

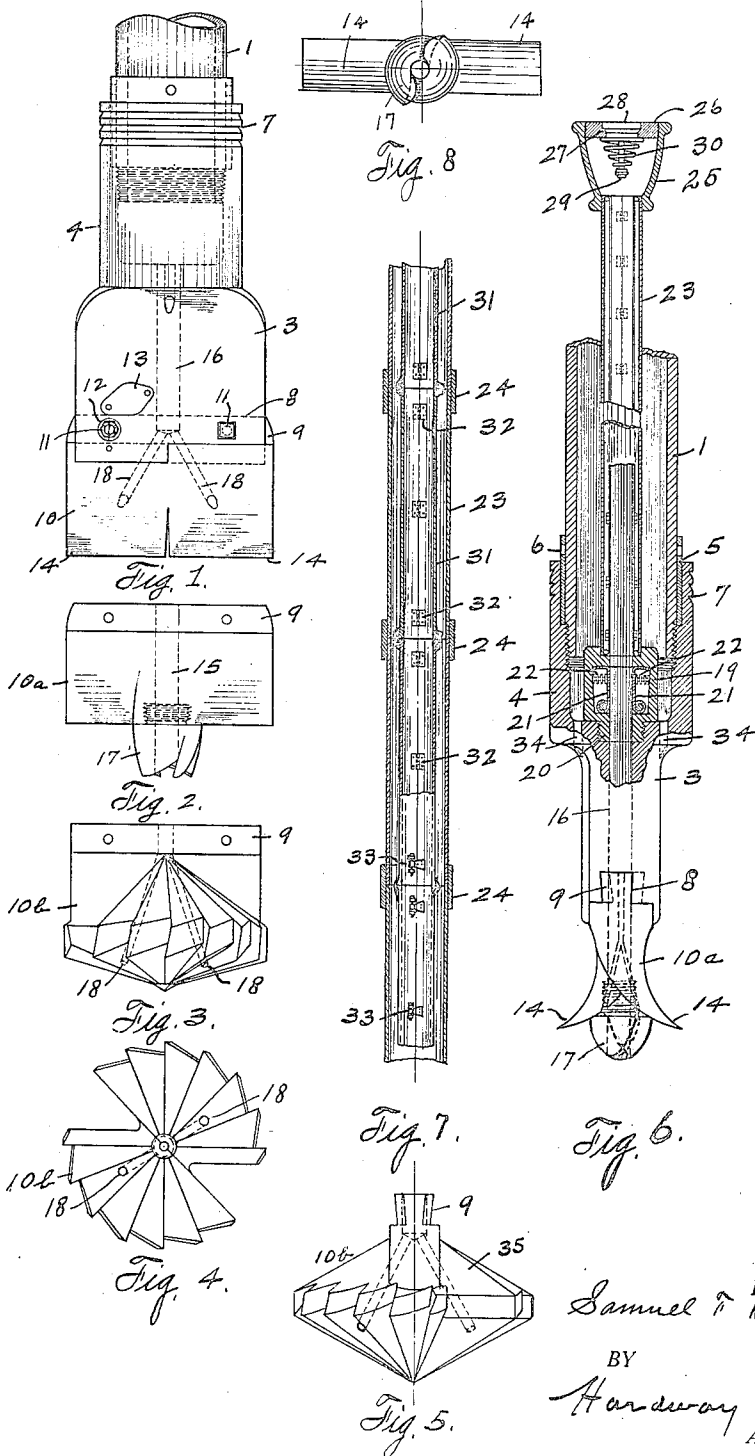
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COMBINATION DRILL BIT AND CORE TAKING DEVICE

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COMBINATION DRILL BIT AND CORE-TAKING DEVICE.

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To all whom it may concern:

Be it known that I, SAMUEL F. BASHARA, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Combination Drill Bits and Core-Taking Devices, of which the following is a specification.

This invention relates to new and useful improvements in a combination drill bit and core taking device.

