Nov. 11, 1958 R. E. BROCHETTI 2,859,940

DUST COLLECTOR HEAD

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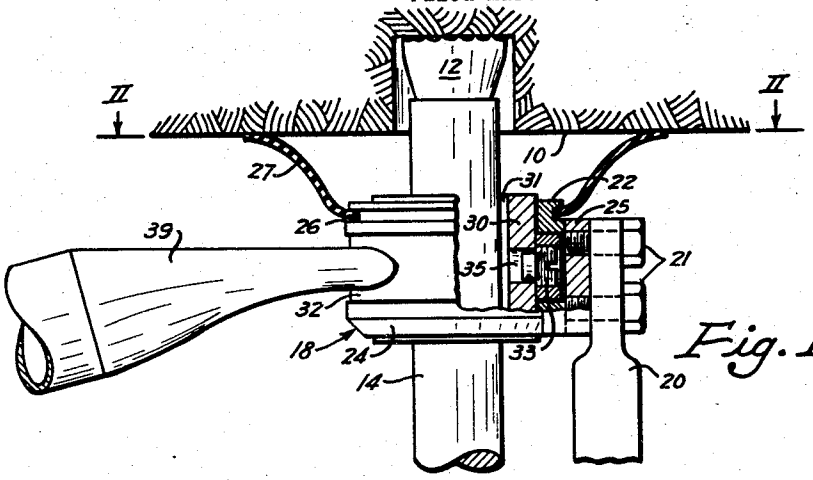


Fig. 1

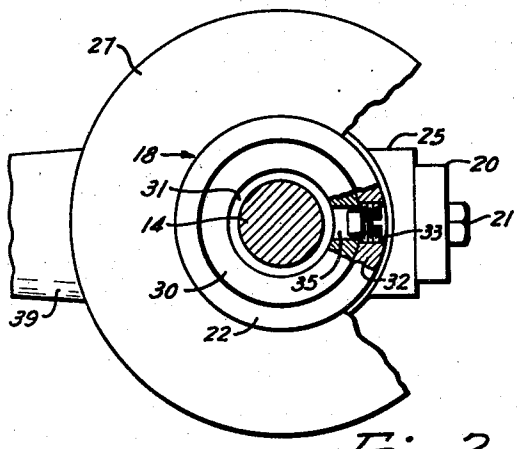


Fig. 2

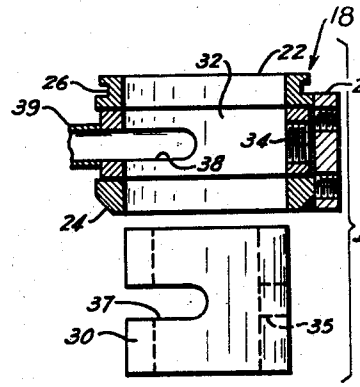


Fig. 4

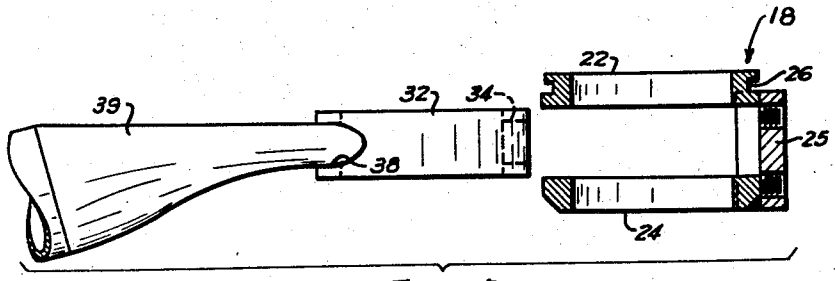


Fig. 3

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DUST COLLECTOR HEAD

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4 Claims. (Cl. 255—50)

This invention relates to dust collecting for drilling operations, and more particularly is concerned with the dust collecting heads that the drills extend through.

In my patent application Serial Number 437,945, filed June 21, 1954, there is disclosed a novel dust collecting head through which dust and larger particles are delivered to a suction hose that carries them away to a collector, thereby maintaining the atmosphere around a drilling operation safe and clean. The collecting head also breaks up the larger particles to a size for removal by the dust collecting unit. Drilling is conducted through the head, and the drill may be inserted or removed without removing the head from its dust collecting position.

It is an object of the present invention to provide an improved dust collecting head for use in drilling operations, in which the part of the head that is connected to a suction hose can be swiveled relative to the rest of the head that is rigidly supported. It is a further object to provide a dust collector swivel head that is easily assembled and inexpensively manufactured.

In accordance with the present invention the dust collecting head comprises a bracket, a sleeve rotatably mounted in the bracket and provided with an opening in its side, and means for coupling the sleeve opening with a suction line. The sleeve is adapted to loosely receive a drill stem. In a preferred embodiment, the bracket is provided with an opening in its side extending far enough around the bracket to allow the coupling means and sleeve to turn in the bracket within predetermined limits while connected with a suction line.

The invention will be described further in conjunction with the appended drawing, in which:

Figure 1 is a view of the collecting head in elevation, with parts broken away, in operative position;

Figure 2 is a horizontal section taken on the line II—II of Figure 1, with parts broken away;

Figure 3 is an expanded view of two parts of the head, with one shown in central vertical section; and

Figure 4 is a partially expanded view, showing two parts of the head assembled and in central vertical section.

