

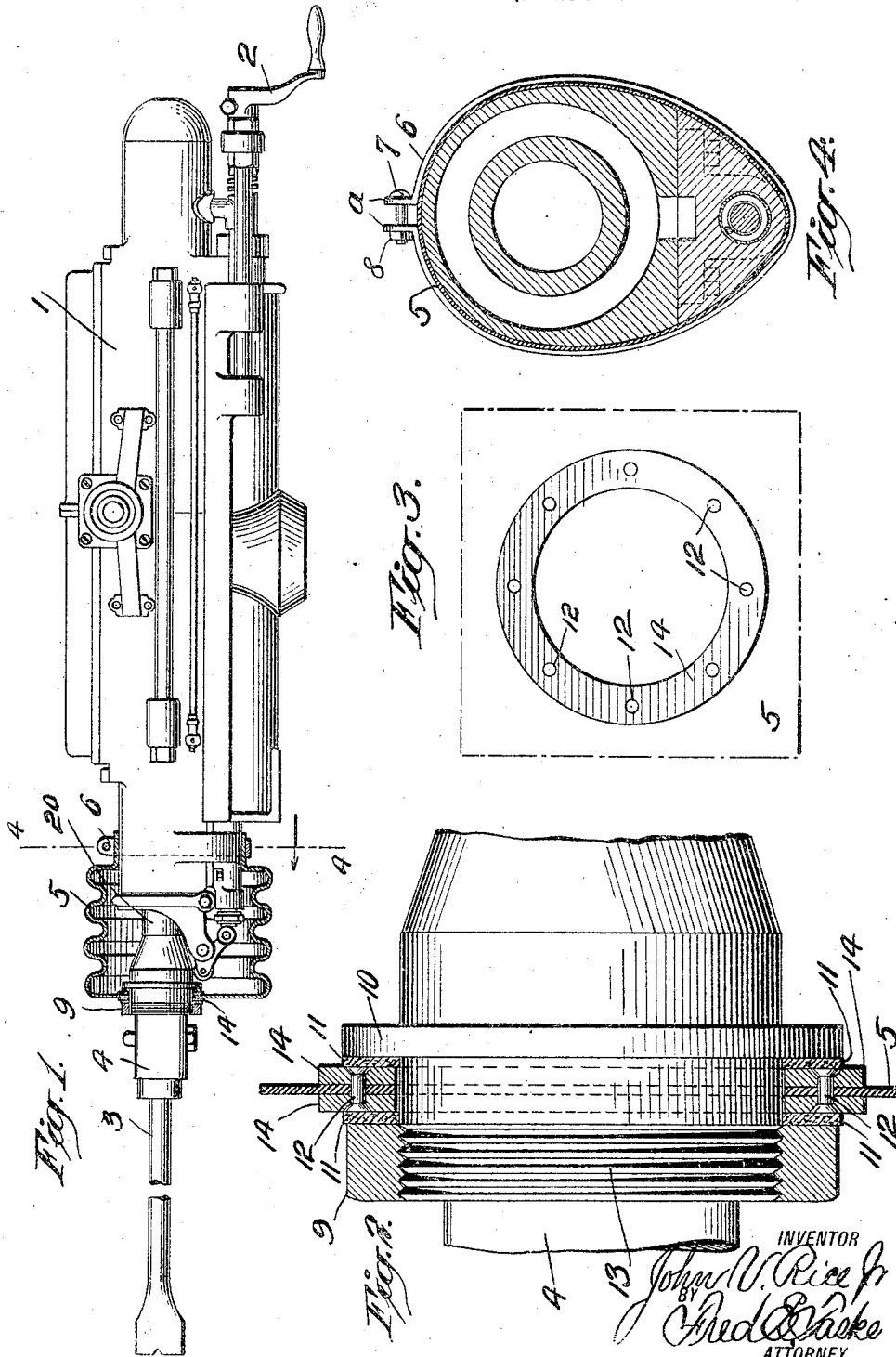
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J. V. RICE, JR

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DUSTGUARD FOR PERCUSSION MACHINES

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DUSTGUARD FOR PERCUSSION MACHINES.

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To all whom it may concern:

Be it known that I, JOHN V. RICE, Jr., a citizen of the United States, and resident of Bordentown, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Dustguards for Percussion Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention applies to means for promoting the successful operation of gasoline and other rock drills and like percussion machines, by safeguarding the same against the destructive and deleterious effects of dust, sand, and other forms of dirt and foreign material, which is apt to creep into the mechanism of the drill and clog its operation. The object of the invention is therefore to provide an effective and simple dust-guard for drills, one that will be cheap in construction and simple in form, easily attached and detached, and capable of effective service without interfering with the regular action of the operative mechanical parts. The invention therefore consists essentially in the construction, arrangement and combination of parts, substantially as will be hereinafter described and claimed.

In the accompanying drawing illustrating my invention:

Figure 1 is a side elevation of a gasoline rock drill provided with my improved anti-dust clogging device.

Figure 2 is an enlarged side view of a part of the same, with certain features in section.

Figure 3 is a detail elevation of one of the rings employed to hold the protecting case or bag.

Figure 4 is a cross-section on the line 4, 4, of Figure 1.

Similar characters of reference denote corresponding parts throughout the different views.

