(No Model.)

J. H. CALKINS.

EXPANSIBLE CUTTER.

No. 522,403. Patented July 3, 1894.

Fig. 1.

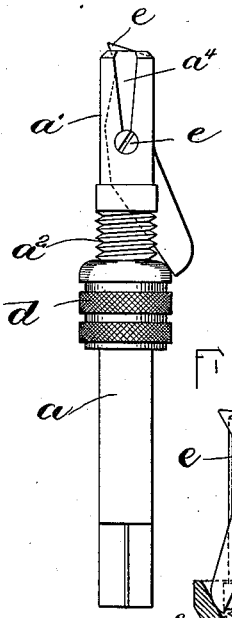


Fig. 2.

Fig. 3.

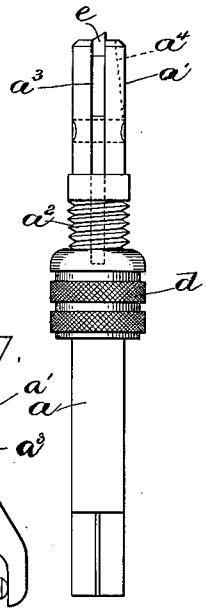


Fig. 6.

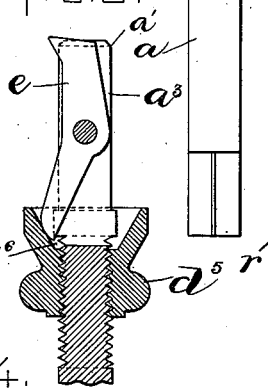


Fig. 7.

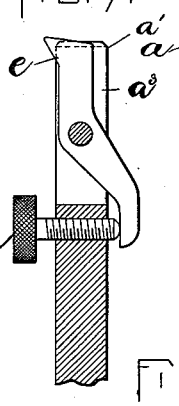


Fig. 4.

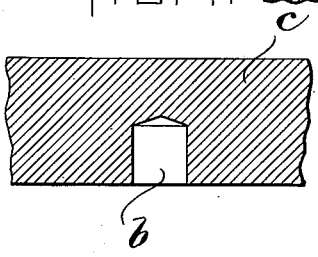


Fig. 5.

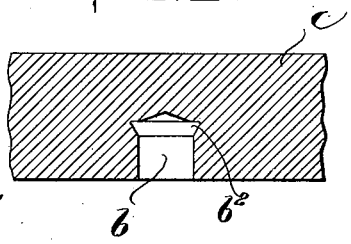
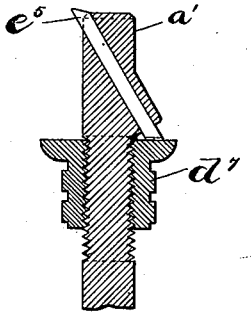


Fig. 8.



WITNESSES:
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A. D. Harrison.

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by Wright Brown Quinby & Coulter
Attys.

UNITED STATES PATENT OFFICE.

JAMES H. CALKINS, OF WAKEFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO TIMOTHY J. McHUGH, OF SAME PLACE.

EXPANSIBLE CUTTER.

SPECIFICATION forming part of Letters Patent No. 522,403, dated July 3, 1894.

Application filed August 31, 1893. Serial No. 484,444. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. CALKINS, of Wakefield, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Expansible Cutters, of which the following is a specification.

This invention has for its object to provide a tool adapted to be used for the enlargement of a portion of a hole that has previously been formed in a piece of marble or other material, the object being to form a hole which is enlarged at its inner end for the reception of an expansible bolt.

The invention consists in an expansible boring tool comprising in its construction a rod formed at one end as a plug adapted to fit a previously formed hole, a bit or cutter movable in the plug, and a bit adjusting device adapted to move the bit, said bit being formed so that its acting portion may be contained wholly within the periphery of the plug, and inserted with the latter in a previously formed hole which closely fits the plug. After the insertion of the bit and rod in said hole the bit may be projected by the adjusting device, and thus caused to project outside of the periphery of the plug, so that when the plug is rotated in the hole the bit will enlarge that portion of the wall of the hole against which it bears, all of which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification—Figure 1 represents a side view of my improved expansible cutter, showing the bit adjusted so that it is wholly contained within the periphery of the plug. Fig. 2 represents a longitudinal section of the cutter, showing the bit projected outside of the periphery of the plug. Fig. 3 represents a view showing the nut and bit in the same position as in Fig. 1, but viewed from a different point. Fig. 4 represents a sectional view of a portion of a marble slab having a hole therein, said hole being shown as it exists before the action of my improved cutter thereon. Fig. 5 represents a view similar to Fig. 4, showing the hole after it has been enlarged at its inner end by my improved cutter. Figs. 6, 7 and 8 represent views of modifications.

