July 25, 1939. J. H. SCHEMEL 2,167,220

DUST COLLECTOR FOR DRILLS

Filed Nov. 29, 1937 2 Sheets-Sheet 1

Fig. 1.

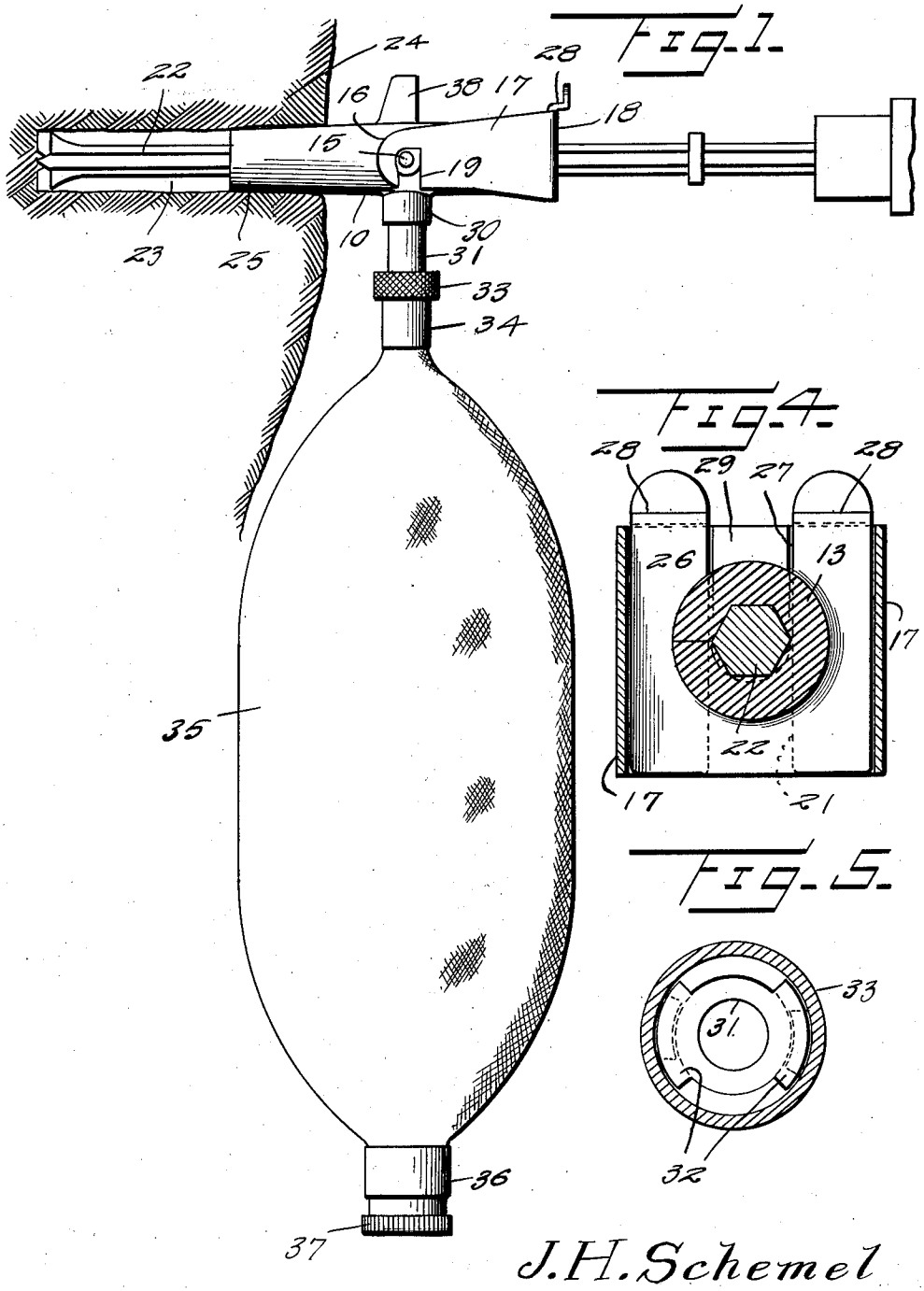


Fig. 4.

Fig. 5.

