

M. L. SARGENT.
 MEANS FOR COLLECTING DRILL CUTTINGS.
 APPLICATION FILED MAY 6, 1909.

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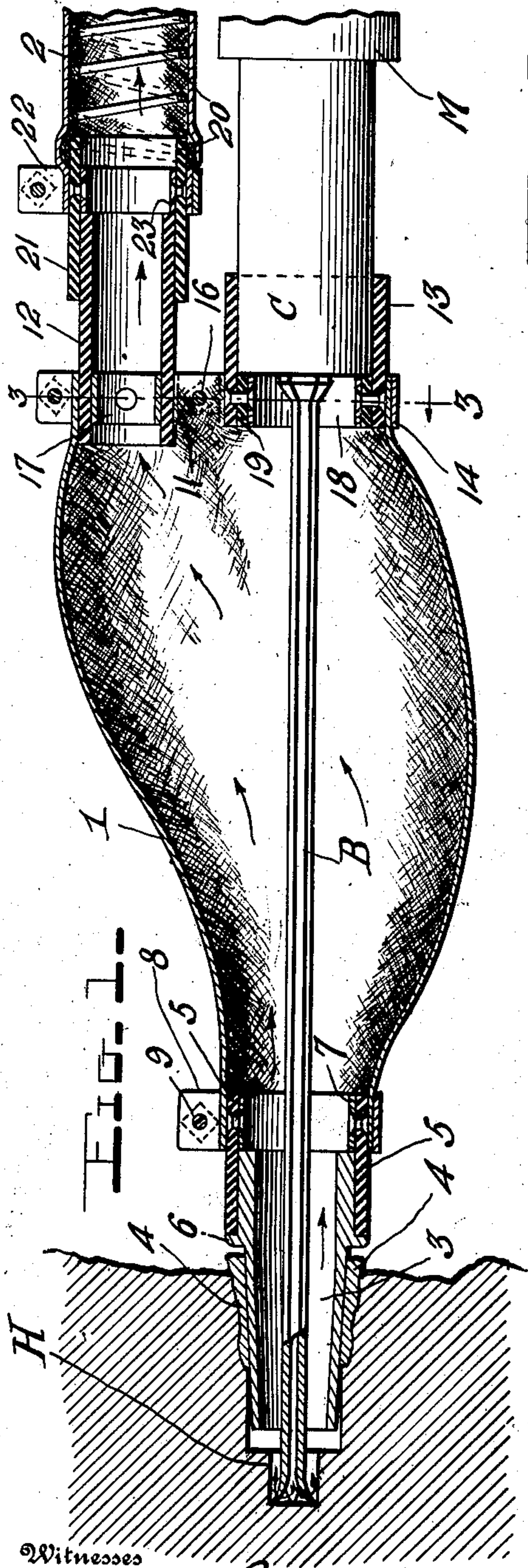


Fig. 1.

