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ATTACHMENT FOR POWER DRILLS

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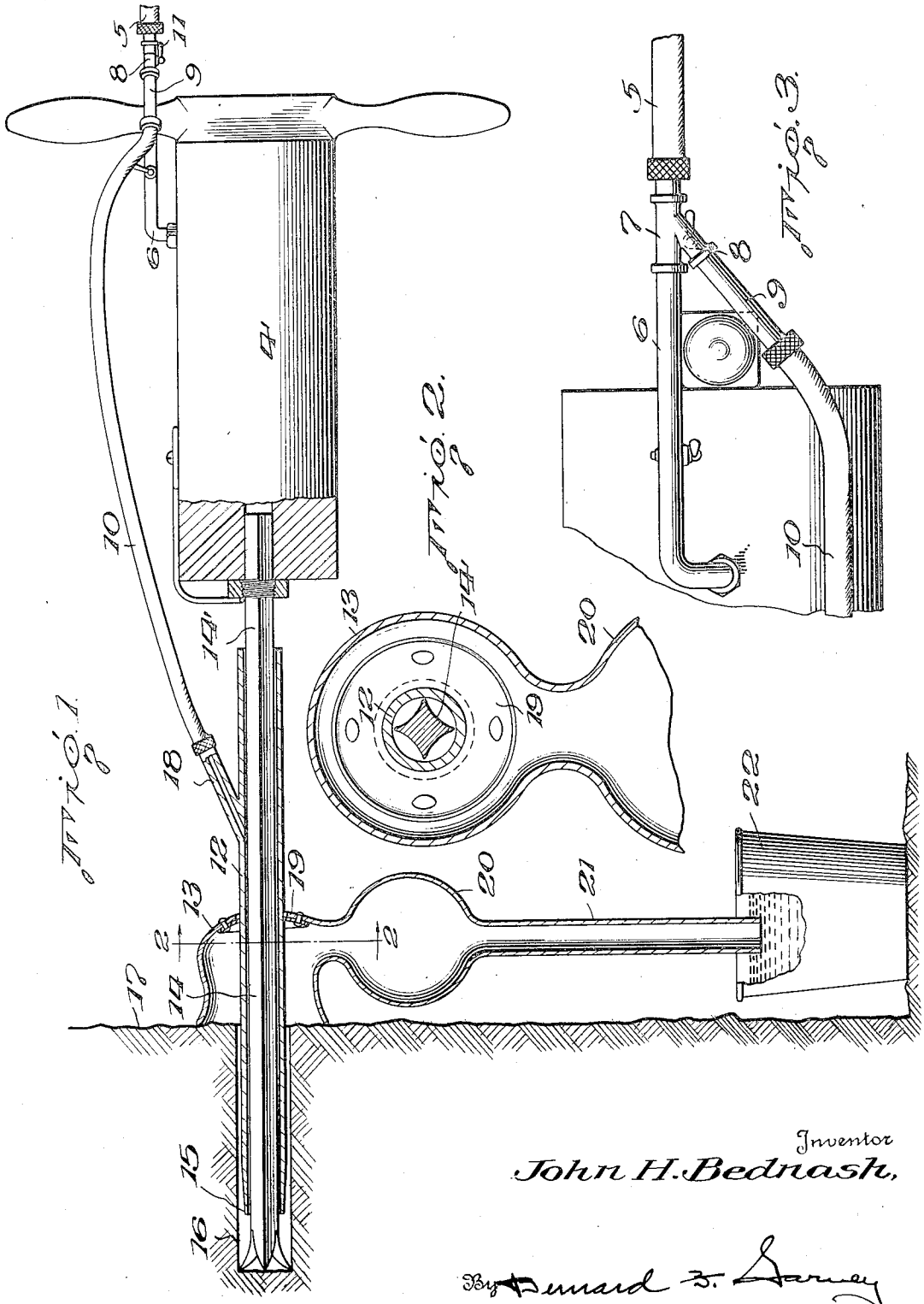


Fig. 1.

Fig. 3.

Fig. 2.

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ATTACHMENT FOR POWER DRILLS

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3 Claims. (Cl. 255—50)

In the use of power drills, especially air hammer drills used in coal mines, stone quarries and like places, the operator is subjected to the annoyance of sprayed materials blown from the working zone of the drill bit with the result that cumbersome facial masks are resorted to for preventing inhalation of the dust by the operator. In the present invention, I associate a dust blower and collector with the drill to effect transfer of the dust from the work to a point remote from the drill, positively eliminating possibility of the dust or other extraneous materials coming in contact with the operator of the drill.

A further object of the invention is to equip the drill bit with a suitable jacket which in no way retards the operation of the drill, yet is so constructed as to be fed progressively with the latter to dislodge dust and extraneous materials from the zone at the working end of the drill bit and carry them into a suitable collecting medium where they are immediately dampened and thereby prevented from passing into the atmosphere.

