Dec. 2, 1924.

1,517,979

H. G. GREATHOUSE

RING AND SLIP

Filed Dec. 29, 1923

3 Sheets-Sheet 1

Fig. 1.

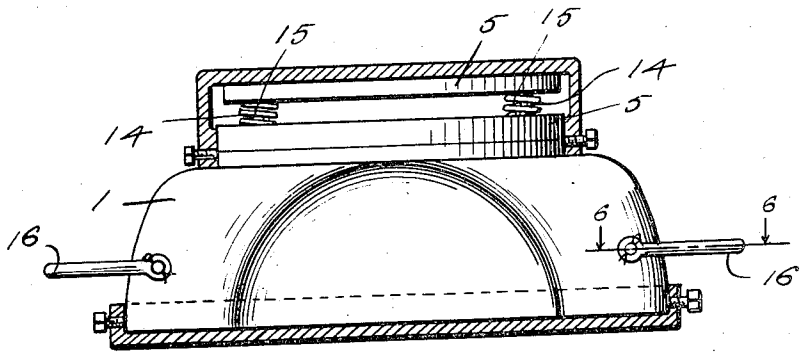
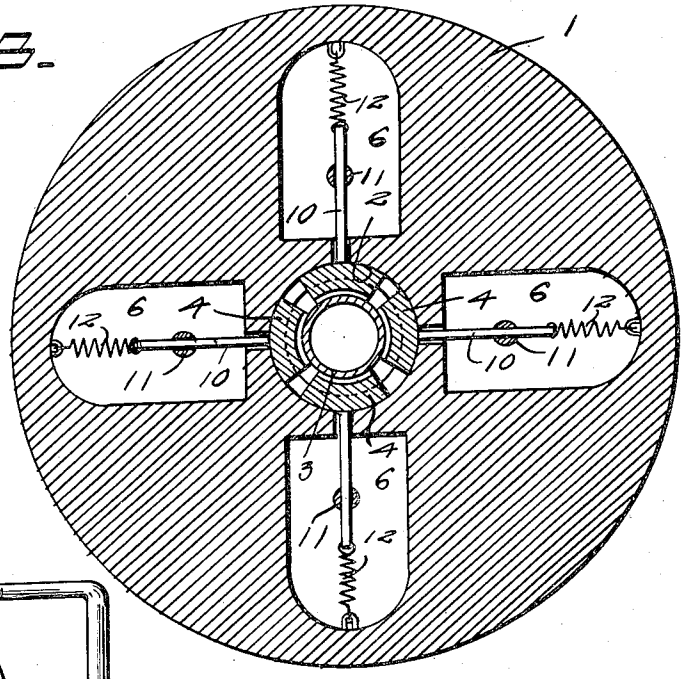


Fig. 2.



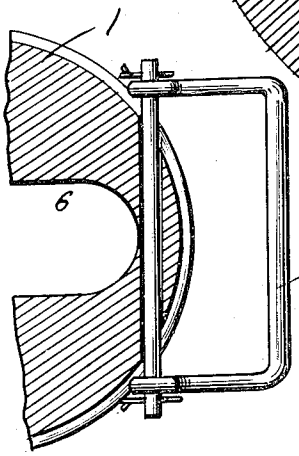


Fig. 6.

Inventor

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Fig. 2.

