

W. L. HATZEL & T. STOETZEL.

DRILL EXTRACTOR.

APPLICATION FILED MAY 11, 1912.

1,055,169.

Patented Mar. 4, 1913.

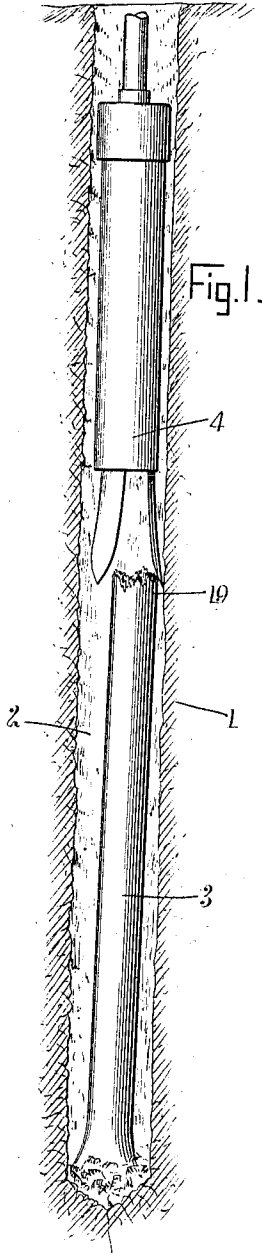


Fig. 1.

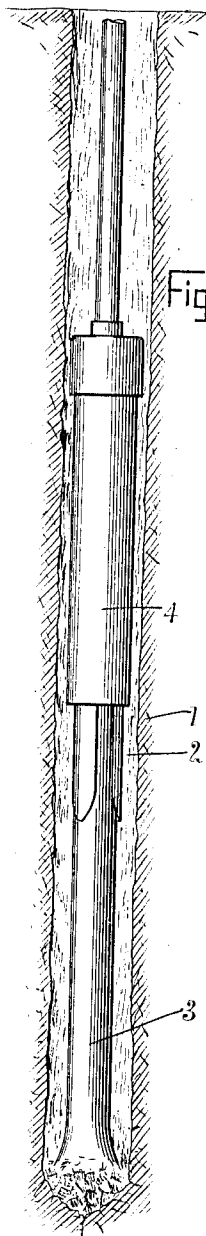


Fig. 2.

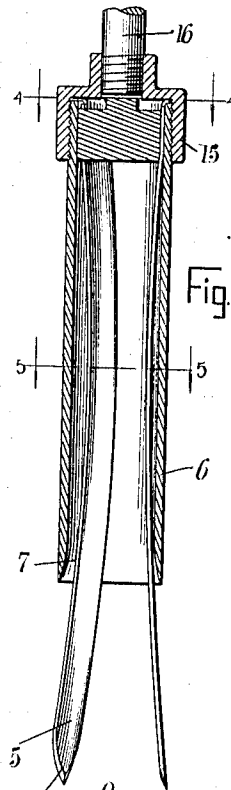


Fig. 3.

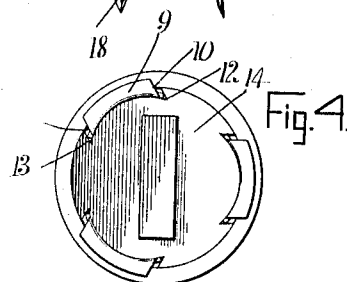


Fig. 4.

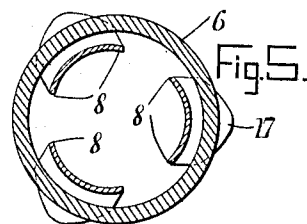


Fig. 5.

WITNESSES

C. H. Reichenthal
A. L. Kitchin

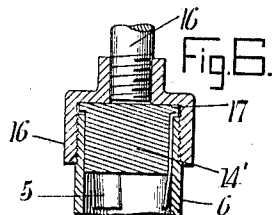


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM L. HATZEL AND THEODORE STOETZEL, OF NEW YORK, N. Y.

DRILL-EXTRACTOR.

1,055,169.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed May 11, 1912. Serial No. 696,668.

To all whom it may concern:

Be it known that we, WILLIAM L. HATZEL and THEODORE STOETZEL, both citizens of the United States, and residents of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Drill-Extractor, of which the following is a full, clear, and exact description.

This invention relates to drill extractors, and has for an object to provide an improved structure for engaging broken drills or drills of any kind, and quickly removing the same from the hole or bore in which they are found.

A further object of the invention is the provision of an extracting device designed to be forced into the hole in which a drill has been broken, for removing the broken section of the drill, the device being adapted to engage the broken section of the drill and automatically connect itself therewith so that when the extractor is removed the section of the drill will be also removed.

A still further object of the invention is to provide a drill extractor for removing sections of drills from any desired point, which embodies a plurality of resilient gripping members designed to be forced over part of the drill or drill sections whereby the drill or drill sections are gripped firmly by the extractor and may be bodily removed thereby.

