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1,441,169.

C. E. REED.
REAMER.
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Fig. 1.

Fig. 2.

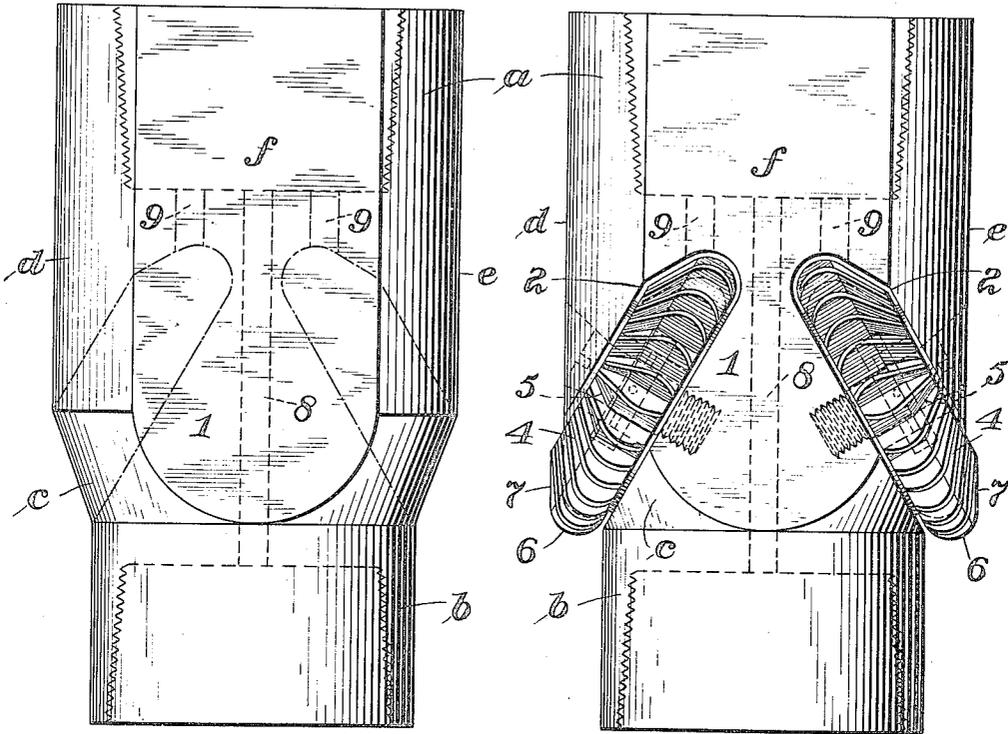
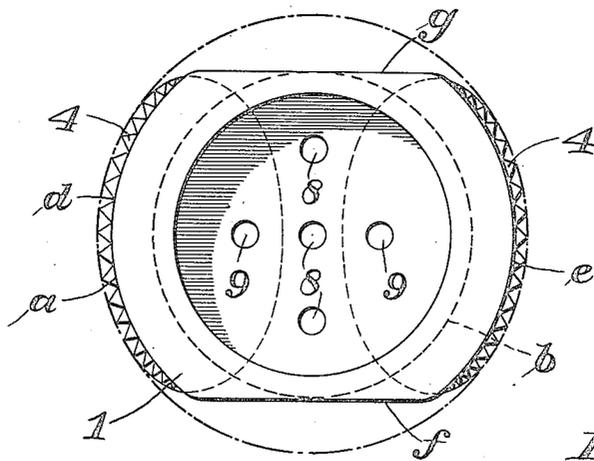


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLARENCE E. REED, OF HOUSTON, TEXAS.

REAMER.

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To all whom it may concern:

Be it known that I, CLARENCE E. REED, a citizen of the United States, and resident of Houston, Texas, have invented certain new and useful Improvements in Reamers, of which the following is a specification.

My invention concerns a tool for drilling oil wells and is intended to enlarge the opening formed by a pilot cutter, or it may be used for enlarging the opening previously formed.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a diagram of a block or reaming head to illustrate its general form, the position of the recesses for receiving the cutters being shown in dotted lines.

Figure 2 is a side view of the head with the cutters in place.

Figure 3 is a top plan view of Figure 2.

In these drawings 1 is the body consisting of a piece of steel having an upper portion *a* of larger size than the lower portion *b*, these two portions having between them a tapered shoulder *c*. The upper part, due to the construction described overhangs the lower reduced portion. The latter is of cylindrical form, while the upper part has its sides *d*, and *e* cylindrical, and its other sides *f*, *g* flat and parallel with each other. In other words this upper portion is of a shape that would be produced by taking a cylinder of a diameter equal to the distance between the points *d* and *e* and slabbing off the sides *f*, *g* to make flat faces here. This slabbing off is preferably carried to an extent that will make the distance between the flat faces *f*, *g*, equal the diameter of the lower reduced cylindrical portion *b*.

In the overhanging portions of the block at the points 2 recesses are formed inclining upwardly and inwardly towards each other from their mouths which lie at the overhanging shoulders of the block or piece. This body piece is, therefore, of a larger dimension crosswise at the upper part *a* than at the lower part *b*. Both the upper and lower ends of the body are provided with means for attachment to other parts, this means consisting, in the particular construction shown, of sockets internally screw-threaded. The lower reduced end receives

the pilot cutting tool or the drill stem which may be of any form desired. The upper socket is adapted to receive the drill rod.

In the recesses I arrange the cutters 4 adapted to rotate on pins 5 which have their heads supported in the outer overhanging portions of the body and at their inner ends the pins are screw-threaded into the main part of the body.

These pins have kerfs in their heads by which they may be screwed into place by a suitable driver. The rotary cutters are of course inclined to accord with the incline of the recesses in which they lie and their lower peripheral edges project beyond the plane of the sides of the body to do the cutting.

They have a rounded cutting edge 6 and a cutting face 7, which are toothed as is usual in this class of implements.

The incline of the face 7 to the axis of the cutter is such that this cutting face at the cutting point lies substantially coincident with the vertical wall of the hole being bored.

The oiling system and the water supply system may be the same as that well known in this class of tool, the water supply means consisting of the passages 8 and 9.

The overhanging relation of the upper part of the head, or block, and the mounting for the journal pins protects the cutters, and prevents the reamer head from catching on any projections from the wall of the well, due to caving of the material or rocks or boulders falling into the bore of the well.

The flat side faces of the upper enlarged portion of the head provide spaces for the return of the flushing water.

For convenience the representation of screw threading of the upper socket has been omitted from Figure 3.

What I claim is:

1. A reaming implement for deep well drilling apparatus consisting of a body having a lower portion of reduced diameter and having at its upper and lower ends means for attachment to adjacent parts of the apparatus, and cutters journaled in the body and inclining downwardly and outwardly, said cutters being of general frusto-conical form with their tapered faces directed outwardly, said tapered face at the lower part of the cutter projecting beyond the vertical plane of the side face of the upper portion

of the body, and with the lower edges of the said cutters overhanging the reduced portion of the body substantially as described.

2. A reaming implement for deep well drilling apparatus consisting of a body having a lower portion of reduced diameter and having at its upper and lower ends means for attachment to adjacent parts of the apparatus, and cutters journaled in the body and inclining downwardly and outwardly, said cutters being of a general frusto-conical form with their tapered faces directed outwardly, said tapered face at the lower part of the cutter projecting beyond the vertical plane of the side face of the upper portion of the body, and with the lower edges of the said cutters overhanging the reduced portion of the body, the edges of the cutters adjacent their bases being rounded, substantially as described.

In testimony whereof, I affix my signature.

CLARENCE E. REED.