July 26, 1927. 1,637,295

T. L. DEE

CORE DRILL

Filed April 30, 1924

Fig. 1.

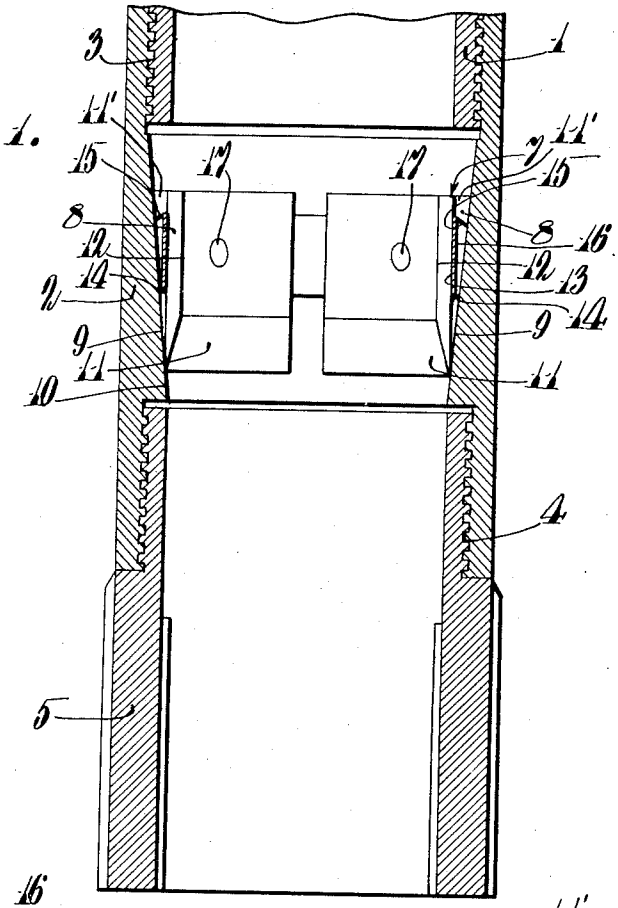


Fig. 2.

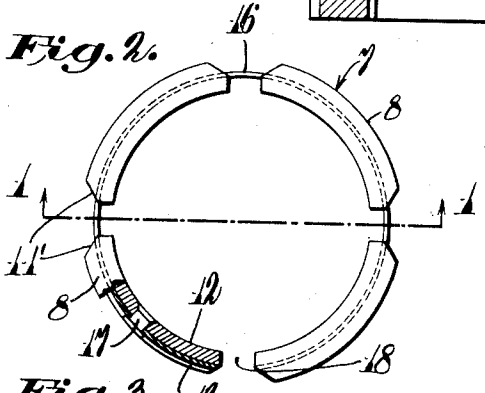


Fig. 3.

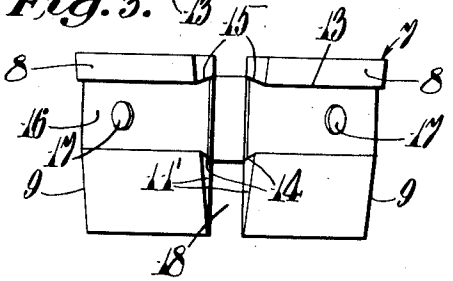
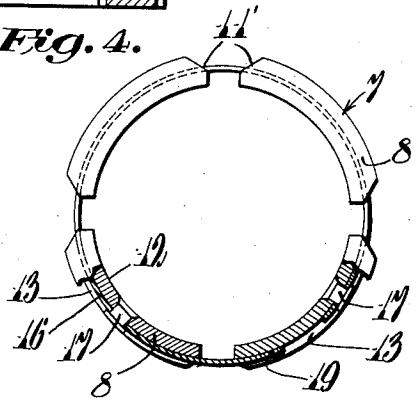


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS L. DEE, OF CHICAGO, ILLINOIS, ASSIGNOR TO SULLIVAN MACHINERY COMPANY, A CORPORATION OF MASSACHUSETTS.

CORE DRILL.

Application filed April 30, 1924. Serial No. 710,116.

My invention relates to core drills.

An object of my invention is to provide an improved core lifter for such a drill. Another object of my invention is to provide an improved core lifter mechanism which has great elasticity and strength. A further and more specific object of my invention is to provide an improved core lifter having great resiliency and a large internal diameter, thereby permitting a core to easily pass through the same but which firmly engages the core, even when the latter is worn in such manner as to hold the core in position when the core barrel is raised from the hole. These and other objects and advantages will, however, hereinafter more fully appear.

In the accompanying drawings I have shown for purposes of illustration two forms which my invention may assume in practice.

In these drawings,—

Fig. 1 is a central vertical section through a core drill bit and barrel in which my improved core lifter mechanism is incorporated, the section through the latter being taken on line 1—1 of Fig. 2.

Fig. 2 is a plan view, partially broken away to facilitate illustration, of my improved core lifter.

Fig. 3 is a side elevation of Fig. 2.

Fig. 4 is a plan view, partially in section, of a modified form of construction.

In the form of my invention shown in Figs. 1 to 3, it will be noted that I have shown a hollow core barrel 1, of usual form, having a core lifter casing or shell 2 threaded thereto at 3 at its upper end while the lower end thereof is threadedly connected, as at 4, to the core drill bit 5 of the rotary type; a core lifter of improved construction, hereinafter described, being provided in this drill to break off the core and hold it in the barrel when the latter is withdrawn from the hole.