One object of the invention is to provide a device of the character described which includes a novel form of drill bit, and embodies also in connection therewith a core retaining liner arranged to receive the core formed, and in which said core is retained until the device is withdrawn from the bore for inspection.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 is a side view of the bit attached to a drill stem.

Figures 2, 3, 4 and 5, respectively, show modified forms of the blade section, the same being formed for ready application to or removable from the shank of the bit.

Figure 6 shows a fragmentary vertical sectional view of the device.

Figure 7 shows a vertical sectional view of the surrounding tube and the core retaining liner therein, and Figure 8 shows a point view of the bit shown in Figure 6.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 refers to the drill stem which may be formed of sections connected together by the usual collars. The numeral 3 refers to the shank of the bit whose upper end is formed into an elongated sleeve 4 having a deep socket therein. The lower end of the drill stem is screwed into this socket. The upper part of the socket is blank and spaced from the drill stem forming an annular space for the reception of the bushing 5 which is driven therein and whose upper edge has recesses as 6, into which a spike or other driving tool may be inserted in the operation of unseating said bushing in case it is desired to remove same.

Only the central part of the recess in the sleeve 4 is threaded to receive the drill stem, leaving the lower part thereof blank and which may be formed with additional threads in case the others become battered or worn out. The upper end of the sleeve 4 has peripheral grooves forming annular shoulders 7 providing means for the engagement of the fishing tool with the bit in case it becomes necessary to use the same to withdraw the bit. The lower end of the shank 3 has a transverse groove 8 which is preferably dovetailed in form, and this groove is provided to receive the correspondingly formed rib 9 which is integral with the upper end of the blade sections 10, 10^a and 10^b. This rib is fitted into said groove and is preferably secured therein by means of bolts 11 which pass through said shank and rib. One end of each bolt has an enlarged head which is countersunk in the shank and the other end thereof is threaded to receive a nut 12 which is also countersunk and secured in place by means of a cotter-key. The nuts 12 are protected by means of thick metal cover plates 13 which are fitted thereover and secured to the shank. The usual form of the blade section embodies two oppositely curved cutting blades 14, but when a core is to be taken this blade section is also provided with a central opening 15 which aligns with an opening 16 extending upwardly through the shank. The form of bit to be used in taking cores is illustrated in Figures 2 and 6, and includes also a pilot drill 17 which cuts around and gives the required form to the core as drilling progresses, and which is detachable.

In Figures 3, 4 and 5 the cutting face of the blade section is of the general contour of an inverted cone and is formed with radiating teeth which not only operate against the bottom of the bore, but against the sides as well. In the forms shown in Figures 1, 3, 4 and 5, the central passageway 16 in the shank connects with diverging passageways 18, 18, through which water is delivered under pressure to the cutting points of the bit, and it is to be noted that these passageways 18 discharge the water at the back side of each blade so as to deliver it immediately in front of the other blade.

As shown in Figure 6 there is located within the sleeve 4 a hollow casing 19 which is formed with an outwardly threaded nipple 20 which is screwed in the upper end of the shank 3. Within this casing the core

engaging dogs 21, 21 are located. These dogs are pivoted at their lower ends and their upper ends are free and are held in engagement with the core by means of the pressure springs 22, 22. The numeral 23 designates a protecting tubing which if desired may be formed of sections, as shown in Figure 7, said sections being connected by collars 24. Screwed onto the upper end of the tubing 23 there is a valve casing 25 whose upper end carries a valve seat 26 having the central passageway 27 which is controlled by a valve 28. This valve has a depending stem 29, and a coil spring 30 surrounds this stem and is attached to the lower end thereof and presses against the underside of the seat 26 to normally hold the valve closed to prevent the inlet of water. The lower end of the tubing 23 is threaded into the upper end of the casing 19 and within it there is a liner formed of independent tubular joints 31. These joints have flared ends and they rest, one upon the other, but they are not connected together. The joints of this liner are preferably of the same length as the sections of the tubing 23. Each joint of the liner is formed of two lengthwise sections. These sections are hinged together along one edge by means of the hinges 32 and the other edges are provided with latches 33 by means of which said last mentioned edges may be secured together. The lower joint of the liner rests upon the casing 19 and said liner and its protecting tubing may be made of any length desired. In drilling, as the core is cut it passes up through the central openings 15 and 16 and through between the dogs 21 and on up into the liner and the air or water in the liner will be forced out by pressure through the opening 27, the valve 28 lifting to permit the same to pass. When it is desired to withdraw the device for examining the core, the same is pulled out of the bore and the dogs 21 will grip and retain the core. When the device has been withdrawn, the sections of the tubing 23 may be unscrewed and the joints of the liner 31 may then be readily removed and the latches 33 thereof disengaged to permit the sections to open, thus revealing the core for examination. It is here to be noted that the latches 33 are provided to prevent the sections of the liner joints from being forced outwardly by the core against the tubing 23, and becoming tightly stuck therein.

