(No Model.)

W. SEELY.

DRILL SHAFT GRAPPLE.

No. 339,021. Patented Mar. 30, 1886.

Fig. 1.

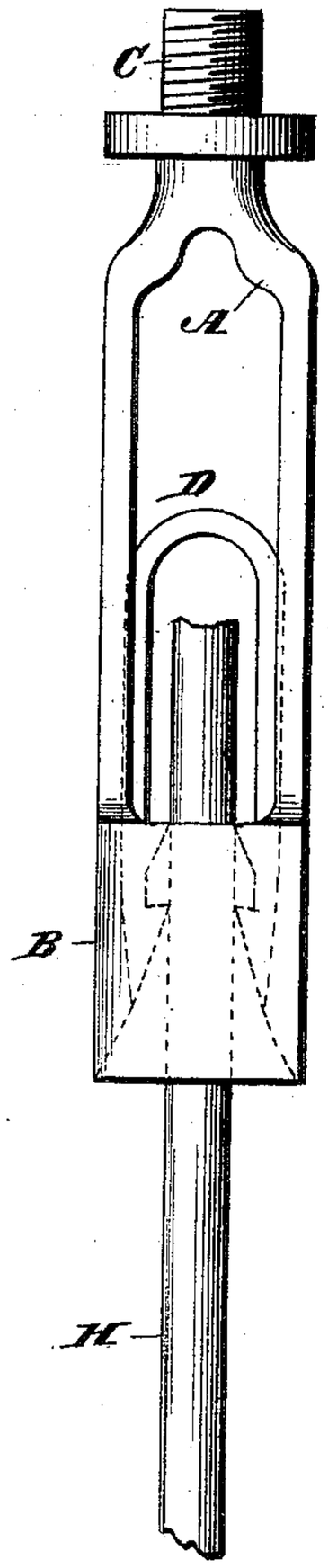


Fig. 2.

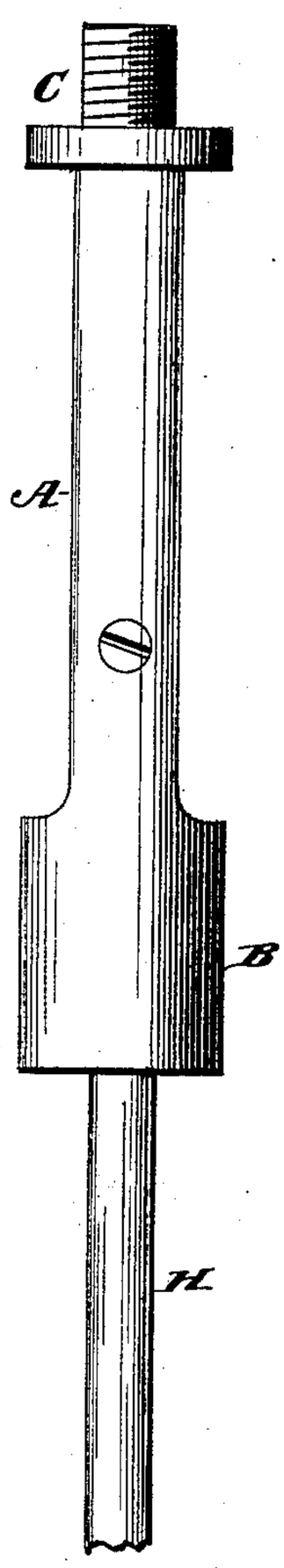


Fig. 3.

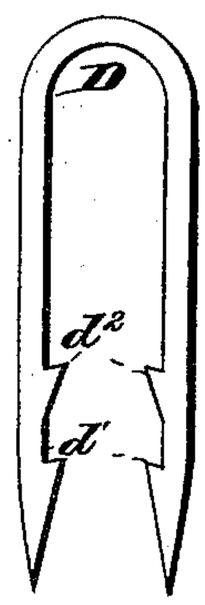


Fig. 4.

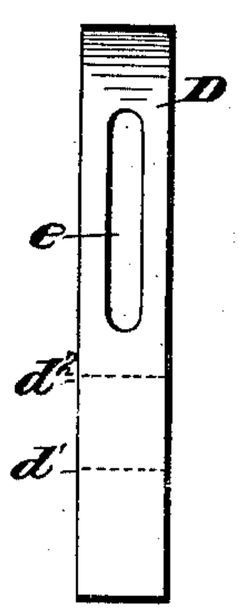


Fig. 5.