1 denotes a drilling machine. The detailed construction of this is not material to an understanding of the present invention. Although primarily it will be a gasoline rock drill—that is to say a drill actuated by the explosions of a gaseous mixture—and to this end the main machine will have the characteristics of an internal combustion engine—yet I do not wish to confine

my invention to this type of drill alone, as it will serve efficiently with various kinds of drilling mechanisms that are driven in manifold ways by different agencies. The machine 1 will usually have the proper feed appliances, controlled by crank handle 2. 3 denotes the drilling implement, and 4, the chuck, whose details may all vary widely and need not be explained here, said chuck being carried by a piston rod or free power-transmitting element 20.

When the drill is in operation it is enveloped in a cloud or mass of fine penetrating dust, consisting of pulverized or granulated stone or mineral material, which is calculated to sift through all the open interstices between the moving mechanical members, and to prove fatal to the continued successful operation of a drill, particularly a gasoline drill, as the latter is peculiarly sensitive to interference from foreign bodies that may drift into the cylinder, or mix with the gasoline or other explosive agent used in the drill.

The point of chief attack is obviously the joints between the drill and chuck, or the power-transmitting member which reciprocates through the end of the cylinder, and the engine mechanism, or in other words the point where the reciprocating member or members pass in and out through the end of the cylinder, there being here an opportunity for the impalpable pulverulent rock, coal, or other dust to slip between the surfaces and enter the engine, and thus clog and obstruct the parts and seriously interfere with the operation. Around this principal danger point therefore I place an enveloping cover or bag, which may be made in many ways and of different materials, but which will usually be a corrugated leather sleeve 5, capable of extension and contraction, like an accordion, during the reciprocations of the drill, the same being attached securely to the drilling machine, and attached loosely to the drill or its chuck so that the latter may revolve therein, as the drill turns about in its operation, or vice versa.

One end of sleeve 5 is clamped to the frame or cylinder of the drilling machine by means of a clamp, consisting of a steel band 6, having bent ends *a, a*, that are drawn together by a bolt 7, having thereon

a nut 8. This is shown in Figure 4, and also in Figure 1. The clamp 6 passes around the tubular member 5 near the end thereof, and when the nut 8 is screwed tight the band 6 will effectively hold the member 5 on the machine, and prevent its slipping or becoming disarranged.

In order that the joints and sliding surfaces may be thoroughly protected, they must be constantly covered during the operation of the drill, and hence the cover 5 must stretch and relax as the drill rotates and reciprocates; therefore I make this cover of flexible material, as leather or canvas, and preferably corrugate it so that it will expand and contract easily and quickly and without injury to the material of which the cover is composed. It is necessary also to provide a connection between the cover and the drill or its chuck such as will allow the drill to revolve. One means for a suitable connection between the cover and the reciprocating and revolving members is indicated in the drawings.

The chuck device 4, at the end of rod 20, or some equivalent member, is screw-threaded at 13, and a screw-threaded ring 9 is adapted to be screwed thereon. Also a flange or circular rib 10 is formed on the chuck at a short distance from the ring 9. This provides a space between the ring 9 and flange 10 between which the end of the tubular or sleeve-like cover 5 may be held. In order to allow the chuck 4 to turn easily within this end of the cover 5, I arrange it so that on each side of member 5 is a stiffening ring 14, having holes at intervals; and rivets 12 are passed through said holes and also through the intermediate cover 5; and moreover I employ felt or fabric sheets 11, adjacent to the rings 14 and between them and the flange 10 and ring 9 respectively so as to cushion the parts at these points and allow the chuck to rotate without rotating the cover 5 which will lie loosely thereover as seen in Figure 2. This reinforcing of guard 5 makes a more durable and useful device. Further it will be understood that the ring 9 and flange 10 will draw the end of the cover 5 back and forth in the endwise movement of the active working parts and thus extend and close up the cover in the manner already explained.

Many changes in the precise details for practically embodying the invention may be

made without departing from the same, and I reserve the right to make such changes as may be found desirable or necessary within the meaning of the claims, it being clear that the fixed connection of the cover may be on the drill or its chuck and the revolving part on the cylinder, or the reverse of that above explained.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with the frame of a drill, and the reciprocating and rotatable parts of a drill, of a flexible expansible and contractible cover attached to the frame, and means for loosely connecting it with the said members, so as to allow of the rotation and reciprocation of the latter without uncovering and exposing the joints between them, said means comprising an adjustable ring and a flange on the said reciprocating members, the same receiving the end of the cover between them.

2. The combination with a gasoline rock drill having a freely reciprocating drilling instrument, of a tubular flexible cover, means for clamping it to the drill, and means for connecting it loosely to the drilling instrument so that the latter will rotate therein, said means including an adjustable ring and a cushion on the end of the cover adjoining said ring.

3. The combination with a drilling machine having a power transmitting element, of a dust guard carried by the machine and protecting the joint where the power transmitting element enters the machine, the end of said guard loosely surrounding said member so that the latter may rotate therein, a cushion for the end of the guard, and means on the power transmitting member for holding the cushion in place.

4. The combination with a drill cylinder, piston, drilling tool and chuck, of a dust-guard enveloping the joint where the piston rod enters the cylinder, a clamp for securing the guard to the cylinder, a ring adjustable on a screwthreaded section of the chuck so as to leave a space between it and a flange on said chuck to loosely receive the reinforced end of the guard, said end having a cushion thereon.

In testimony whereof I hereunto affix my signature.

JOHN V. RICE, JR.