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D. DUPUIS.

CORE LIFTER FOR DIAMOND DRILLS.

APPLICATION FILED AUG. 9, 1904.

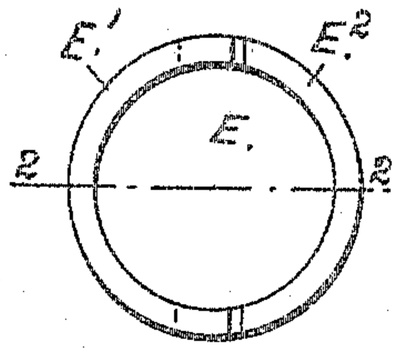

Fig. 1

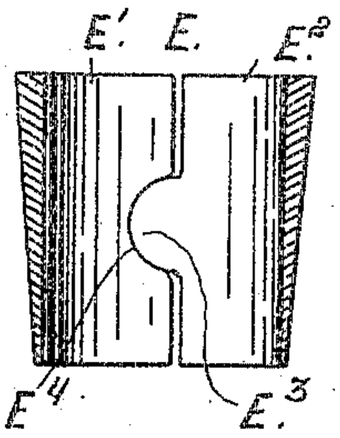

Fig. 2

Fig. 6

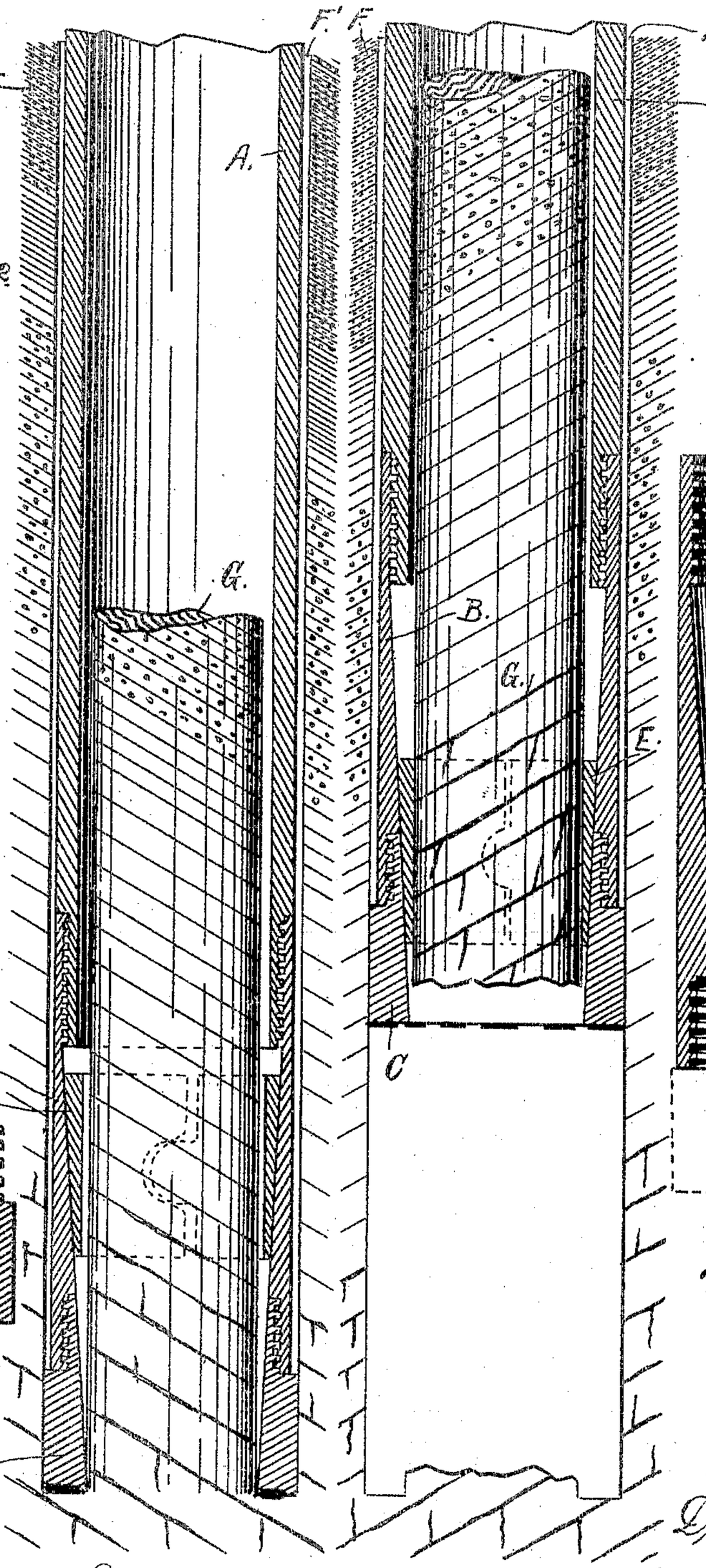

Fig. 4

Fig. 5

Fig. 3

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UNITED STATES PATENT OFFICE.

DAVID DUPUIS, OF SALT LAKE CITY, UTAH, ASSIGNOR OF ONE-HALF TO D. A. CARPENTER, OF EL PASO, TEXAS.

CORE-LIFTER FOR DIAMOND DRILLS.

SPECIFICATION forming part of Letters Patent No. 779,995, dated January 10, 1905.

Application filed August 9, 1904. Serial No. 220,147.