In my improved mechanism, I have provided a core lifter, generally designated at 7, which comprises a plurality, herein four, of radially spaced wedges 8 each having an inclined surface 9 formed on its outer periphery, adapted to cooperate with the usual conical-shaped surface 10 formed in the core lifter casing 2. These wedges 8 are also each provided with an inclined surface 11 formed on the lower inner edge thereof which is adapted to engage and guide the core as it passes upwardly through the vertical inner peripheries 12 of the wedges. The ends of the wedges are suitably cut away or beveled as at 11′ along their length forming an enlarged vertical passage between their ends. These wedges are further annually grooved, as at 13, which grooves have slightly undercut portions 14 and 15. Herein, an annular radially expanding member, herein a spring 16, is also inserted in the grooves 13, the undercut portions 14 and 15 preventing displacement thereof while each of the wedge members 8 is rigidly secured to the resilient member 16, herein by a single rivet 17. As shown, the spring member 16 is also cut away or split at 18, thereby permitting the wedges to contract as they are forced against the core during the raising of the latter from the hole. In the form of my invention shown in Fig. 4, it will be noted that the radially expanding spring member 16 is provided with an elongated portion 19 which overlaps the ends of the wedges 8 forming a sliding dovetail joint and thereby preventing vertical displacement of the ends of the spring and of the wedges carried thereby.

As a result of my improved construction, it will be observed that a core lifter is provided which has great strength and elasticity, which is especially adapted to engage soft cores, and which rigidly holds the latter in position, even when worn down by the drilling operation or the liquid in the hole. It will also be observed that the mechanism is exceedingly simple, may be manufactured at a minimum of expense, and applied to a core drill of standard construction without change.

While I have in this application specifically described two forms which my invention may assume in practice, it will be understood that these forms of the same are shown for purposes of illustration and that the invention may be modified and embodied in other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A core lifter comprising separate spaced wedge shaped supporting and core engaging elements having inclined external surfaces, a radially expansible split member

encircling said elements, and means for rigidly scuring each of said elements to the inner surface of said member.

2. A core lifter comprising separate spaced wedge shaped core engaging elements having external peripheral grooves formed therein, a split resilient member lying entirely within said grooves, and means for rigidly securing each of said elements to the inner surface of said resilient member.

3. A core lifter comprising separate spaced wedge shaped supporting and core engaging elements having external peripheral grooves formed therein, a split resilient annular member encircling said elements and seated in said grooves, and means for rigidly securing each of said elements to the inner surface of said resilient member.

4. A core lifter comprising separate spaced wedge shaped core engaging elements each having an external peripheral groove formed therein, a split resilient member disposed in said grooves, said grooves providing means for preventing vertical displacement of said resilient member, and means for rigidly securing each element to the inner surface of said resilient member.

5. A core lifter comprising separate spaced wedge shaped supporting and core engaging elements having inclined external surfaces, a split resilient annular member, and means for rigidly securing each wedge element to the inner surface of said resilient member.

6. A core lifter comprising separate spaced wedge shaped core engaging elements, a split resilient annular member, and means for rigidly securing each element to the inner surface of said resilient member, the outer surface of said resilient member being disposed within the outer surface of said elements.

7. A core lifter comprising separate spaced wedge shaped core engaging elements, and a resilient split member having an end rigidly secured to one of said elements while the other end thereof has a sliding connection with one of said wedge shaped elements.

8. A core lifter comprising separate spaced wedge shaped core engaging elements each having a peripheral groove formed therein, and a split resilient member having an end thereof rigidly secured in the groove in one of said elements while the other end thereof has a sliding connection with the groove in one of said wedge shaped elements.

9. A core lifter comprising separate spaced wedge shaped core engaging elements, and a supporting member secured to certain of said elements while an end thereof has sliding engagement with a certain one thereof.

10. A core lifter comprising separate spaced wedge shaped core engaging elements, a split resilient member secured to certain of said elements while an end thereof has sliding engagement with a certain one thereof, and means on said elements for preventing vertical displacements of said resilient member.

11. A core lifter comprising separate spaced wedge shaped core engaging elements each having an undercut external groove formed therein, a split resilient annular spring member disposed in said grooves, and means for rigidly securing each element to said resilient member.

12. A core lifter comprising separate spaced wedge shaped core engaging elements each having an inwardly inclined core guiding surface and a circumferentially extending groove, a split resilient annular member disposed in said grooves, and means for rigidly securing each element to said resilient member.

13. A core lifter comprising separate spaced wedge shaped core engaging elements having inclined outer surfaces, and an inwardly inclined inner core guiding surface, the outer surfaces of said wedges having circumferentially extending grooves formed therein, a split resilient annular member disposed in said grooves, and means for rigidly securing each of said wedge shaped elements to said resilient member.

14. A core lifter comprising separate spaced wedge shaped core engaging elements having cut away end portions forming fluid passages and transverse grooves, a circumferentially extending resilient split annular member disposed in said grooves, and means for rigidly securing each of said elements to said resilient member.

In testimony whereof I affix my signature.

THOMAS L. DEE.