

(No Model.)

H. CASSIDY.
EXPANSIBLE REAMER.

No. 376,427.

Patented Jan. 17, 1888.

Fig. 1.

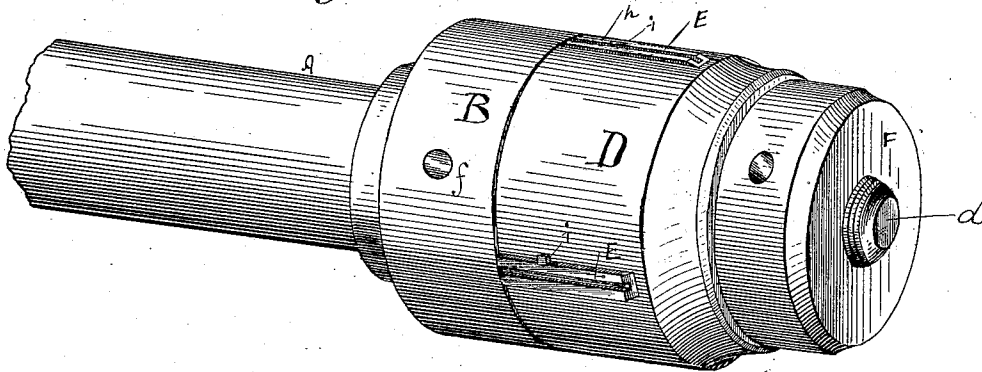


Fig. 2.

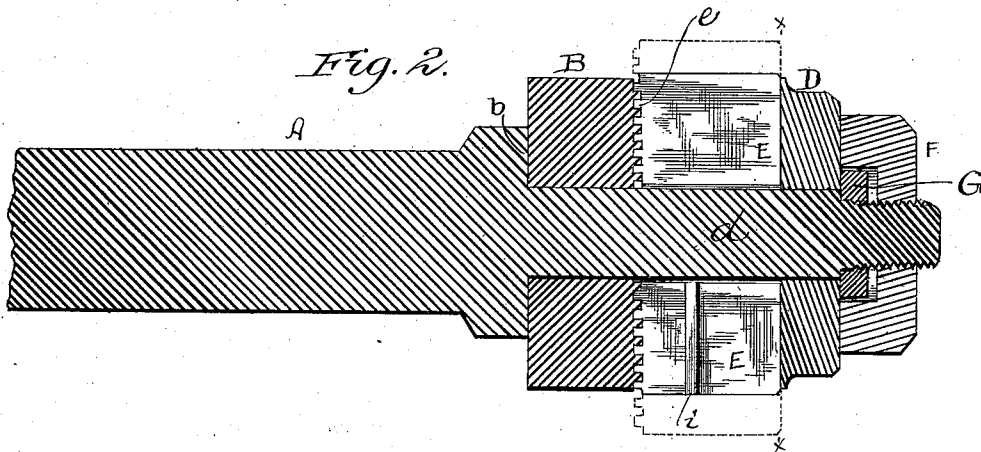
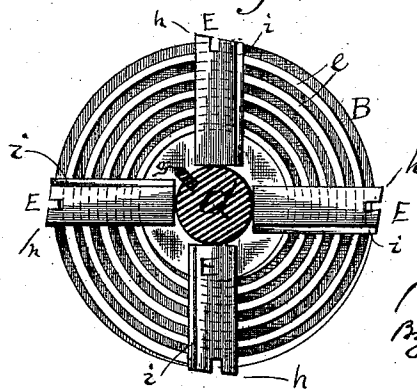


Fig. 3.



Witnesses

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EXPANSIBLE REAMER.

SPECIFICATION forming part of Letters Patent No. 376,427, dated January 17, 1888.

Application filed September 26, 1887. Serial No. 250,732. (No model.)

To all whom it may concern:

Be it known that I, HUGH CASSIDY, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and
5 useful Improvement in Expansible Reamers; and I do hereby declare that the following is a full and accurate description of the same.

Reamers are employed for enlarging and making truly circular holes previously bored
10 or drilled with a boring-bit or drill, and it is a matter of great convenience and economy to render one tool applicable to holes of different diameters. This is done with solid reamers to a certain extent by making them conical in form; but it is not always allowable to
15 make the hole conical. It has been also done by making the cutting edges of movable bits, which are capable of adjustment on radial lines, so that they can be placed at greater or
20 less distances from the axis.