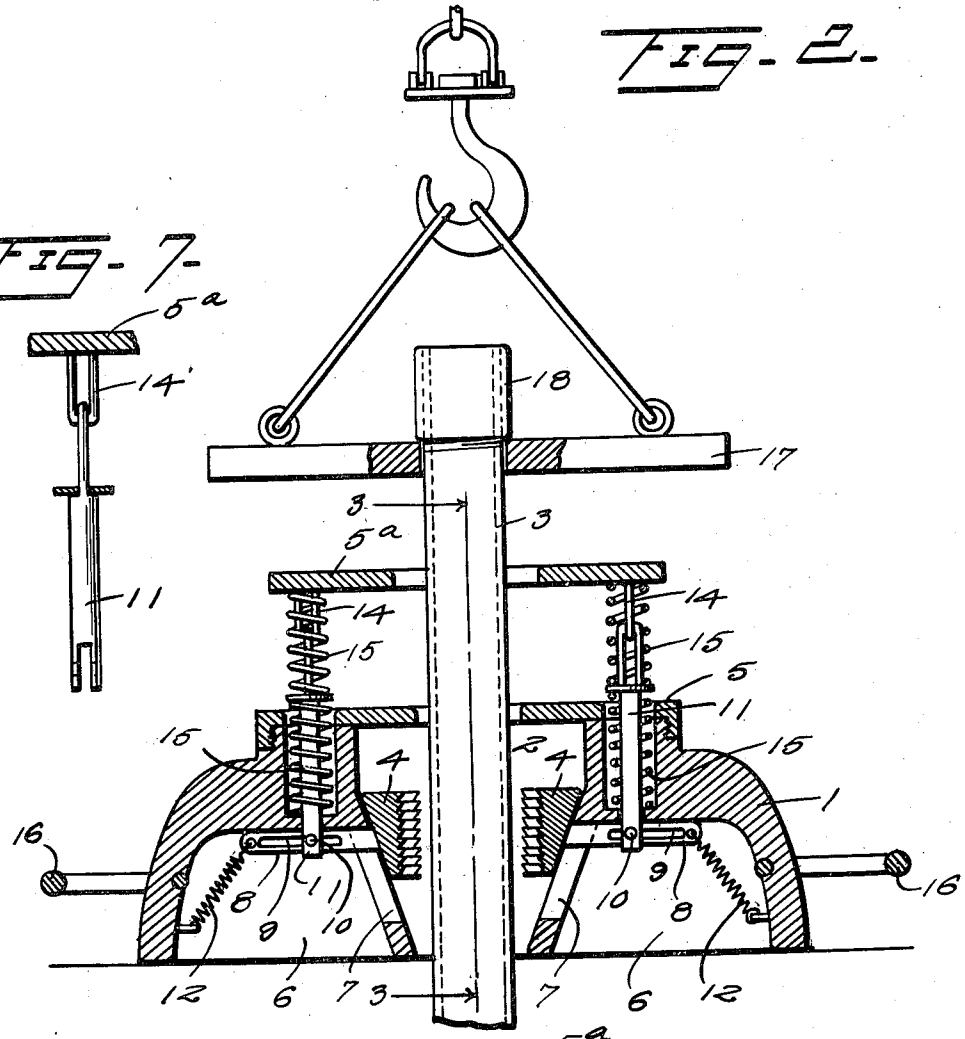
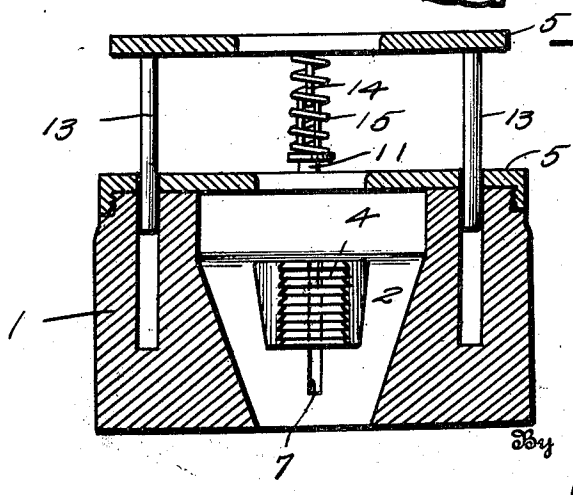


Fig. 7.

Fig. 3.



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Fig. 5.

