

C. S. PROCTOR, N. LOFTUS & J. ANDERSON.

CORE RETAINER OR LIFTER.

APPLICATION FILED APR. 29, 1911.

1,038,436.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

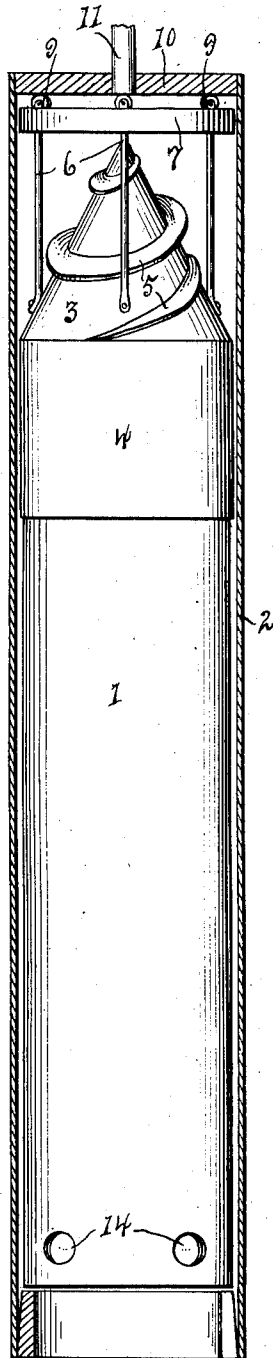
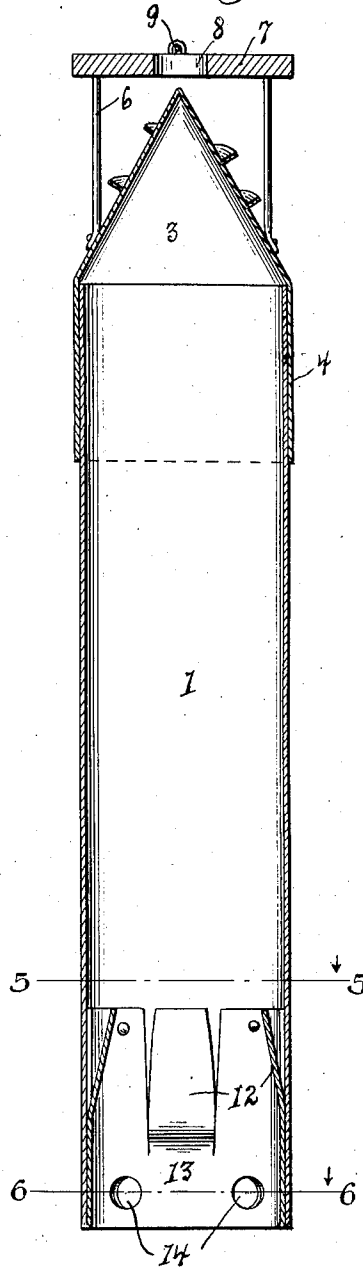


Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

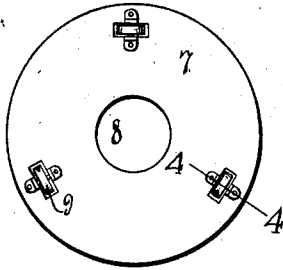


Fig. 4.

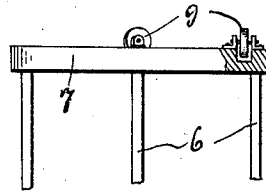


Fig. 5.

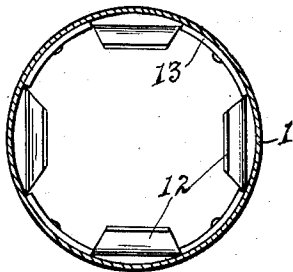
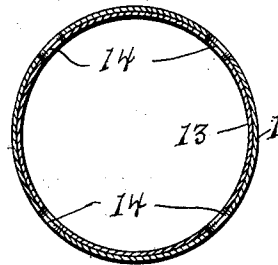


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

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CORE RETAINER OR LIFTER.

1,038,436.

Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed April 29, 1911. Serial No. 624,127.

To all whom it may concern:

Be it known that we, CHARLES S. PROCTOR, NICHOLAS LOFTUS, and JOHN ANDERSON, all citizens of the United States, residing at Beckley, in the county of Raleigh and State of West Virginia, have invented new and useful Improvements in Core Retainers or Lifters, of which the following is a specification.

Our invention relates to a core retainer or lifter and more particularly to a device adapted to be carried within a drill casing and so constructed as to receive within the retainer a core of the substance through which the drill is passed.

An object of our invention is to provide a device of the above nature, which may be easily and cheaply constructed and placed upon the market but which at the same time will be highly efficient and durable in operation and actual use. To attain the highest efficiency in a device of this nature the retainer ought not to revolve with the drill casing.

This is a difficulty which has not heretofore been overcome, but it is an object of our invention to provide means whereby this disadvantage is obviated and whereby the core retainer is held comparatively stationary with relation to the rapidly revolving drill casing.

Another object of our invention is to provide a core lifter provided with means for reducing the friction between it and the drill casing to the minimum.

A still further object is to produce a retainer having many and obvious advantages over those now in use, and which may be easily and quickly handled by the operator with a high degree of accuracy.

With the foregoing and other objects in view our invention consists in such details of construction, and in the arrangement and combination of parts as will be hereinafter more fully described and specifically pointed out in the appended claims.

In describing our invention in detail reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a view in side elevation of our improved core lifter showing the drill casing in section. Fig. 2 is a vertical sec-

tional view of our invention. Fig. 3 is a top plan view of the same. Fig. 4 is a detailed view of the top bearing plate. Fig. 5 is a horizontal sectional view taken upon the line —5— of Fig. 2 looking in the direction of the arrow, and Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 2 looking in the direction of the arrow.

In reducing our invention to practice we construct a suitable casing having a body 1 which is of the desired length to properly fit within a drill casing 2, the latter being of usual and well known construction. The body 1 is preferably cylindrical in shape and is provided with a conical cap 3 which cap has a downwardly extending portion 4 which snugly embraces one end of the body 1. Mounted upon the conical portion of this cap is a spiral fin 5, the spirals being inclined upwardly from left to right as shown in Figs. 1 and 2, it being assumed that the drill casing is to revolve from right to left. If the drill casing revolves from left to right the spirals will be inclined upwardly from right to left as will be hereinafter more fully understood, as the invention is disclosed.

In order to reduce the friction between the core lifter and the drill casing to the minimum roller bearing connections are provided. The preferred manner of forming these bearings is clearly illustrated in the drawings, wherein a plurality of standards or upwardly extending supports 6 are provided, said supports being erected upon the conical cap 3. Carried by said supports is an annular bearing plate 7, said plate being formed with a concentric aperture 8 for purposes hereinafter more fully pointed out. Disposed at different points on the upper surface of the bearing plate 7, and connected thereto in any suitable manner is a plurality of roller bearings 9, said bearings being adapted to bear against the under surface of the head plate 10 of the drill casing when the core lifter is inserted in said casing as illustrated in Fig. 1.

The numeral 11 in Fig. 1 designates the drill rod. It will be understood that this rod is of usual construction and is hollow in order that water may be forced from the surface downwardly through said rod and into the drill casing. The manner of forcing this water downwardly through said

tube forms no part of our invention so it has not been illustrated in the drawings, but it may be said that we preferably employ a force pump of some character which will accomplish this purpose. The water should flow through the member 11 into the drill casing with considerable force. As the aperture 8 in the bearing plate 7 registers with the end of the drill rod 11, this water under pressure flows against the tip of the conical cap 3 and expends its force upon the spiral fins or ribs 5. This action is what holds our core lifter comparatively stationary with relation to the drill casing. The latter revolves with great rapidity and under ordinary circumstances would carry the core lifter with it. However as the water impinging upon the fin 5 tends to rotate the core lifter in a direction opposite to the direction of rotation of the drill casing the result will be that the core lifter will be held stationary or approximately so, the advantages of this feature of our invention being readily apparent to those skilled in the art to which the device appertains.