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Filed Nov. 29, 1937 2 Sheets-Sheet 2

Fig 2

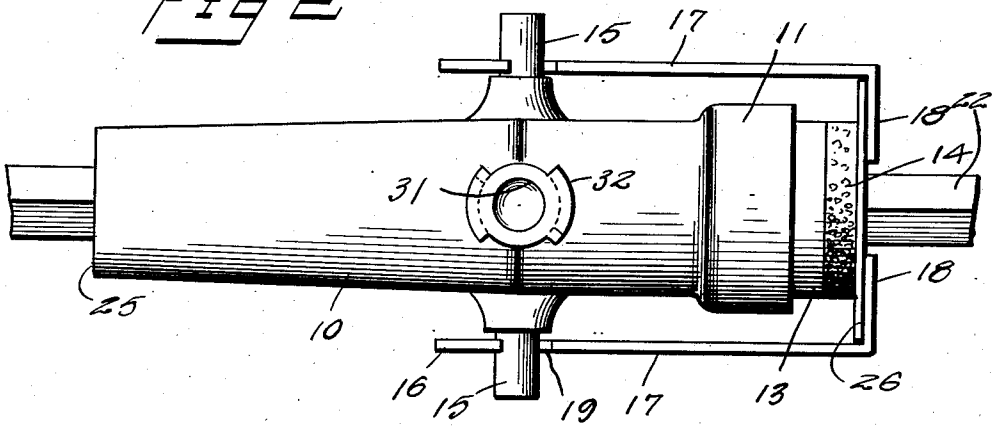


Fig. 3.

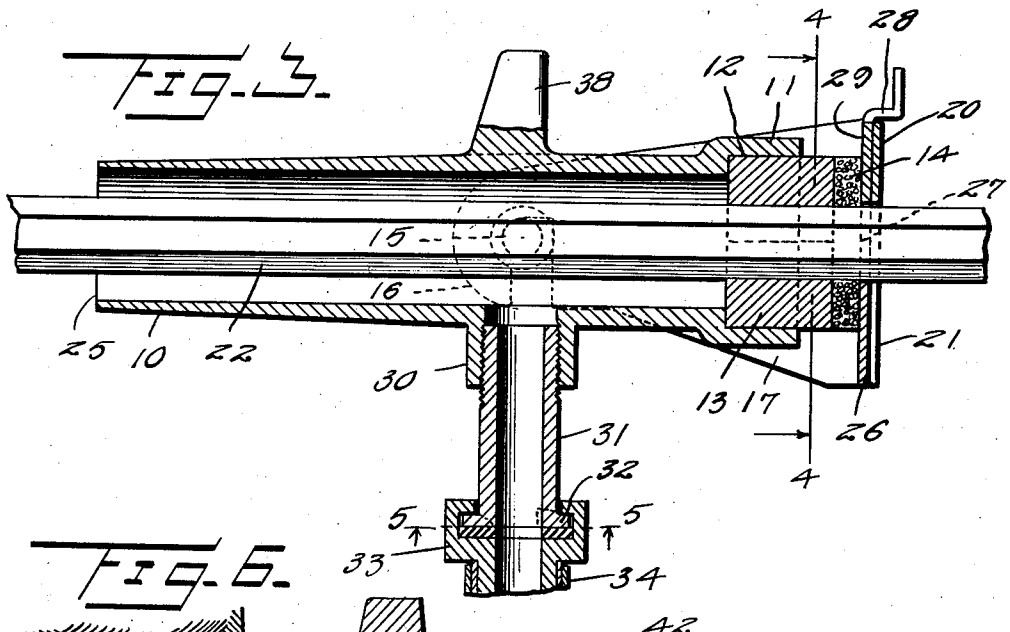
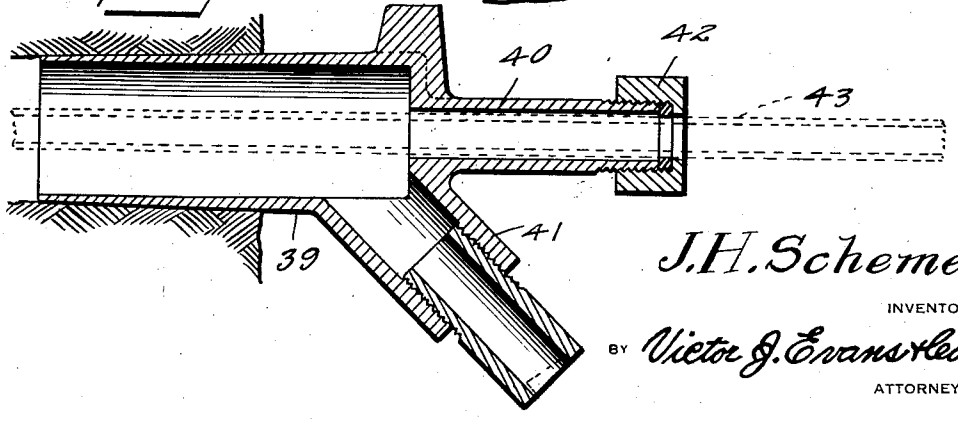


