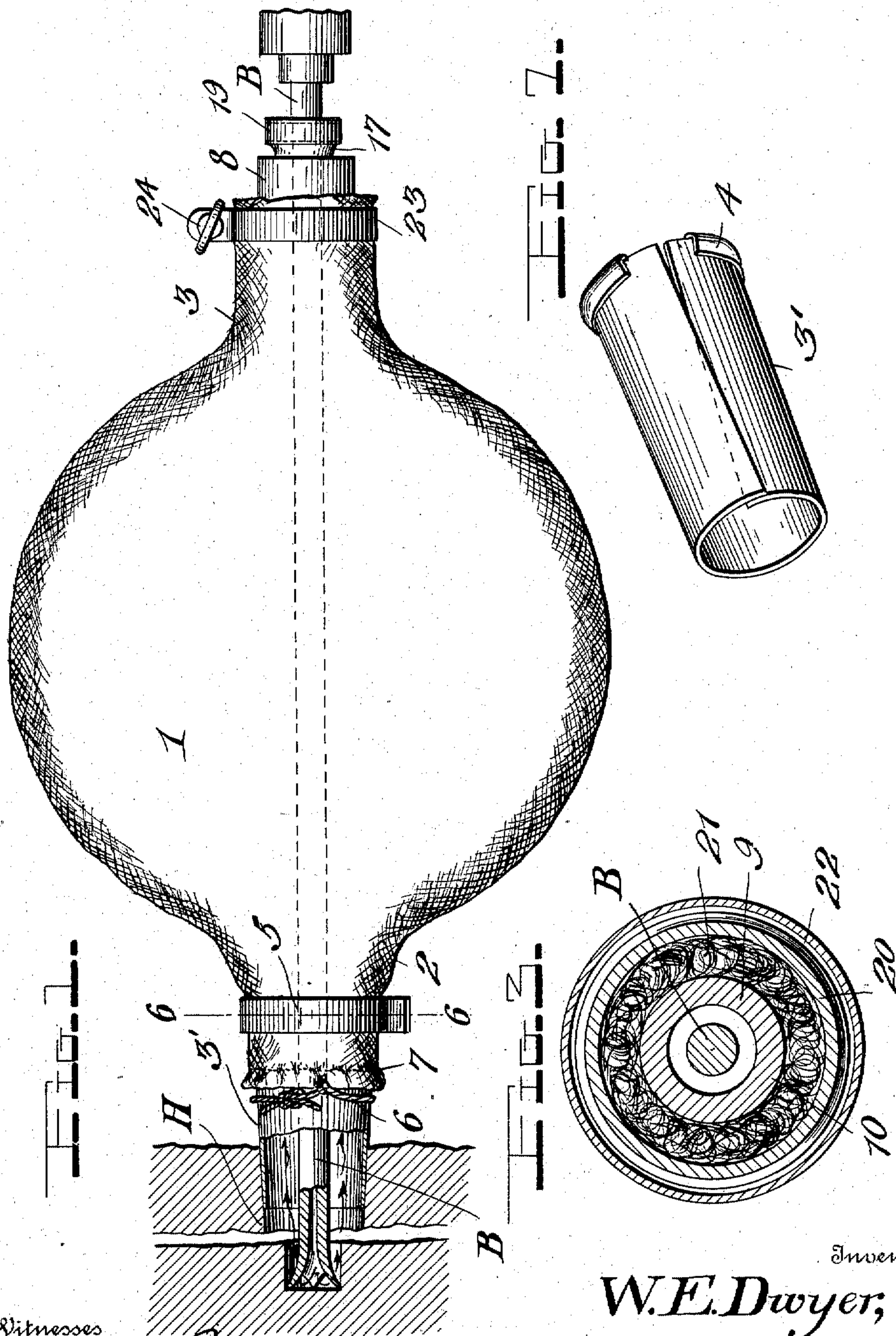


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 DRILL DUST ARRESTER AND AIR PURIFIER.
 APPLICATION FILED MAR. 15, 1910.

983,986.

Patented Feb. 14, 1911.

