation the dust and cuttings expelled from the drill hole G are blown directly into the nozzle S and are drawn through the nozzle, together with atmospheric air and dust entering the hood at the various apertures or spaces at the top and bottom of the hood.

Upon entering the nozzle S the cuttings and air are deflected from the aperture Y by the baffles *k* and *o* and directed towards the passage in the lateral extension T.

In practice the present invention has been found to be highly efficient. This is due partly to the fact that the nozzle S is so positioned that the greater portion of the cuttings expelled from the drill hole G pass directly into the nozzle, and in part to the spacing of the inlet opening Z of the nozzle with respect to the rock face upon which the deflector rests. By suspending the nozzle above the rock face in the manner described sufficient space is provided for admission of an ample volume of atmospheric air to the nozzle and thus to the evacuating apparatus, thereby assuring the complete removal of the dust created in the drill hole and that freed from the rock face by the operator.

I claim:

1. A dust deflector comprising a hood having a rim to seat upon the work for supporting the hood and defining an opening for the admission of dust into the hood, and a nozzle within and secured fixedly to the hood and through which dust passes from the hood.

2. A dust deflector comprising a hood having a rim to seat upon the work for supporting the hood and defining an opening for the admission of dust into the hood, and a nozzle within the hood to convey dust therefrom and having an extension connected to the hood for supporting the nozzle, and end walls on the hood and the nozzle having apertures to accommodate a drill steel and to admit atmospheric air into the hood and the nozzle.

3. A dust deflector comprising a hood having a rim to seat upon the work for supporting the hood and defining an opening for the admission of dust into the hood, and a nozzle within the hood and having an opening located intermediate the ends of the hood for conveying dust from the hood, there being an extension on the nozzle secured to the hood for supporting the nozzle.

4. A dust deflector comprising a hood having an opening in its base for the admission of dust, a nozzle within the hood and having an intake opening located above the first-mentioned opening and through which dust passes from the hood, a hollow lateral extension on the nozzle seated in the side of the hood to support the nozzle, end walls on the hood and the nozzle having apertures to accommodate a drill steel and to admit air into the hood and the nozzle, and a deflector in the nozzle to deflect the dust from the apertures.

5. A dust deflector comprising a cup-shaped inverted hood, a cup-shaped inverted nozzle in the hood and being arranged intermediate the ends thereof, a hollow lateral extension forming a continuation of the nozzle and being seated in the side of the hood to support the nozzle, end walls on the hood and the nozzle having apertures to accommodate a drill steel, said hood and nozzle having openings in the side thereof for the passage of a drill steel into the apertures, and covers for the openings and being connected to simultaneously open and close the openings.

6. A dust deflector comprising a nozzle having a depending inlet portion, and a hood encompassing the inlet portion and having an aperture through which the nozzle extends to the exterior of the hood.

7. A dust deflector comprising a nozzle having a depending inlet portion, and a hood encompassing the inlet portion having an aperture through which the nozzle extends to the exterior of the hood and being fixedly secured to the nozzle, said hood and said nozzle having apertures to accommodate a drill steel.

GEORGE S. KELLEY.