

No. 725,844.

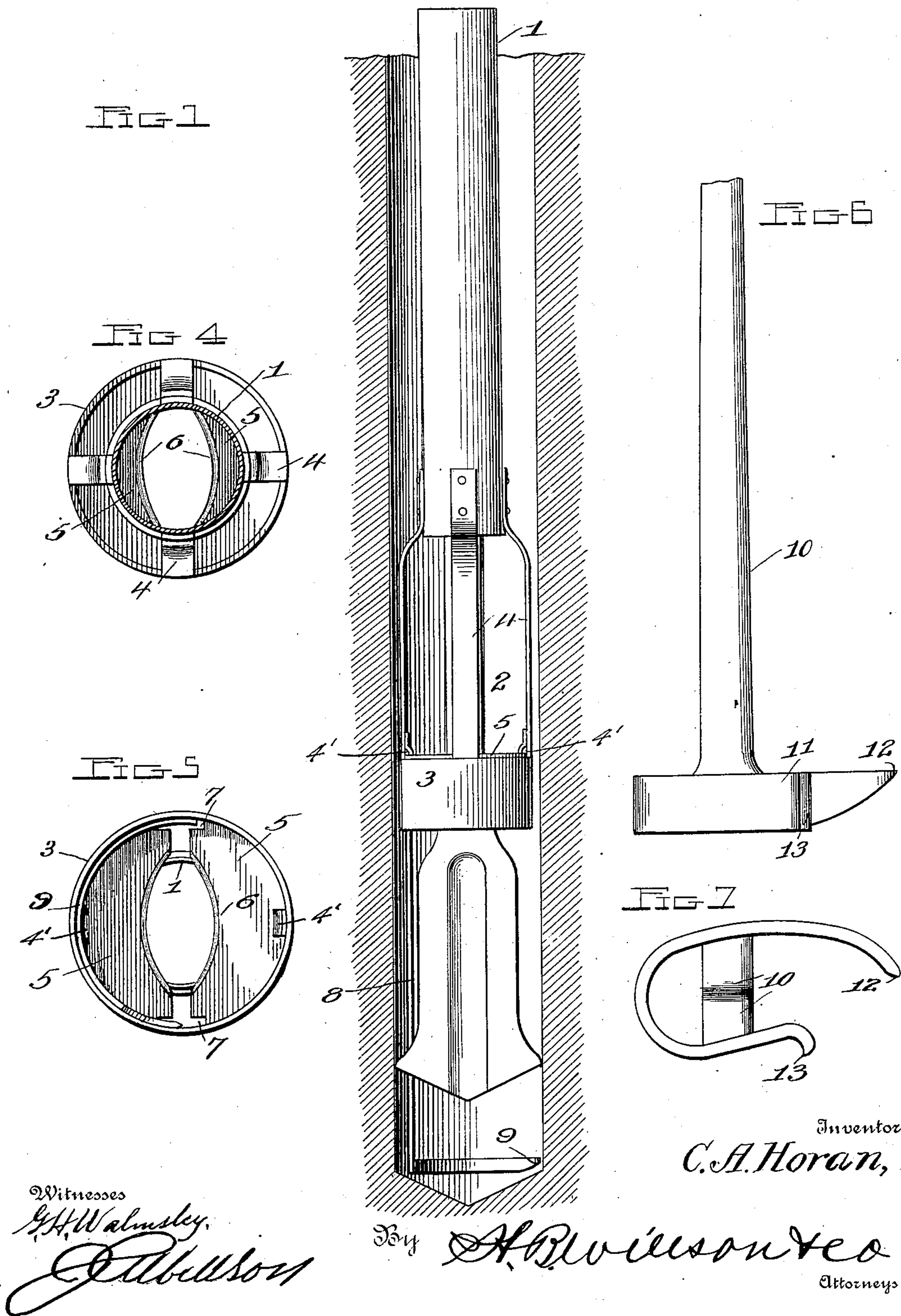
PATENTED APR. 21, 1903.