The same letters of reference indicate the same parts in all the figures.

Referring for the present to Figs. 1 to 5 inclusive—a represents a metal rod, one end of which is formed as a cylindrical plug a' adapted to fit a hole b which has been formed in a marble slab c. A portion a^3 of the periphery of the rod adjacent to the plug a' is screw-threaded, and with said screw-threaded portion is engaged a nut d.

e represents a bit which is preferably of hardened steel, and is located on a slot a^3 which is formed in the plug, said slot extending inwardly from the outer end of the plug. The bit is connected to the plug by means of a bolt or pivot e', and is provided with an inclined shank e^2 which projects diagonally from the inner portion of the slot, the inner end of said shank bearing upon the outer end of the nut d, so that the position of the bit may be determined by the position of the nut, the bit being forced outwardly from the slot by an outward movement of the nut as indicated in Fig. 2.

It will be seen that when the nut is adjusted as shown in Figs. 1 and 3 the bit may be contained wholly within the periphery of the plug, so that the plug and bit may be together inserted in the hole b. After the insertion of the bit and plug in said hole, the bit may be projected outside of the periphery of the plug by the outward adjustment of the nut, as shown in Fig. 2. It will be seen that by continuously rotating the plug in the hole, and at the same time gradually moving the nut outwardly, and thus gradually projecting the bit, an enlargement b^2 may be formed at the inner end of the hole b as shown in Fig. 5, thus adapting the hole to receive a bolt which is capable of being expanded at its inner end to engage it with the slab c.

The bit e is of such length that its cutting point is substantially flush with the end of the rod, the slot of which extends to its end. Thus the side of the rod diametrically opposite the cutter will bear against the side of the hole b and support the back pressure of the cutter, and steady the tool in its operation. This is a particular advantage when enlarging the bottom of a hole in such hard substance as marble.

After the hole has been enlarged as above described the nut d may be adjusted away from the plug, thus permitting the bit to assume the position shown in Fig. 1, so that the plug and bit may be removed from the hole.

a^4 represents a groove or channel formed in one side of the plug a' to permit the escape of the chips or cuttings formed by the bit making the enlargement b^2.

Referring to Figs. 6, 7 and 8, showing certain modifications—it will be seen that my invention is not confined to the construction above described. Fig. 6 shows an adjusting nut d^5 which has a recess d^6 receiving the shank of the bit. Fig. 7 shows, as a substitute for a rod, an adjusting screw r passing through the rod and bearing on the said shank. Fig. 8 shows a bit e^5 fitted to slide endwise in a diagonal slot in the plug, and adjusted by a nut d^7 bearing on the projecting shank of the bit.

I claim—

1. In an expansible boring tool the combination of a rod formed at one end as a plug adapted to fit a previously formed hole, a bit or cutter pivoted in the plug and extending in two directions from its pivot and formed so that its acting portion or arm may be contained wholly within the periphery of the plug, and inserted with the latter in a hole formed to fit the plug, and a device in contact with the other arm for projecting the cutting end outside of the periphery of the plug, the cutting end of the bit being substantially flush with the end of the rod whereby, when the plug is rotated within the hole, the bit may be supported and caused to enlarge the hole, as set forth.

2. In an expansible boring tool the combination of a rod formed at one end as a plug adapted to fit a previously formed hole, a bit or cutter movable in the plug, and having a shank or projection extending outwardly from the periphery of the plug, and a screw-threaded sleeve fitted to the rod and bearing on the projecting shank, whereby the bit may be projected outside of the periphery of the plug, as set forth.

3. An expansible boring tool comprising in its construction a rod formed at one end as a plug adapted to fit a previously formed hole, a bit or cutter pivoted in the plug, said bit having an inclined shank or projection opposite its cutting end and extending outwardly from the periphery of the plug, and a bit adjusting nut engaged with the threaded portion of the rod and bearing against the projecting portion of said shank, the bit being formed so that it may be contained wholly within the periphery of the plug, and inserted with the latter in a previously formed hole, whereby after the insertion of the bit and rod in said hole, the bit may be projected by a suitable adjustment of the nut, and thus caused to project outside of the periphery of the rod so that when the plug is rotated in the hole the bit will enlarge that portion of the wall of the hole against which it bears, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 21st day of August, A. D. 1893.

JAMES H. CALKINS.

Witnesses:
TIMOTHY J. McHUGH,
JAMES F. CURLEY.