Fig. 6.



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DUST COLLECTOR FOR DRILLS

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Application November 29, 1937, Serial No. 177,117

3 Claims. (Cl. 255—50)

The invention relates to a dust collector and especially to dust collectors for drills of the hammer type and used in mining.

The primary object of the invention is the provision of a collector of this character, wherein the same is supported about the drill bit and in the use of the latter the dust and cuttings therefrom will be delivered into a bag for the collection of the same and in this fashion avoiding unhealthy conditions and annoyance to an operator of the drill as the latter must necessarily inhale the dust to a greater or lesser extent and in this way protection therefrom is assured to the operator.

Another object of the invention is the provision of a collector of this character, wherein the need of its removal from the drill is avoided when changing the said drill from one hole to another and dust and cuttings will be assured of deposit within the bag or the like of said collector, the air under pressure blown through the drill in the working thereof forces the dust from the hole and drives the same into the bag or other like depository.

A further object of the invention is the provision of a collector of this character, which is simple in construction, readily and easily applied to and removed from the drill bit, thoroughly reliable and efficient in operation, assuring protection to an operator of the drill from dust and dirt during the working of the same, strong, durable, and inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred and modified forms of embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of the collector constructed in accordane with the invention in association with the hammer drill and set to the work.

Figure 2 is an enlarged bottom plan view.

Figure 3 is a vertical longitudinal sectional view thereof.

Figure 4 is a sectional view on the line 4—4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a sectional view on the line 5—5 of Figure 3.

Figure 6 is a view similar to Figure 3 showing a slight modification.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, particularly Figures 1 to 5 inclusive, the collector constituting the present invention comprises a tapered cylindrical body unit 10, the taper thereof being external and in a longitudinal direction toward one end while the opposite end is formed with an outstruck annular portion 11 providing interiorly thereof a shouldered seating socket 12 for a resilient centrally perforated sleeve-like closure plug 13 having at its outermost portion a soft rubber facing 14.

Formed with the body unit 10 at opposite sides thereof and intermediate of its length are laterally extending lugs 15 with which engage the hook terminals 16 of the side cheeks 17 of a clamping yoke 18, the hook terminals 16 being provided with keeper slots 19 opening through the lowermost edges of the said cheeks 17 and accommodate the lug 15 for the saddling of the plug 13 when seated in the socket 12 in the portion 11 of the body unit 10. This yoke 18 is of substantially U-shape and in the cross web 20 thereof at its closed end is a notch 21 opening through the said web 20 at one edge only thereof to effect a clearance for a centrally bored drill bit 22 for a hammer type rock drill or the like. The drill bit 22 is carried through the center opening in the plug 13 and also passes centrally through the body unit 10 for operation in cutting a hole 23 within a body of rock 24 as usual, the body unit 10 being swaged or driven into this hole 23 for wedging engagement of the smaller end 25 of the body unit within said hole for a purpose presently described.

Within the yoke 18 and coacting with the cross web 20 is a latching plate 26 having a notch 27 opening through one edge thereof and adapted to be reversely arranged to the notch 21 in said web 20 while formed with the plate 26 on opposite sides of the open end of the notch 27 therein are latching ears 28 which override the web 20 when the plate 26 is in place within the yoke and in this manner the said yoke will be latched in saddling relation to the plug 13 when the drill bit 22 is passed through the said plug and the body unit 10. The plate 26 when engaged in the yoke 18 to lie against the inner face of the cross web 20 between the latter and the plug 13 and having contact with the latter has fitting with a guide piece 29 suitably fixed to the inner side of the cross web 20 of the yoke and being accommodated in the notch 27 in said plate 26 so that there will be an interfitting of the latter with the web 20 of

the yoke 18 and thus the bit 22 will be yoked by the cross web 20 and the said plate 26. The plug 13 effects a packing gland at the end portion 11 about the bit 22 when inserted through the body unit 10 into the hole 23 for drilling purposes.