C. A. HORAN.  
DEVICE FOR EXTRACTING DRILLS, &c.

APPLICATION FILED APR. 7, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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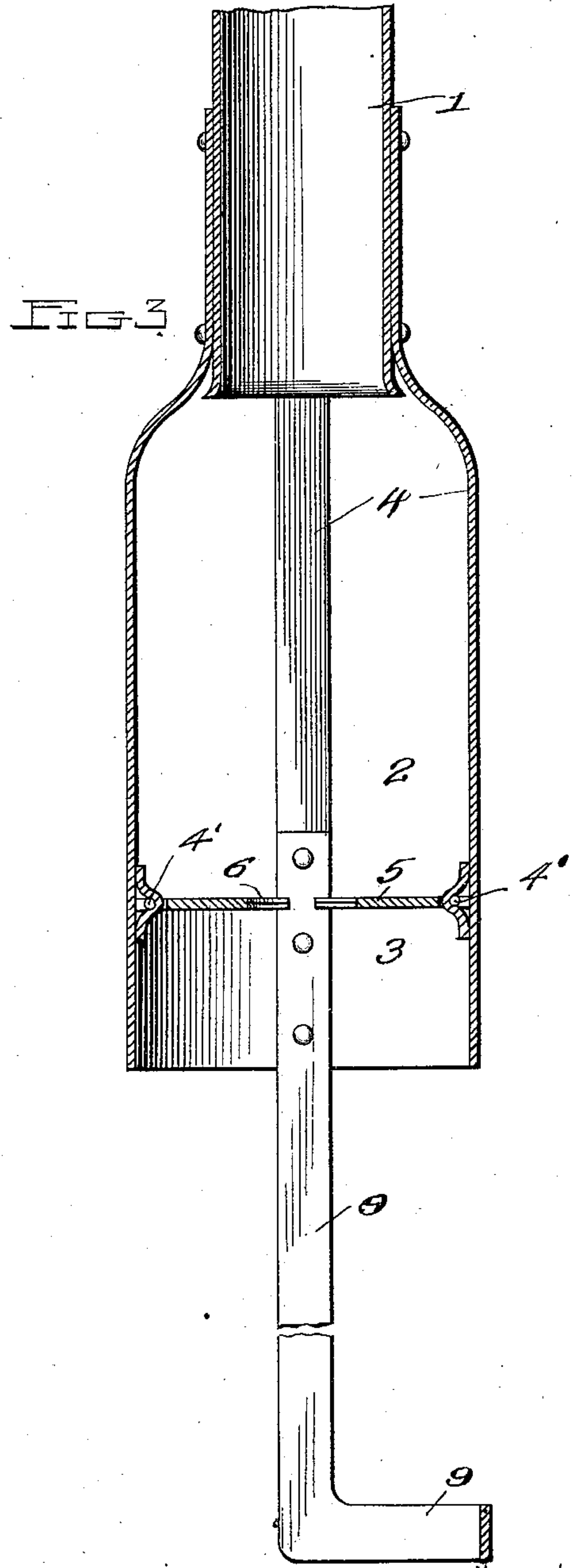
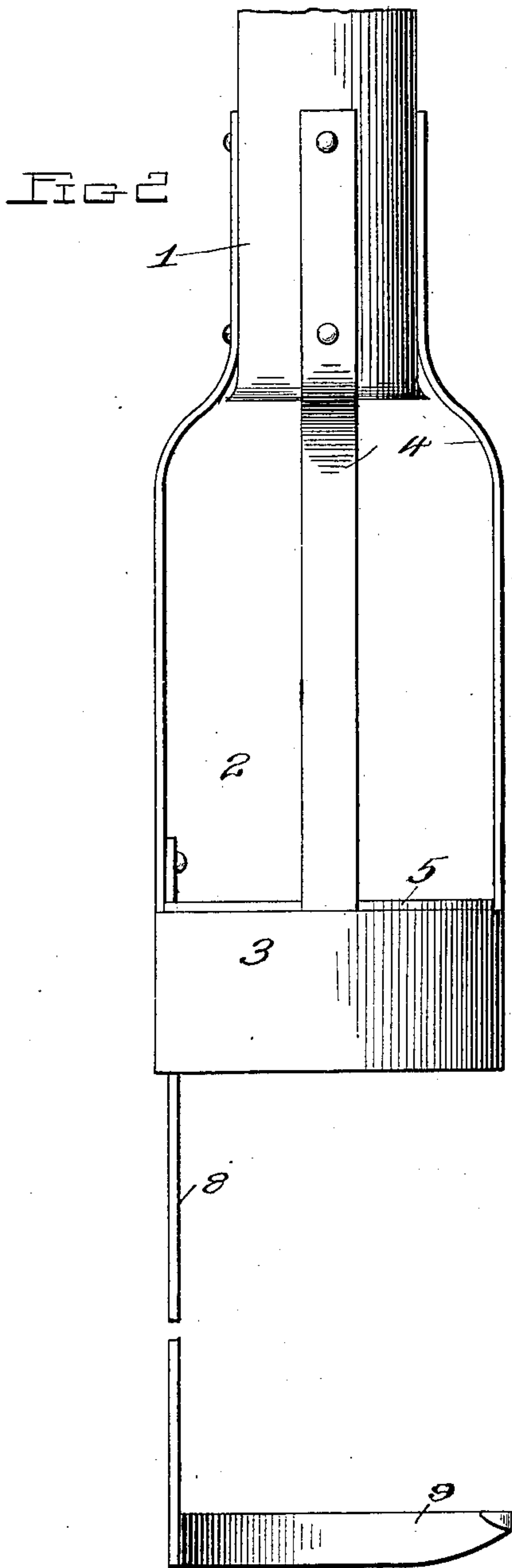
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# UNITED STATES PATENT OFFICE.