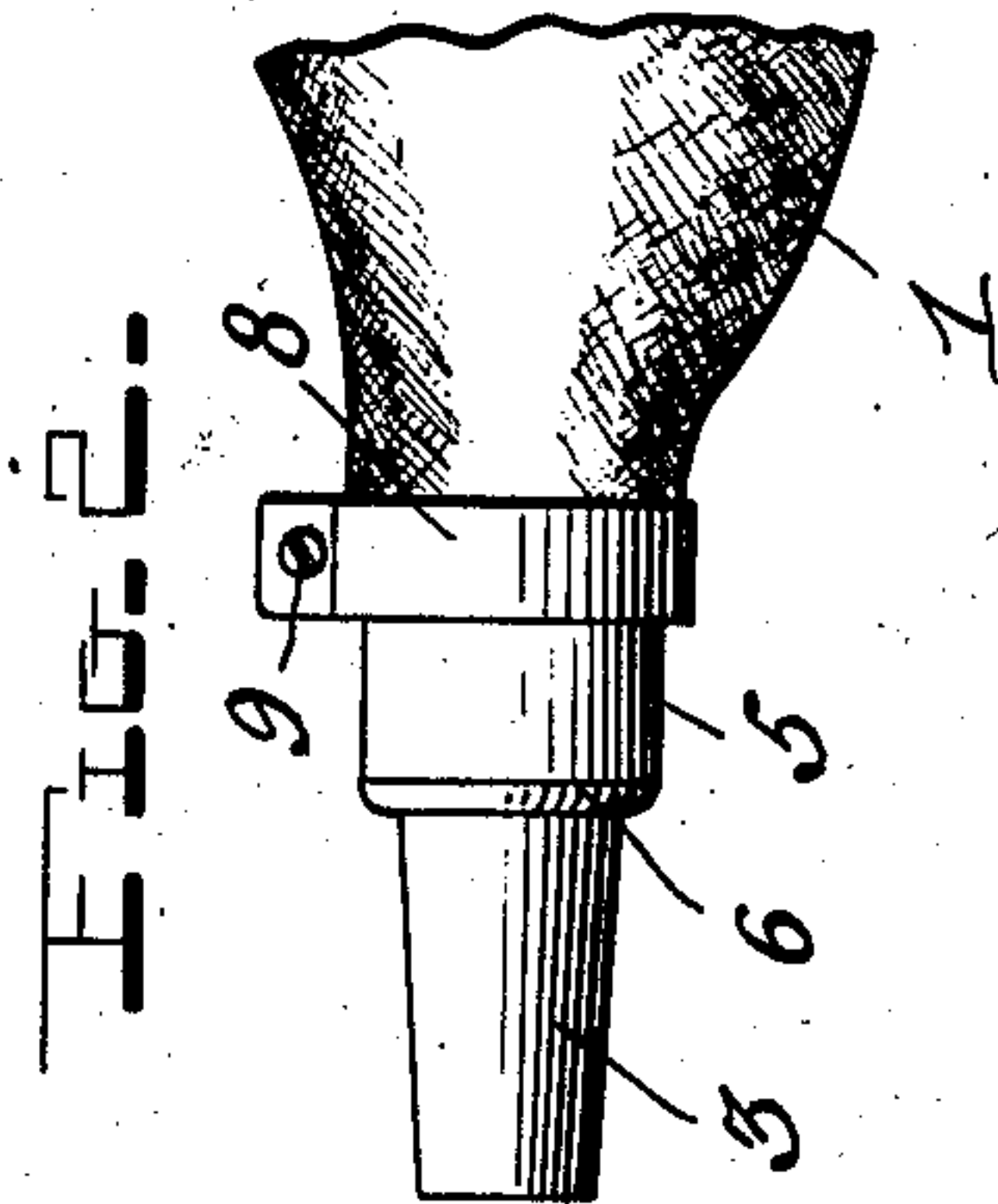
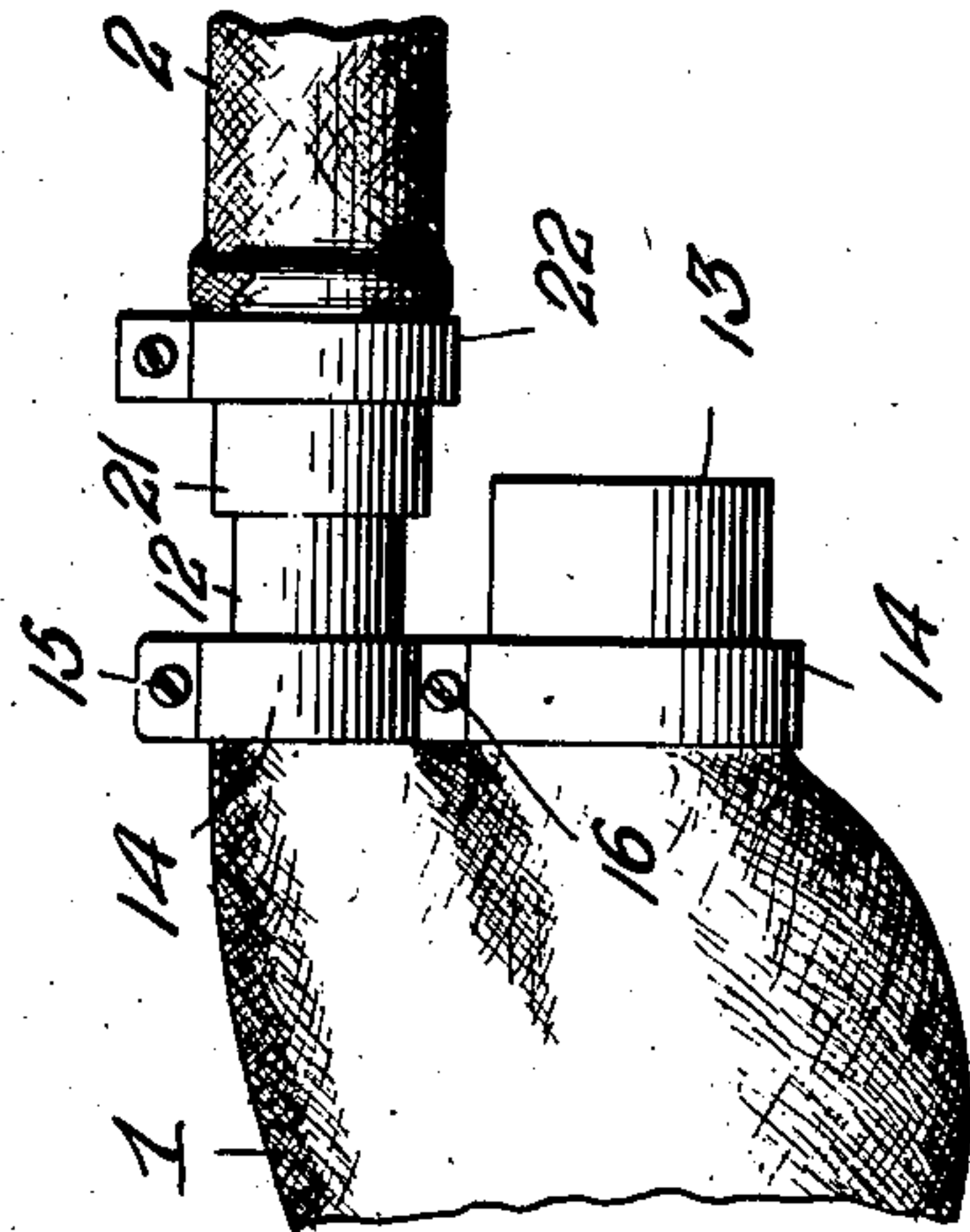