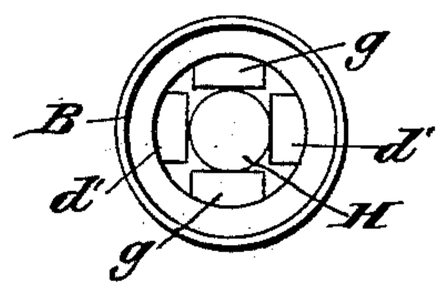
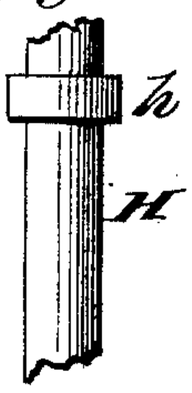


Fig. 6.



Witnesses.

Luther Ripley

Fred H Swafford

Inventor.

William Seely.

By

Joseph N. Clouse.

Atty.

UNITED STATES PATENT OFFICE.

WILLIAM SEELY, OF PORT HOPE, MICHIGAN.

DRILL-SHAFT GRAPPLE.

SPECIFICATION forming part of Letters Patent No. 339,021, dated March 30, 1886.

Application filed October 14, 1885. Serial No. 179,896. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SEELY, a citizen of the United States, residing at Port Hope, in the county of Huron and State of Michigan, have invented new and useful Improvements in Drill-Shaft Grapples, of which the following is a specification.

My invention relates to improvements in grapples such as are used to catch a broken drill-shaft or well-auger shaft, and thus clear the hole of obstructions; and the object of my invention is to provide a safety-grapple that will be a ready and efficient means of extracting broken drill-shafts, it being necessary in many cases to abandon a hole when the drill gets stuck and the drill-shaft broken. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the device. Fig. 2 is an edge view of the device. Figs. 3 and 4 are side and edge views of the barbed grapple-yoke. Fig. 5 is an end view looking into the device; and Fig. 6 is a section of a drill-shaft with a collar on it.

Similar letters refer to similar parts throughout the several views.

The main shell or frame of the device consists of a bail, A, the upper end of which terminates in a collar and screw, C, forming a coupling to connect it with any length of shaft desired, and the lower end terminating in a sleeve or band, B, which sleeve or band B is straight with the bail on the outside, and, as indicated by dotted lines, on the inside it has a double conical taper, with the apexes of the two cones together, the shorter one tapering outward to the edge and the longer one tapering outward to the point where the sleeve or band B intersects the bail A.

D is a barbed grapple-yoke, the round closed end of which is a spring, and the two arms are tapered on the outsides, and on the inside they are tapered at the point and each one armed with two or more tempered barbs or biting-edges, d' d' d^2 d^2, a space between the barbs being left to receive also a collar on a broken shaft when a shaft may chance to be broken close up to the collar, as shown in Fig. 6. Screws f f, extending inward through the bail A, work in the slots e e and prevent the barbed grapple-yoke D from being drawn out.

H represents a section of a broken drill-shaft in position fast in the device.

g g, Fig. 5, are stops to keep the shaft H in a position nearly central.

Having described the parts of my device and their working relation to each other, the working is simple and easily understood by a brief description, as follows: A shaft with the device on the end of it is lowered in the hole, and when it comes down to the end of the broken shaft to be drawn out, the large conical opening in the end of the sleeve B guides the shaft H between the barbs d' d' and d^2 d^2. The yoke D, yielding easily to the upward pressure, is forced up and allows the shaft H to pass the barbs and go up far enough to allow the barbs to get a firm hold on it. Then when the upward draft is applied the yoke D is drawn down by the impinging of the barbs on the shaft H, and as increased power is applied the yoke D is drawn down the incline planes or tapered surfaces, tightening the grip on the shaft H. Thus the more power there is applied to draw out the broken shaft the tighter the grip is on the shaft.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a drill-rod grapple, the combination of the bail A, having a sleeve, B, provided internally with a double conical taper, stops g g within said sleeve, and stop-screws f f, projecting inward from the bail-arms, and the spring grapple-yoke D, provided with barbs d' d^2, and having longitudinal slots e for engaging the stop-screws f, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WM. SEELY.

Witnesses:
FRED H. STAFFORD,
L. DOW GRIFFIN.