CHARLES A. HORAN, OF STOCKTON, CALIFORNIA.

## DEVICE FOR EXTRACTING DRILLS, &c.

**SPECIFICATION** forming part of Letters Patent No. 725,844, dated April 21, 1903.

Application filed April 7, 1902. Serial No. 101,801. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. HORAN, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Devices for Extracting Drills, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a device for extracting drills, drill-rods, tools, &c., from wells.

The object of the invention is to provide a simple and effective construction of device by means of which drills, drill-rods, and tools of various kinds which have dropped down into a well or become detached from the drill-rod, or the point of a drill which has been broken off from the shank of the drill-bit, may be grappled for from the surface and conveniently and expeditiously gripped and removed, the particular purpose of the invention being to devise a tool which is especially adapted for engaging objects disposed in awkward positions and found difficult of removal by ordinary extractors of this character.

With this and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in certain novel features of construction and combination and arrangement of parts, which will be hereinafter fully described, defined in the appended claim, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section through a well, illustrating the operation of the invention in gripping and extracting a broken drill-bit. Figs. 2 and 3 are respectively a side elevation and a vertical section of the lower portion of the extractor. Fig. 4 is a horizontal section. Fig. 5 is a bottom plan view. Fig. 6 is a side elevation of a modified form of grappling-hook. Fig. 7 is a bottom plan view of the same.