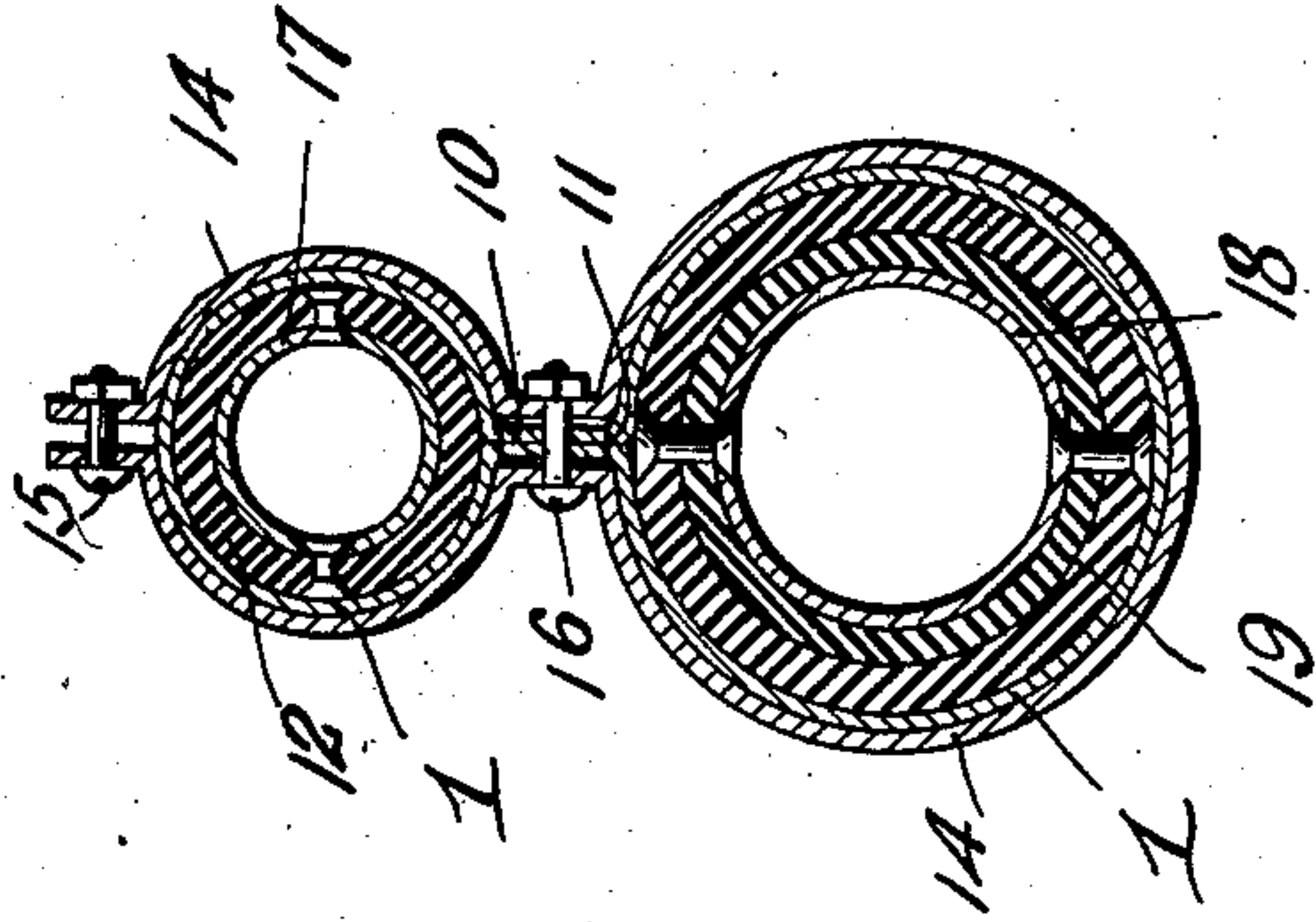