Other objects of the invention will be apparent from the following description of the present preferred form thereof, taken in connection with the accompanying drawing, wherein

Fig. 1 is a longitudinal sectional view of a drill jacket constructed in accordance with the present invention, showing the drill bit and air hammer in side elevation, the latter being shown fragmentarily to disclose details;

Fig. 2 is a sectional view taken on the line 2—2 looking in the direction of the arrows; and

Fig. 3 is a top plan view of the air conduits showing the manner of associating the conduit for the drill jacket with the source of air supply of the air hammers.

In the drawing, I have shown an air hammer 4 of conventional design which is equipped with an air supply tube 5, the latter communicating with a pipe 6 which communicates with the hammer in a manner well known in the art. In the present invention I interpose a Y-coupling 7 between the air supply tube 5 and pipe 6. The leg 8 of the Y-coupling is in communication with a by-pass 9 detachably connected to one end of a flexible conduit 10. A valve is mounted in the leg of the Y-coupling controlled by a handle 11.

The jacket of the present invention consists of a cylinder generally designated 12 and a hood generally designated 13. The cylinder is sleeved on a drill bit 14, the latter being of conventional design, having channels between the flutes thereof, which serve a special purpose in the present invention as will hereinafter appear. It will be noted that the opposite ends of the cylinder 12 terminate short of the opposite ends of the drill bit, the forward end of the cylinder tapering, as indicated at 15, to facilitate entrance of the cylinder with the bit into an opening 16 formed by the latter in the work 17. The cylinder is equipped with an air inlet portion 18 to which the conduit 10 is detachably engaged. Consequently, when the valve in the Y-coupling is open, air is permitted to pass uninterruptedly through the conduit 10 and the inlet 18, into the cylinder 12 and pass through the channels of the drill bit 14 outwardly beyond the tapered end 15 of the cylinder, in proximity to the working end of the bit. This dislodges dust and extraneous materials from the work opening 16 and forces them outwardly past the outer periphery of the cylinder 12 and beyond the outer surface of the work.

The hood 13 is detachably mounted on the cylinder 12 and yieldably engaged therewith, and in air-tight contact with the outer periphery of the cylinder through the medium of a disc 19. The mouth of the hood 13 surrounds the work opening 15 as shown to advantage in Fig. 1, and is adapted to be constructed of material which will effect a seal between the hood and the work. The body of the hood projects downwardly from the cylinder and is intermediately dilated to provide a spherical collector 20 which issues into an outlet or discharge tube 21. The lower end of the outlet or discharge tube 21 may be immersed in any suitable manner and to illustrate the application of the invention, I have in the present instance, shown a liquid-containing pail 22. In this way the dust and other extraneous materials forced from the work opening into the mouth of the hood 13 are carried downwardly through the constricted neck of the hood into the spherical body portion 20 thereof, where expansion of the dust is permitted preparatory to passing into the bath where the dust and other materials are dampened to prevent passage of the same into the atmosphere.

In use of the present invention, it is manifest that the air hammer is operated in a manner well known in the art in order to impart an axial reciprocating motion to the drill bit 14. The drill is engaged with the work at the desired point and the hood adjusted on the cylinder 12 to a position where contact of the hood with the work is effected. As the drill feeds into the work, the cylinder 12 correspondingly moves forwardly against the resistance of the yieldable disc 19. As the bit is feeding into the work, air is simultaneously fed through the conduit 10 into the

cylinder for blowing the particles dislodged by the bit from the work opening and ejected therefrom into the mouth of the hood, in a manner already described. It is apparent from the above that the present attachment may be engaged with a power operated drill or the like, in a facile and expeditious manner without in any way altering the drill or air hammer and without retarding or in any way impeding the operation of the drill. Projection of dust and other materials into the atmosphere is positively eliminated.

Although I have herein described the preferred form of my invention, it is nevertheless to be understood that various changes may be made therein, especially in the details of construction, proportion and arrangement of parts, within the scope of the appended claims.

What is claimed is:

1. In combination with an air operated drill, and a jacket sleeved on the drill, a collector enveloping the jacket and snugly engaged thereto, said jacket being in communication with the air supply of the drill to force materials from the working end of the drill outside of the jacket and into said collector.

2. In combination with a power operated drill, a jacket sleeved on the drill, a hood mounted on the jacket and adapted for engagement with the work at the point of penetration of the drill, said jacket being progressively movable through the hood during feeding of the drill bit into the work, said jacket being in communication with the air supply of the drill, with its forward end in close proximity to the drill bit whereby materials loosened by the bit will be urged outside of the jacket.

3. In combination with an air hammer and a bit operated by the hammer, a cylinder sleeved on the bit, a hood mounted on the cylinder and yieldably engaged therewith to form an air-tight connection between the hood and cylinder, said cylinder being movable through the hood with the bit, and a conduit communicating with said cylinder and with the air supply of said hammer for forcing materials dislodged by the drill bit into said hood.

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