To all whom it may concern:

Be it known that I, DAVID DUPUIS, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Core-Lifters for Diamond Drills; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in diamond-drill apparatus, and more particularly to the core-lifting device used in connection with the shell, the bit, and core-barrel. The construction of the core-lifter is believed to be novel, and I have also shown a novel construction of bit, in that the interior wall of the bit is beveled, corresponding with the bevel of the shell, so that the core-lifter may drop into the bit, thus enabling the lifter to grasp the core near the rock or lower extremity of the core. This feature is of some importance, particularly as it enables the lifter to take better hold or grasp the smaller pieces of core which occur in broken ground.

My improved core-lifter consists of two members, one of which is provided with ears engaging a counterpart recess formed in the other member, the engaging edges of the ears of one member forming the arc of a circle to engage a corresponding recess formed in the other member, whereby the two members are capable of a rocking movement the one upon the other, as circumstances may require, whereby the members are allowed to adjust themselves upon the core and by their gripping action cause the latter to be broken off and raised as the core-barrel, the shell, and the bit are lifted.

An important feature of the device consists in the fact that one of the core-lifter members is larger than the other—that is to say, one of them in end view forms a little more than half of the circle formed by the two members, while the other member forms less than half the circle. The reason for this is that if as the core passes up through the large portion any dirt should accumulate between the smaller portion and the core, thus preventing the gripping of the core, the larger part will still hold it, break the core off, and bring it to the surface in the core-barrel, since the core cannot get out of the larger lifter member by a lateral movement, as the said member passes more than half-way around the core.

Having briefly outlined my improved construction, as well as the function it is intended to perform, I will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figures 1 and 2 are top plan and sectional views, respectively, of the core-lifter, Fig. 2 being a section taken on the line 2 2, Fig. 1. Fig. 3 shows the core-shell in detail and in combination with my improved core-lifter. In this view the ordinary construction of shell is employed. Fig. 4 is a sectional view illustrating the core-barrel, core-shell, and bit, together with my improved construction of core-lifter. In this view my special construction of bit is also shown. Fig. 5 is a similar view showing the parts in position when the core is broken off and partly lifted out of the hole. Otherwise the construction is the same as shown in Fig. 4. Fig. 6 is a detail view showing in full lines the bit illustrated by dotted lines in Fig. 3.

The same reference characters indicate the same parts in all the views.

Let A designate the core-barrel; B, the core-shell; C, the bit, and E the core-lifter. In this case the barrel is of ordinary construction. The shell is screwed to the lower extremity of the barrel in the usual manner. The bit is also connected with the lower extremity of the shell by screw-threads. In the form shown in Figs. 4 and 5 the interior bevel of the bit harmonizes with the corresponding bevel of the shell, which permits the core-lifter to drop into the bit as occasion requires, whereby the lifter is adapted to grasp smaller pieces of core than would be the case in the

ordinary arrangement of shell and bit as shown in Fig. 3, the ordinary construction of bit being indicated by dotted lines in said figure.

The two members of my improved core-lifter are designated E′ and E², respectively. These two members when connected in interlocking relation, as shown in Figs. 1 and 2, form the arc of a complete circle, except that there is a small break between the members which permits a rocking movement. The member E′ forms slightly more than half of the circle, while the member E² forms somewhat less than half the circle. The member E² has a lug E³, which engages a recess E⁴ of counterpart shape formed in the member E′. The ear E³ is circular on its engaging edge, whereby the members are allowed to rock freely upon each other to a limited extent in the performance of their core-gripping function.

The form of shell shown in Fig. 3 will be designated B′, since a slightly-modified form of construction is illustrated. The core-lifter, however, shown in Fig. 3 is of the same construction as that shown in the other views. The bit shown in Fig. 6 will be designated C′, as it is of a slightly-different construction from that shown in the other views.

In the drawings the letter F designates the formation in which the hole F′ is formed, while G designates the core which is formed by the rotation of the bit, whose lower extremity is provided with cutting devices, as black diamonds.

From the foregoing description the use and operation of my improved device will be readily understood. As the core-barrel, shell, and bit are rotated the core G is formed and passes up through the said parts. When a sufficient length of core has been formed or when it is no longer practicable to continue the operation without removing the core, the core-barrel is lifted, which causes the shell by virtue of its bevel to act on the exterior beveled walls of the core-lifter, whereby the latter is made to grip the core, which is then broken off and raised out of the hole in a manner that will be readily understood.

It is evident that if for any reason the member E² of the core-lifter should fail to grip the core the member E′ will grip it and cause it to be lifted out of the hole, since the core cannot slip laterally out of the core-lifter member E′, as the latter reaches more than half-way around the cylindrical core. This is an important feature of my construction.

Having thus described my invention, what I claim is—

1. A core-lifter consisting of two members one of which is larger than the other and adapted to pass more than half-way around the cylindrical core to be lifted.

2. A core-lifter consisting of two interlocking members one of the members having ears and the other, recesses which the ears engage, the engaging edges of the ears and the walls of the recesses being circular in shape whereby the members are permitted a rocking movement.

3. A core-lifter comprising two coöperating interlocking members capable of a rocking movement, the said core-lifter being exteriorly beveled and interiorly cylindrical, the one member being larger than the other for the purpose set forth.

4. A core-lifter comprising two coöperating members connected to have a limited rocking movement, the said lifter being interiorly cylindrical, and of frusto-conical shape exteriorly.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID DUPUIS.

Witnesses:
P. J. Shaver,
W. A. Bonnet.