Fig. 4.

Witnesses

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MEANS FOR COLLECTING DRILL-CUTTINGS.

956,181.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MARTIN L. SARGENT, 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 Means for Collecting Drill-Cuttings, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to means for collecting drill cuttings and more particularly a device adapted to be attached to the ordinary pneumatic rock drills used in mining of all kinds.

The objects of the invention are to provide a simple, inexpensive, practical and effective collecting device for the dust and cuttings from the drill; an improved air tight connection between the collecting casing or chamber and the outer end of the drill hole and improved detachable and air tight connections between the several parts of the device and the tool.

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

Figure 1 is a longitudinal section through the preferred embodiment of the invention showing the use of the same; Fig. 2 is a detail side elevation of the invention on a reduced scale; and Fig. 3 is a vertical section taken on the plane indicated by the line 3—3 in Fig. 1.

In the drawings 1 denotes a casing or sheath arranged to surround the bit B of a drilling machine M and adapted to have at one end an air tight joint or connection with the outer end of a drill hole H and at its other end an air tight connection with the chuck C or other portion of the machine M and also with a discharge conductor 2. The casing 1 is preferably made of flexible material such as canvas or similar fabric and it may be of any size and shape which will permit it to serve as a collecting chamber for the major portion of the dust and cuttings from the drill.

One of the important features of my invention is the air tight joint or connection between the outer end of the casing 1 and the drill hole H and I preferably effect such joint by providing a tubular member 3 of

metal or other rigid material which is inserted in the drill hole H and is of such shape and construction that no air will be permitted to escape around it. To facilitate the insertion of the tubular member 3 in the hole H and to also provide an air tight contact between said member and the wall of the hole, said member is tapered longitudinally, as shown but, if desired, I may provide upon the exterior of said member a packing 4 of yieldable or elastic material which will be compressed when the member is driven into the hole to effectively prevent the escape of air around the member. Said tubular member 3 is of greater diameter than the bit B and, consequently, the hole H must be made by a bit of greater diameter than the one used for the regular drilling operation.

The tubular member 3, which is preferably constructed of metal, is made detachable from the casing 1 so that it may be easily and tightly driven into the hole H, and, in order to provide an effective detachable air tight connection between said casing and said member, the former has at its open inlet end a tubular mouth 5 of flexible or elastic material such as rubber tubing. Said mouth 5 is adapted to slip on the outer end of the member 3 and to abut against a shoulder formed by an annular flange 6 on said member. Said tubular mouth 5 has its inner end reinforced by a metal ring 7 arranged within it and united to it by rivets or other fastenings, as shown in Fig. 1, and said end is secured within the reduced outer end of the casing 1 by a divided clamping ring 8, the spaced apertured ends of which are drawn together by a clamping bolt 9. By providing the elastic tubular mouth 5, it will be seen that the outer end of the casing 1 may be easily removed from the tubular member 3 to permit the contents of the casing to be discharged and by fastening the mouth 5 to the casing 1 by means of the clamping ring or band 8, said casing when worn out may be readily replaced by a new one.