2 SHEETS—SHEET 1.



Witnesses

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 E. M. Ricketts

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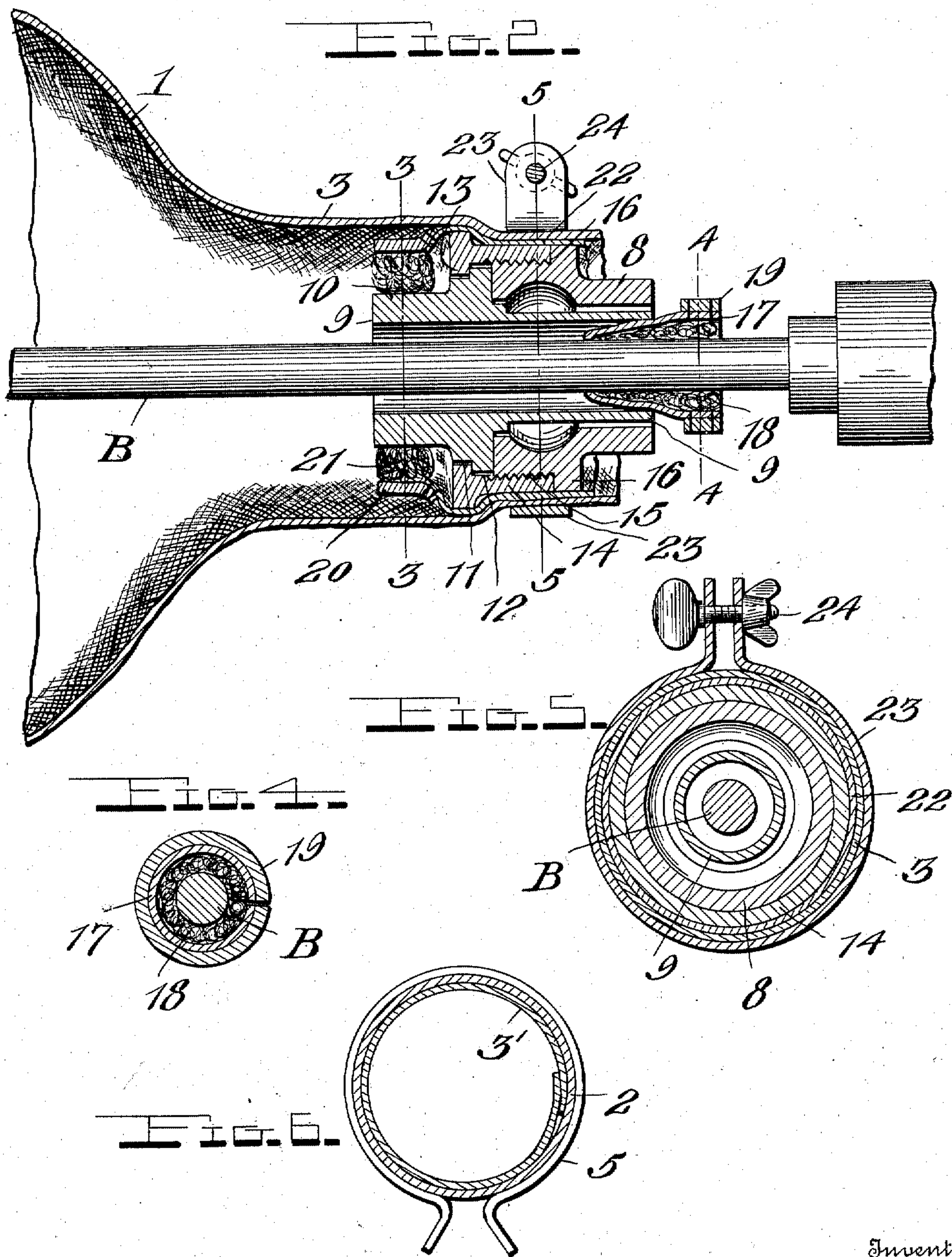
By Watson E. Coleman.
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UNITED STATES PATENT OFFICE.

WILLIAM E. DWYER, OF LEADVILLE, COLORADO.

DRILL DUST-ARRESTER AND AIR-PURIFIER.

983,986.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed March 15, 1910. Serial No. 549,424.

To all whom it may concern:

Be it known that I, WILLIAM E. DWYER, a citizen of the United States, residing at Leadville, in the county of Lake and State of Colorado, have invented certain new and useful Improvements in Drill Dust-Arresters and Air-Purifiers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in dust collecting and air purifying devices for use in connection with pneumatic rock drills and the like.

One object of the invention is to provide a device of this character having an improved swivel connection at one end whereby it is particularly adapted for a rotating drill.

Another object of the invention is to provide a device of this character which will not only collect the dust produced by the drill, but also purify the air coming from the drill, and which has improved means for connecting the device to a drill hole, and an improved means for preventing the escape of dust and preventing its entrance to the swivel connection.

With the above and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, hereinafter fully described and claimed, and illustrated in the accompanying drawings in which:—

Figure 1 is a side elevation of my improved dust collecting and air purifying device; Fig. 2 is an enlarged longitudinal section through one end of the device; Figs. 3, 4 and 5, are detail sectional views taken respectively on the planes indicated by the lines 3—3, 4—4 and 5—5 in Fig. 2; Fig. 6 is a detail section taken on the plane indicated by the line 6—6 in Fig. 1; and Fig. 7 is a perspective view of the tubular member which enters the drill hole.