During the operation of taking a core, water may be forced downwardly through the drill stem but it cannot enter the liner by reason of the valve 28, and the core will thus be protected and will not be liable to become washed out or intermingled with water, said water passing downwardly through the water passageways 34, 34 provided one each side of the bit and passing

thence on down to the cutting points of the bit.

For the purpose of preventing the bit from engaging against any lateral projections, putting out into the bore, and hanging, lateral deflectors 35 are formed on or secured to the sides of the bit. These are of the form of an inverted wedge and they deflect the bit and prevent its engagement with said projections.

What I claim is:—

1. A drill bit including a shank whose lower end is formed with a transverse groove, a blade section whose upper end is formed with a transverse rib formed to fit into the groove, said blade section having radiating cutting blades, and a pilot bit detachably secured to, and depending from the blade section.

2. A drill bit formed with a shank and cutting blades, said bit having a central core passageway, a pair of core engaging dogs arranged in the bit on opposite sides of the passageway, means holding the dogs yieldably against the core, a tube secured to the bit in alignment with the passageway, and a liner formed of independent joints within the tube.

3. In a device of the character described, a core retaining liner formed of independent joints, each joint being composed of longitudinal sections hinged together.

4. In a device of the character described, a core retaining liner formed of independent joints, each joint being composed of lengthwise sections, said sections being hinged together on one side of the joint, and on the other side being secured together by releasable latches.

5. A liner formed of lengthwise sections hinged together at one side and at the other side being secured together by releasable latches.

6. In a device of the character described, a core retaining liner formed of lengthwise sections fitted together to form a tubular joint, the adjoining edges of said sections being hinged together at one side, and releasable means for securing the sections together at the other side of the joint.

7. A drill bit including a shank, one end of which is formed into a sleeve adapted to receive a drill stem, and water passageways cut through the lower end of the sleeve through which water may be discharged from within the sleeve to the sides of the shank.

8. In a device of the character described, a core retaining liner formed of independent joints, each joint being composed of longitudinal sections detachably secured together.

9. In a device of the character described, a core retaining liner formed of independent joints, each joint being composed of lon-

gitudinal sections detachably secured together, and means for protecting the liner from flushing water.

5 10. In a device of the character described, a core retaining liner formed of independent joints, each joint being composed of longitudinal sections detachably secured together, and means to protect said liner.

10 11. In a device of the character described, a core retaining liner formed of independent joints, each joint being composed of longitudinal sections detachably secured together and means to protect said
15 liner comprising a tube spaced outside said liner.

20 12. In a device of the character described, a drill stem, a coring bit thereon having passages for flushing fluid there-
through, in combination with a core retaining liner formed of independent joints, each joint composed of longitudinal sec-

tions, and means holding said sections in alignment and protecting the same from said flushing water.

25 13. In a device of the character described a drill stem, a coring bit thereon having passages for flushing fluid there-
through, in combination with a core retain-
ing liner formed of independent joints, each
30 joint composed of longitudinal sections, and
means holding said sections in alignment
and protecting the same from said flushing
water, and comprising a tube spaced out-
side said liner, and having a valve closed
35 upper end.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL F. BASHARA.

Witnesses:

LORENA FAHRENTHOLD,
E. V. HARDWAY.