The inner or rear end of the casing 1 is preferably made with a larger opening and the opposite portions of the walls of said opening are brought together, as shown at 10, in Fig. 3, and united by one or more rows of stitching 11 so as to form two openings which receive elastic tubular collars

12, 13, the former being for the connection of the discharge conductor or pipe 2 and the latter for the connection of the chuck C. These flexible or elastic collars 12, 13 are preferably made of rubber but they may be constructed of leather or the like and each one has its inner end arranged within one of the openings in the enlarged rear end of the casing 1 and secured therein by a double clamp 14 constructed, preferably, from a single strip of metal bent to form opposing gripping portions which receive the collars 12, 13 between them and which are clamped thereon by clamping bolts 15, 16 provided in their spaced outer ends and intermediate portions, as clearly shown in Fig. 3. The collar 12 is reinforced by an inner ring 17 riveted within it and a similar metal ring 18 is arranged within the other collar 13. A ring 19 of rubber, leather or similar material is preferably interposed between the ring 18 and collar 13 to serve as a shoulder against which the chuck C abuts to provide a more effective air tight connection at this point.

The outlet or discharge conductor 2 is in the form of a tube made of flexible material and held distended by an inclosed coil spring 20. A tubular elastic collar 21 similar to but slightly larger than the collar 12 is adapted to receive and frictionally engage the latter and it is inserted in the end of the conductor or pipe 2 and secured therein by a clamping band 22 similar to the clamp 8 above described. A metal reinforcing ring 23 is arranged within the collar 21 to reinforce the same and to provide a stop shoulder for the collar 12, as clearly shown in Fig. 1 of the drawings. Said conductor 2 may be of any length and lead to any point of discharge but in practice I preferably make it about ten feet in length because I find that by the time the exhaust air passes out of a pipe or tube of such length, all of the dust which it carries will have settled upon the bottom of such pipe. In fact, I find that fully ninety per cent. of the dust and chippings from the drill settle upon the bottom of the casing 1.

In operation, the hole H is drilled with a large bit and the rigid tubular member 3 is then driven into it so as to provide a tight joint or connection. The casing 1 is then applied to the tool and bit and the bit is passed through the member 3 and the mouth 5 of the casing is engaged with the outer end of said member. In the operation of the drill, the casing 1 will be collapsed as the bit moves into the rock and it will collect all of the dust and cuttings of the drill, the blast of air from the exhaust of the driving engine for the drill being driven through the tubular bit and discharged at the bottom of the hole so that all of the dust and chip-

member 3, as indicated by the arrows in Fig. 1.

While the invention is especially adapted for use in connection with pneumatic rock drills commonly used for mining, it will be understood that it may be employed upon drills of other types and constructions than the one illustrated, and it will also be understood that various changes in the form, proportion and arrangement of parts and in the details of construction may be resorted to within the spirit and scope of the invention.

Having thus described the invention what is claimed is:

1. In combination with a bit, of a tubular member to surround the bit and adapted to be inserted in a drill hole to effect an air tight connection therewith, a flexible casing forming a collecting chamber and having an outlet and a detachable connection between said casing and said member.

2. In combination with a bit, of a tubular member to surround the bit and adapted to be inserted in a drill hole to effect an air tight connection therewith, a flexible casing forming a collecting member and having an inlet and an outlet opening, an elastic tubular mouth at the inlet end of said casing and adapted to detachably engage said tubular member, an elastic collar at the outlet end of said casing to detachably engage the shank of the bit, and a tubular conductor extending from said casing.

3. In combination with a bit, of a tubular member to surround the bit and adapted to be inserted in a drill hole to effect an air tight connection therewith, a casing of flexible material having an outlet, and an open outer end, an elastic tubular mouth piece inserted in the open outer end of said casing, a reinforcing band secured within said mouth piece at its inner end and a clamping band for retaining the mouth piece within the casing, said mouth piece being adapted to engage said tubular member.

4. In combination with a bit, of a tubular member to surround the bit and adapted to be inserted in a drill hole to effect an air tight connection therewith, a flexible casing forming a collecting chamber and having a large and a small open end, the small end being in communication with the tubular member, whereby said casing forms a collecting chamber, said casing having the opposing portions of the walls of its large open end secured together to provide two open portions, flexible collars arranged in said open portions, a double clamp for retaining said collars in the casing, one of said collars being adapted to engage the shank of the bit and an outlet conductor connected to the other of said collars.

5. In combination with a hollow bit through which air under pressure is forced to the hole being drilled, of a tubular mem-

ber to surround the bit and adapted to be
inserted in the drill hole to effect an air-
tight connection therewith, said member
having a cylindrical end, a collecting casing,
5 and an elastic cylindrical mouth piece se-
cured in said casing and adapted to receive
the cylindrical end of said tubular member.

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

MARTIN L. SARGENT.

Witnesses:

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