Near the lower end of the body 1 of the core lifter is disposed a plurality of springs 12, these springs projecting inwardly toward one another and upwardly into the interior of said body. They may be formed in any desired manner and connected to the body as may be preferred. In the drawings they have been illustrated as being stamped out of a metallic ring 13 and as being bent inwardly as shown. Said ring 13 not only provides means for forming said springs, but also acts as a reinforcing ring for the lower end of said body. As the drill casing 2 works its way into the substance being sought, through the medium of a diamond drill (not shown but which it will be understood is attached in the usual manner to the lower end of the casing 2) the coal or ore through which the drill is passing will be forced upwardly into the core barrel or body 1, and when the lifter has been filled in this manner the substance will be held therein by the springs 12, said springs preventing the exit of the contents of the barrel. Disposed near the lower end of the body 1 is a plurality of apertures 14 said apertures being provided so as to permit the escape of the water which flows into the drill rod 11 before mentioned.

From the foregoing it will be seen that we have provided a very simple core lifter and one which may be easily and cheaply constructed and placed upon the market. At the same time it has been found highly efficient in actual operation and an improvement over those now in use.

We desire it to be understood that the above is merely the preferred form of our invention, and that slight changes in the construction and in the arrangement and

combination of the various parts may be resorted to whenever desired without departing from the spirit of the invention, provided such changes fall within the scope of the appended claims.

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

1. A device of the character described, comprising a body, a cap thereon, and means tending to rotate said device through the medium of a flow of water.

2. A device of the character described, comprising a body, a cap carried thereby, anti-friction bearings carried by said device, and means whereby said device is caused to remain stationary within a revolving member.

3. A device of the character described, comprising a body, a cap carried by said body, a spiral fin carried by said cap, anti-friction bearings supported by said device, and means in said body for retaining the contents thereof.

4. In a device of the character described, the combination with a drill casing, of a body adapted to be received within said casing, means for reducing the friction between said device and said drill casing, and means carried by said device whereby the latter is prevented from rotating with said drill casing.

5. In a device of the character described, the combination with a drill casing, of a barrel adapted to be received therein, means for reducing the friction between said device and said drill casing, and means carried by said device whereby a flow of fluid through said drill casing causes said device to remain relatively stationary.

6. The combination with a drill casing having a fluid inlet, of a core lifter adapted to be received within said casing, and means carried by said core lifter whereby the flow of fluid through said inlet causes said core lifter to remain relatively stationary with respect to the casing.

7. The combination with a drill casing having a fluid inlet, of a core lifter adapted to be received in said casing, and a fin carried by said core lifter whereby the flow of fluid through said inlet tends to rotate said core lifter.

8. The combination with a drill casing having a fluid inlet, of a core lifter adapted to be received therein, said core lifter having a conical end opposed to the fluid inlet, and a fin on said conical end whereby the flow of fluid through said inlet tends to hold said core lifter stationary with respect to the rotating drill casing.

9. The combination with a drill casing, of a core lifter adapted to be received within said casing, anti-friction bearings carried by said core lifter and adapted to come into

contact with the head of said casing, and means for preventing said core lifter from rotating with said casing.

5 10. In a device of the character described, a movable body, a cap thereon, a plate supported by said cap, antifriction bearings carried by said plate, and an inclosing casing having an end portion with which said bearings engage.

10 11. In a device of the character described, a movable body, a cap thereon, a plate supported by said cap, antifriction bearings on said plate, a hollow casing relatively stationary with respect to the body having
15 an end portion with which said bearings engage, and means for securing said bearings to said plate.

20 12. In a device of the character described, a body, a removable cap thereon, anti-friction bearings supported by said cap beyond

one end of said device, inwardly projecting members in the other end of said body for retaining the contents of said device, and means tending to rotate said device when a stream of fluid impinges upon one end 25 thereof.

13. A core lifter comprising a body, a cap carried by one end thereof, a fin carried by said cap, anti-friction bearings supported beyond the end of said cap, and means carried 30 within the other end of said body for retaining the contents thereof, said other end of said body having perforations therein.

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