Referring more particularly to the drawings 1 denotes a casing or sheath arranged to surround an ordinary bit B of a drilling machine and adapted to have at one end an air-tight joint or connection with the drill hole H, and at its other end an air-tight or dust proof connection with the drill or a portion of the drill. This casing is preferably made of flexible porous material so that it acts not only as a dust collector, but

as an air purifier. The casing 1 is provided at its opposite ends with reduced tubular portions or necks 2, 3, the former of which receives a tubular mouth piece 3 adapted to be inserted in the drill hole. This tubular mouth piece is preferably made from a sheet of slightly resilient metal by bending the same into substantially cylindrical form and having its longitudinal edges overlapped so that it may be expanded or contracted to enter different sized drill holes and snugly fit the same. The mouth piece 3' may be tapered longitudinally if desired, and at its large end it is formed with a stop flange or rib 4 formed by folding over the said edge of the sheet metal as shown. The tubular portion 2 is retained on the mouth piece by a spring clip 5, and also by a cord 6 which passes through a hem 7 formed around the edge of the neck 2, the ends of the cord being drawn tightly around the mouth piece and tied as shown. This is the preferred manner of detachably connecting the casing to the mouth piece but it will be understood that other means may be provided for accomplishing this object.

Secured within the tubular portion or neck 3 of the casing is a swivel connection consisting of outer and inner tubular members 8, 9, the latter having a cylindrical bore through which the drill bit B extends. Said inner member 9 has one end thickened and formed with a radially projecting groove 11 containing an annular groove 12, which latter is adapted to receive an inwardly extending annular flange 13 formed at one end of a sleeve nut 14 which is internally screw threaded to engage the large threaded end 15 of the outer member 8. Said end 15 of the member 8 has the flange 11 abutting against it and it is formed with an annular stop flange 16 against which the sleeve nut 14 abuts when the latter is screwed inwardly to retain the flange 11 between the flange 13 and the member 8. This construction it will be seen permits the inner member 9 to rotate freely. Dust is prevented from escaping through the bore of the inner member 9 of the swivel by providing a split packing member 17 which preferably comprises a piece of leather or other flexible material bent into tubular shape and having one end inserted in the bore of the swivel member 9 and around the

bit, as shown. The inner face of the packing member or washer 17 is preferably lined with felt or other soft material 18 which will prevent the passage of dust, and if desired the outer edge of the member or washer 17 may be reinforced by a flexible strip 19 of leather or other material. Dust is prevented from entering the swivel by providing a somewhat similar packing member 20 consisting of a circular band or sleeve of flexible material such as leather provided on its inner face with a soft material 21 such as felt or wool and having attached to it a tubular sleeve 22 of fabric or other flexible material which surrounds the sleeve nut 14 and is arranged within the neck 3 of the casing 1. If desired, the packing member or washer 20 may be a piece of sheepskin with the natural wool forming the material 21, although if desired, the latter may be felt or other soft material which will exclude the passage of dust. The parts 3 and 22 are clamped to the swivel by means of a clamping band 23 preferably made of a strip of metal which is passed around the exterior of the neck 3 and over the sleeve nut 14. The ends of the clamping band 23 are apertured to receive a clamping bolt 24, as shown more clearly in Fig. 5.

In operation, it will be seen that the air which passes through the drill bit B from the exhaust of the pneumatic engine which operates the drill, will be discharged at the bottom of the drill hole to blow out the dust and chippings, as indicated by the arrows in Fig. 1. The dust and chippings will be collected in the chamber formed by the sack or casing 1 and the air will pass through the casing free from injurious particles of dust and ore.

It will be noted that the improved swivel connection permits the free rotation of the drill bit without twisting the casing 1.

Having thus described the invention, what is claimed is:

1. The combination with a bit, of a tubular member to surround the bit and constructed of resilient sheet metal bent into tubular form and adapted to be inserted in a drill hole and to expand therein to effect an air-tight connection, a stop flange on the outer end of said member, a casing forming a dust collecting chamber and having a tubular neck to receive said member, a drawing string in said neck of the casing, and a spring clip to retain said neck of the casing on said member and against said stop flange.

2. The combination with a bit, of a casing to surround the same and provided at one end with means to effect an air tight connection with a drill hole, and at its other end with a neck, a swivel device arranged in the neck of the casing and consisting of an inner tubular member surrounding the bit and formed with an annular flange, and a two part outer member engaged with said flange, a clamp securing the neck of said casing to the two part outer member of the swivel device, a flexible annular packing member arranged within the neck of the casing and clamped between the latter and said two part outer member of the swivel device, to prevent the entrance of dust between the two members of the swivel device, and a flexible tubular packing member arranged in the outer end of the inner tubular member of the swivel device, and having on its inner face soft material to engage the bit and on its outer face a surrounding reinforcing band.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM E. DWYER.

Witnesses:

WILLIAM H. CAMPBELL,
PATRICK BRENNAN.