In carrying out the objects of the invention, a housing of tubular construction is provided in which a plurality of curved gripping members is provided designed to flare out slightly at their ends which project beyond the tubular structure. To this tubular structure is secured an operating rod or pipe whereby the device may be forced into a hole and over the end of a drill or section of a drill, for causing the resilient curved members to grip the same. After the drill or drill section has been firmly gripped by the extractor the same may, of course, be easily removed upon the removal of the extractor.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a view showing a side elevation of an embodiment of the invention in operation, this view also showing a broken

section of drill located in a hole which was being made; Fig. 2 is a view similar to Fig. 1 with the exception that the extractor is positioned on the upper end of the drill section; Fig. 3 is a longitudinal vertical section through an embodiment of the invention; Fig. 4 is a top plan view of the extractor with the operating fitting removed; Fig. 5 is a section through Fig. 3 on the line 5—5; and Fig. 6 is a fragmentary sectional view similar to the upper part of Fig. 3, the same, however, showing a slightly modified form of the invention.

Referring to the accompanying drawings by numerals, 1 indicates a rock or other material in which a hole 2 is being bored, and 3 indicates the lower end or section of a drill which has been broken off. The extractor 4 is designed to be forced or rather passed downwardly through the hole 2, as shown in Figs. 1 and 2, until the same has telescoped over the drill section 3 to a sufficient extent for causing the resilient clamping members 5 of the extractor 4 to grip the section 3. After the extractor 4 has been moved to the position shown in Fig. 2, the extractor is removed and with it the section 3. A new drill may be then placed in the hole 2 and the drilling operation continued.

The extractor 4 is formed with a tubular housing 6 beveled at 7 so as to allow the resilient clamping members 5 to be flared outwardly at the bottom. The members 5 are preferably curved for their entire length longitudinally and also transversely. The transverse curvature of the members 5 is struck on an arc of less diameter than the curvature of the tubular member 6 whereby biting edges 8 are provided which bite into the drill section 3 when the extractor is in operation. The upper ends of the clamping members 5 are formed with turned-over portions 9 cut away at 10 and 11 for fitting into the dove-tailed ways 12 and 13 formed in the plug 14. In this manner the plug 14 presses the upper ends of the members 5 against the upper end of the tubular housing and is in turn supported by the clamping members 5. It will also be observed that the turned-over portions 9 overlap somewhat the upper edge of the tubular member 6 and are clamped against the same by a fitting 15 to which is secured a pipe or rod 16. The pipe or rod 16 may be made of any length and if desired, may be made in sections so as to cause a proper operation of the extractor in

inserting and removing the same from the hole 2.

In Fig. 6 a slightly modified form of plug 14' is provided formed with a flange 17 which overlaps the projections 9. Aside from this slight change the construction shown in this figure is similar to the preferred form and will therefore need no additional description. It will be observed that the lower ends of the members 5 are somewhat rounded or pointed at 17 and also beveled at 18 so as to be able to be forced between the walls of the hole 2 and the drill section 3, as shown at the point 19 in Fig. 1.

Having thus described our invention we claim as new and desire to secure by Letters Patent:—

1. In a drill extractor of the class described, a housing, a plurality of arc-shaped resilient plates connected with the upper end of said housing interiorly thereof, said plates projecting below the housing and flaring slightly outwardly therefrom whereby the clamping members may be forced over a drill section, and means connected with the upper end of the housing for operating the same.

2. In a drill extractor of the class described, a housing formed slightly flared at the lower end, a plurality of resilient clamping fingers connected with said housing at the upper end and extending through the housing to a point below the same, said clamping fingers being bowed longitudinally and curved transversely, and means connected with the upper end of the housing for operating the same.

3. In a drill extractor of the class de-

scribed, a member, a plurality of resilient plates arranged in said tubular member and projecting below the lower end thereof, each of said plates being curved transversely for forming biting edges, and an operating means connected with the upper end of the housing.

4. In a drill extractor of the class described, a housing, a plurality of resilient plates arranged in said housing and projecting below the lower end thereof, each of said plates being formed with biting edges for engaging a drill forced into the housing, a retaining and binding plug connected with the upper end of said plates for holding the upper end of the plates rigidly connected with the tubular housing, and an operating member connected with the upper end of the tubular housing.

5. In a drill extractor of the class described, a housing, a plurality of resilient fingers connected at one end to the upper part of said housing interiorly and projecting for the full length of the housing and to a point below the lower end of the housing, said fingers being bowed slightly longitudinally whereby the lower ends thereof will flare outwardly, and means rigidly connected with the upper end of said housing for operating the same and said fingers.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM L. HATZEL.
THEODORE STOETZEL.

Witnesses:

JULIUS TRATTNER,
HELENE TRATTNER.