At the lowermost side of the body unit 10 and opening into the same intermediate thereof is a nipple 30 in which is engaged a connector pipe 31 having separable coupling connection through the male and female interfitting members 32 and 33, respectively, with the mouth end 34 of a dust collecting bag 35, the opposite end 36 being fitted with a removable cap 37 for the discharge of the contents of the bag 35 therefrom when the same is to be emptied of such contents.

The body unit 10 at its top is formed with a protuberance 38 convenient for the placement of the said body unit in the hole 23 where opening through the rock 24. The position of the collector with the body unit 10 inserted in the hole 23 during the drilling operation is clearly shown in Figure 1 of the drawings. In this position the exhaust air blowing through the drill bit 23 dislodges and forces dirt, dust and cuttings from the drill bit 23 into the bag 35 where the same is collected. The fitting of the body unit 10 on the drill bit avoids the necessity of the removal of the collector when changing the drill from one point to another of the work for the drilling of a number of holes.

In Figures 6 of the drawings there is shown a slight modification of the invention wherein there is involved a cylinder 39 open at one end and closed at the other excepting for a tubular extension 40 at the latter end while the external surface of this cylinder 39 tapers from the closed end to its open end. At the under side and opening into the cylinder 39 is a nipple 41, being outwardly angled with respect to the cylinder 40 and to which is separably coupled the bag 35 identically to the coupling of the latter with the connector pipe 31.

Carried by the extension 40 aligned with the cylinder 39 is a packing gland 42 through which is passed a blow pipe 43 which is extended through the cylinder 39 when engaged in the hole in the work and air under pressure conveyed through the pipe 43 will remove dust and dirt or cut metal within the said hole therefrom and such matter automatically collected in the bag 35. The pipe 43 is accommodated in the extension 40 when inserted within the cylinder 39. This pipe 43 is of considerably less diameter than the internal diameter of the cylinder 39 and similarly the bit 22 is of considerably less diameter than the internal diameter of the body 10 thus assuring a way for the dust and other matter for entry into the bag 35.

What is claimed is:

1. A dust collector for a drill comprising a nozzle-like body unit having an open inlet end and an opposite open drill-receiving end for the passing of the drill therethrough, an outlet nipple formed with said unit, a dust collector element, a separable coupling between the said element and the said nipple for communication through the latter from the said unit to the said element, means at the drill-receiving end of the said unit for effecting a seal between the drill and the said unit, lugs externally on the unit at opposite sides thereof, and a clamping yoke saddling the said means and sealing the drill-receiving end of said unit and having hook-like sides engageable with said lugs.

2. A dust collector for a drill comprising a nozzle-like body unit having an open inlet end and an opposite open drill-receiving end for the passing of the drill therethrough, an outlet nipple formed with said unit, a dust collector element, a separable coupling between the said element and the said nipple for communication through the latter from the said unit to the said element, means at the drill-receiving end of the said unit for effecting a seal between the drill and the said unit, lugs externally on the unit at opposite sides thereof, and a clamping yoke saddling the said means and sealing the drill-receiving end of said unit and having hook-like sides engageable with said lugs, the said yoke being formed with a bifurcation for clearing the drill.

3. A dust collector for a drill comprising a nozzle-like body unit having an open inlet end and an opposite open drill-receiving end for the passing of the drill therethrough, an outlet nipple formed with said unit, a dust collector element, a separable coupling between the said element and the said nipple for communication through the latter from the said unit to the said element, means at the drill-receiving end of the said unit for effecting a seal between the drill and the said unit, lugs externally on the unit at opposite sides thereof, a clamping yoke saddling the said means and sealing the drill-receiving end of said unit and having hook-like sides engageable with said lugs, the said yoke being formed with a bifurcation for clearing the drill, and a plate releasably held within the yoke and closing the bifurcations throughout that portion unoccupied by the drill.

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