Referring to the drawings, the numeral **10** represents a surface, generally a horizontal surface such as the roof of a mine, being drilled by means of a drill **12** on a shaft or stem **14** which extends downwardly to a drilling machine (not shown). Encircling the upper part of the drill stem is a dust collecting head, which includes a bracket **18** supported by a jack or other support **20** that is well known in this art and that holds the bracket firmly in place. Suitable means, such as screws **21**, are provided to connect the jack and bracket. The bracket **18** advantageously comprises a pair of axially spaced horizontal retaining rings **22** and **24** (refer especially to Figure 3), with a block **25** at one side of the rings rigidly connecting them and holding them parallel. The block is provided with threaded openings for receiving screws **21**. The upper retaining ring is provided with a peripheral groove **26** that receives the lower end of a resilient boot

27, the top of which engages the mine roof several inches away from the drill stem to form a seal. Being flexible and resilient, the boot provides a fairly air-tight connection between the surface **10** being drilled and the dust collecting head and serves to channel dust and rock particles to the head rather than permitting them to escape to the surrounding atmosphere.

Coaxially disposed within the bracket **18** is a sleeve **30** which extends through both retaining rings and is journaled therein. The inside of the sleeve is large enough to fit loosely about the drill stem and to permit the drill to pass through the sleeve. As described in my earlier application, the annular space **31** between the sleeve and the drill stem permits the drilling dust to fall down into the sleeve, where it will be arrested and drawn out of the side of the collector head in a manner about to be described, by a current of air entering the lower end of space **31**.

Encircling sleeve **30** between retaining rings **22** and **24**, which it engages, is a rotatable coupling ring **32**. The sleeve is held in bracket **18** by means of this coupling ring, because a set screw **33** threaded in a radial opening **34** in the ring projects into a registering opening **35** in the sleeve. The sleeve, in turn, holds the coupling ring in place. The set screw can easily be installed or removed by simply turning the sleeve and coupling ring until opening **34** is exposed between the retaining rings.

In order to draw air and dust through the collector head, the sleeve and coupling ring are also provided with a pair of registering radial slots, **37** and **38** respectively, preferably diametrically opposite the openings containing set screw **33**. Connected with ring slot **38** is the inlet end of a rigid suction conduit **39**, the outer end of which is adapted to be connected to a suction hose in the usual manner. The outer end of this conduit may be circular, but its inner end is flattened so that it can be joined to the coupling ring around its slot **38**.

To assemble the dust collecting head for operation, the coupling ring **32** is placed beside the gap between the bracket rings as shown in Fig. 3, and then is slipped between those rings to the position shown in Fig. 4. The sleeve **30** is then inserted in the assembled coupling ring and bracket, and then radial openings **34** and **35** are aligned, as by sighting. With the sleeve and coupling ring turned so that those openings are at one side of block **25**, set screw **33** is inserted and screwed into place. The combined coupling ring and sleeve then can be rotated from side to side, but they cannot come out of the bracket. The collector head then is fastened to its support and placed where drilling is to be started. After connecting a suction hose to conduit **39**, the drill is passed up through the head and drilling is begun.

From the foregoing it can be observed that my improved dust collecting head is characterized by the ability of the suction nozzle to be swiveled or rotated so that greater freedom of action is available in drilling operations. The simplicity of the elements employed and of the disposition of these elements contribute to ease of construction and assembly in addition to providing trouble free operation in use.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A dust collector swivel head comprising a bracket adapted to be connected to a support and provided in its side with an opening, a sleeve rotatably disposed in the bracket and adapted to loosely receive a drill stem, and

a ring secured around the sleeve and rotatably mounted in the bracket for holding the sleeve therein, the sleeve and ring being provided with registering radial openings beside said bracket opening for connection to a suction line, and said bracket opening extending far enough around the bracket to allow said ring and sleeve to turn in the bracket within predetermined limits while connected with a suction line.

2. A dust collector swivel head comprising a pair of axially spaced retaining rings, means at one side of the rings rigidly connecting them to form a bracket, a sleeve rotatably disposed in the rings and provided in its side with an opening between the rings, the sleeve being adapted to loosely receive a drill stem, a rotatable coupling ring encircling the sleeve between the retaining rings, and means detachably fastening the coupling ring to the sleeve to hold the sleeve in the bracket, the coupling ring having a radial opening through it registering with said sleeve opening, and the coupling ring opening being adapted to be connected to a suction line.

3. A dust collector swivel head comprising a pair of axially spaced retaining rings, means at one side of the rings rigidly connecting them to form a bracket, a sleeve

rotatably disposed in the rings and adapted to loosely receive a drill stem, a rotatable coupling ring encircling the sleeve between the retaining rings, means detachably fastening the coupling ring to the sleeve to hold the sleeve in the bracket, the coupling ring and sleeve being provided with registering radial openings between the retaining rings, and a conduit connected to the coupling ring opening and extending away from it between the retaining rings, said conduit being swingable back and forth between the retaining rings.

4. A dust collector swivel head comprising a stationary bracket adapted to be connected to a support, a sleeve rotatably disposed axially in the bracket and adapted to loosely receive a drill stem, and a ring detachably secured around the sleeve and supported by the bracket, said sleeve and ring being provided with registering radial openings for connection to a suction line.

References Cited in the file of this patent

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