So far as I am aware, all adjustable bits or expansible reamers heretofore have had their movable bits supported on an adjustable cone, the forward or backward movement whereof
25 caused the said bits to be thrust outward, or permitted them to retreat toward the center, as the case may be. This mode of construction gives solid bearings for the several bits, but does not admit of easy adjustment with accuracy.
30

My invention consists in mounting the movable bits and controlling them by a scroll-plate acting in a plane transverse to the axis of rotation, so that all the bits will be simultaneously moved in one direction or the other, as the case may be.
35

It also consists in the particular structure of the several parts to effect the movement and locking in position of said bits.

In the following description reference is had to the accompanying drawings, wherein—
40

Figure 1 is a perspective view of my reamer. Fig. 2 is a longitudinal section of the same. Fig. 3 is a transverse section on line *x x*.

45 The shaft or bearer A is formed with a cylindrical head, *d*, and a shoulder, *b*. A plate, B, is fitted to turn freely on the cylindrical head *d* against the shoulder *b*, and said plate is provided on its face side with a scroll rib
50 or thread, *e*, and with spanner-holes *f*, or other means whereby power may be applied to re-

volve said plate B when required. The cylindrical part *d* need not extend beyond the thickness of the plate B, as that is the member which is required to revolve. In front of said
55 plate there is a head, D, which carries the radially-adjustable cutters E, and said head is most conveniently mounted on the extended end of the bearer and capable of longitudinal movement thereon, but is necessarily re-
60 strained from rotary motion thereon. This may be accomplished by making the forward extension of the bearer angular in cross-section and fitting said head D thereto; but it is more convenient to make said extension cy-
65 lindrical and prevent rotation of the head D by ordinary means—such as a spline, *g*—as shown in Fig. 3. By these means the cutters E are compelled to rotate with the bearer A.

Each cutting-bit is fitted to move in a socket
70 or groove cut radially in the head D, and one edge of each cutter is provided with sections of a spiral or scroll rib or thread having the same pitch as the scroll *e* on the plate B, and therefore adapted to mesh therewith. When
75 the several cutters are thus in mesh with the scroll *e*, it is evident they will all be simultaneously moved outward or inward, as the case may be, by rotation of the plate B. The exposed edges *h* of the cutters E are properly
80 ground to present salient edges.

It is convenient to cut the sockets for the cutting-bits entirely through from side to side of the head D, as shown, so that the cutting-edge *h* and the scroll-rib edge are both en-
85 tirely exposed. It is then possible to lock all the movable parts by forcing them back against the shoulder *b* by pressure applied to the front of the head D, and such pressure is easily applied by means of a screw-nut, F, applied on
90 the extremity of the bearer and forcing back against the front of the head D; but said nut must necessarily be relaxed before the plate B can be revolved to change the adjustment of the cutters, and if said nut be moved too far
95 the head D may move away from the scroll and slip the cutters out of engagement. To guard against this the nut F is recessed at the back, and a stop-nut, G, is placed therein, which will serve to keep the head D and its cutters
100 from longitudinal movement far enough to go out of engagement with the scroll-rib *e*.

The bit-sockets being open toward three sides, it is convenient to apply a guide-rib, *i*, on the side of the bit in the direction of its movement and provide a corresponding groove inside the socket, so that said cutter can only move in one direction in its socket.

Having described my invention, I claim—

1. In an expansible reamer, the bearer *A*, having a shoulder, *b*, a plate, *B*, fitted to turn freely thereon against said shoulder, as set forth, said plate being provided with a scroll rib or thread, *e*, and cutting-bits *E* in engagement with said scroll-rib, and means whereby said bits are attached to said bearer to be revolved with it and free to move radially for adjustment by the rotation of said scroll-plate.

2. In an expansible reamer, a bearer, *A*, having an extension, *d*, and a shoulder, *b*, a plate, *B*, fitted to turn freely against said shoulder

and provided with a scroll rib or thread, *e*, a head, *D*, fitted to and caused to revolve with said bearer *A*, provided with radial sockets, and cutting-bits *E*, fitted therein and adapted to engage said scroll-rib *e*, and means for locking all of said movable parts rigidly to said bearer when the proper adjustment has been attained.

3. In an expansible reamer, the bearer *A*, having the shoulder *b* and extension *d*, the scroll-faced plate *B*, adapted to turn freely against said shoulder, the non-rotating head *D*, provided with radial sockets, the cutting-bits *E*, fitted to move therein and engage the scroll-rib *e*, the recessed clamping-nut *F*, and the stop-nut *G*, substantially as set forth.

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Witnesses:

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