Referring now more particularly to the drawings, the numeral 1 designates the stock of the tool, which is preferably tubular in form and may be composed of a single pipe or rod or a series of pipe or rod sections, according to the depth of the well in which it is

inserted for the extraction of drills or tools, said sections being coupled together in any preferred manner. The lower end of this stock carries a pendent cage 2, comprising a ring or band 3 of like internal diameter throughout and a series of spaced arms 4, integral with the lower edge of the ring or band and secured at their upper ends to the lower end of the stock, said arms preferably being outwardly curved or deflected to adapt the ring or band to be made of a greater diameter than the lower end of the stock to admit of the ready insertion and removal of the drills or tools engaged by the grapplers. Hinged or pivoted, as shown at 4, to two of the said arms 3 are clutches 5, consisting, preferably, of plates in the form of flap-valves, said plates being provided with segmentally-recessed gripping edges 6, which are beveled or inclined to form biting portions to firmly engage the object to be extracted. The outer opposite side edges of these plates rest upon seats formed by the upper edge of the ring 3 between the arms and are notched at 7 adjacent to their free engaging edges to receive the intermediate arms 3 and to permit of the clutches coming together in close relation. These clutches are adapted to tilt upwardly to permit of the passage of the drill or other object to be extracted into the cage and then to tilt downwardly under the weight of the object or pull thereon to firmly grip said object, thereby enabling the same to be withdrawn from the well.

Projecting below the ring or band 3 is a shank 8, which is formed or provided at its lower end with a hook 9, arranged horizontally and extending at right angles thereto. This hook serves as a means for engaging the object to be grappled and holding the same in position while the extractor is being moved downward to cause the object to pass into the cage and to project upward between the clutch devices to enable the latter to grip or clutch said object in the manner described.

In the operation of the device the extractor is inserted into the well until the hook 9 reaches a point adjacent the object to be withdrawn from the well, when the hook is drawn into engagement with the object and the device properly manipulated to cause said hook to bring the object—say a drill or



rod—to an upright position and to maintain it in such position while the extractor is being moved downward until the upper end of the drill or object passes between the two  
5 clutch devices into the cage, whereupon an upward pull is exerted to lift the object from off the bottom of the well and to cause the clutches to firmly engage the same, whereupon the drill or object may be readily re-  
10 moved. In this manner a drill, drill-rod, or broken drill-point or a series of connected rods may be gripped and withdrawn from the well. When the object to be withdrawn is in an inclined or leaning position, the ex-  
15 tractor is moved to bring the hook 9 into engagement therewith and to draw the object to a substantially vertical position, this action being promoted by turning or rotating the extractor to center the object, when the  
20 extractor is lowered until the object is gripped by the clutch device, whereupon it may be withdrawn. The operation of the extractor in this connection is clearly indicated in full and broken lines in Fig. 1 of the  
25 drawings.

In Figs. 6 and 7 I have shown a modified form of grappling-hook, which is especially adapted for use in removing tools and other small objects. In this construction of the  
30 grapple the shank is provided with a pair of parallel side arms 10, which are connected at their lower ends to the hook 11, which is of substantially U form in general outline, one of the ends of the hook terminating in a point  
35 12 and the other end in a guiding-lip 13, the purpose of the point being to engage the object and the lip to guide the same into the throat or passage between said lip and the point until the object enters the body of the  
40 hook and is securely gripped, when the extractor is lifted to withdraw said object.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation, and advantages of my improved extractor 45 will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the prin- 50 ciple or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A grappling device consisting of a stock, a cage applied to the lower end of the stock and comprising a thin sheet-metal band of uniform diameter provided with two pairs of diametrically-opposed arms integral with its up- 60 per edge and extending upwardly therefrom and connected at their upper ends to the stock, bearing-pieces upon the inner faces of one pair of the arms, a pair of clutch-plates having journals pivotally mounting them 65 upon the bearings and notched in their edges to clear the arms, whereby the plates are adapted to seat on the upper edge of the sheet-metal band, said plates being provided with segmentally-recessed beveled biting edges at 70 their free ends, such edges conjunctively forming an elliptical opening, and a horizontal grappling-hook carried by the cage, substantially as described.

In testimony whereof I have hereunto set 75 my hand in presence of two subscribing witnesses.

CHARLES A. HORAN.

Witnesses:

A. H. MCCLOUD,  
W. J. HORAN.