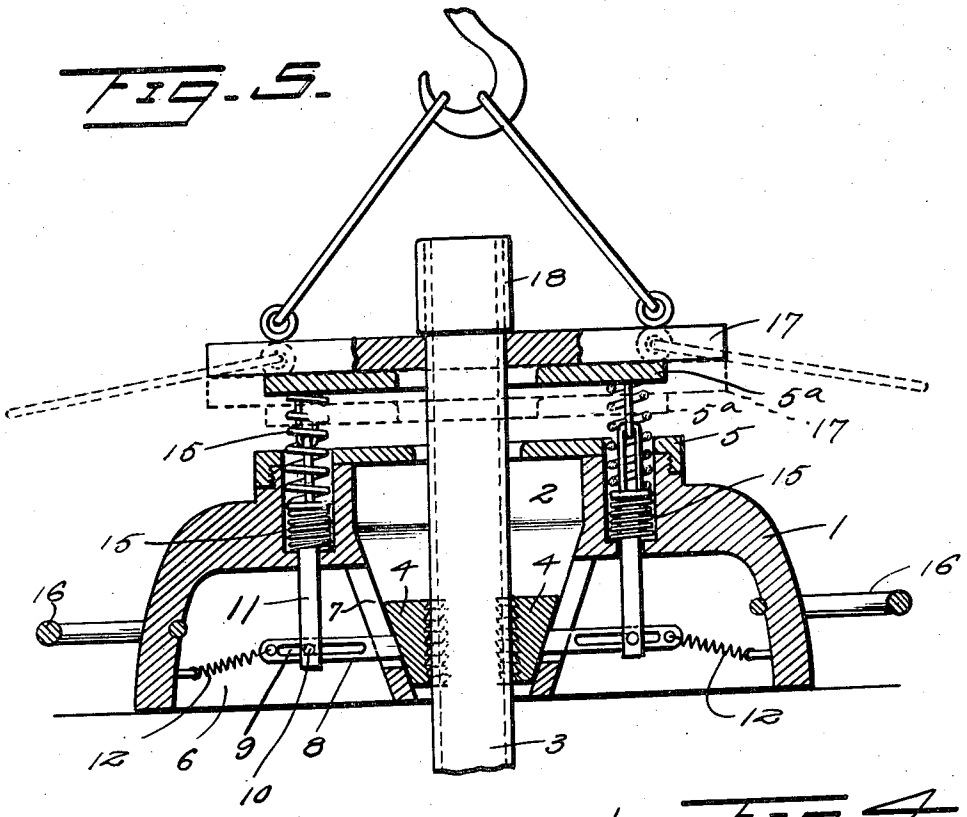
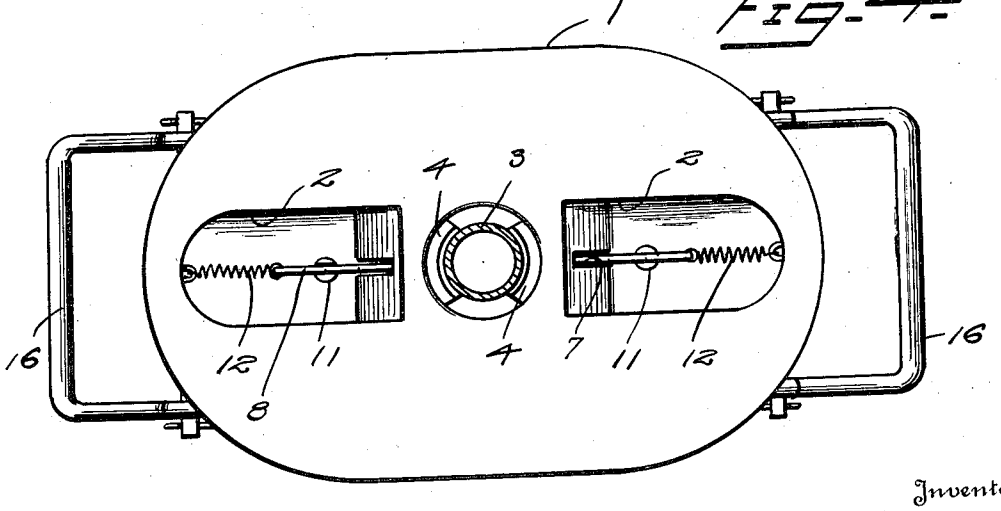


Fig. 4.



Inventor

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Attorney

Patented Dec. 2, 1924. 1,517,979

UNITED STATES PATENT OFFICE.

HOLLY G. GREATHOUSE, OF DAWES, WEST VIRGINIA.

RING AND SLIP.

Application filed December 29, 1923. Serial No. 683,410.

To all whom it may concern:

Be it known that I, HOLLY G. GREATHOUSE, a citizen of the United States, residing at Dawes, in the county of Kanawha and State of West Virginia, have invented certain new and useful Improvements in Rings and Slips; and I do hereby 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.

The present invention has relation to deep well equipment and more particularly to the elevating mechanism whereby the tube or casing is lowered into the well or withdrawn therefrom, according to requirements.

Other objects and advantages will be apparent and suggest themselves as the nature of the invention is understood.

While the drawings illustrate an embodiment of the invention it is to be understood that in adapting the same to meet different conditions and requirements, various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit of the invention.

Referring to the accompanying drawings forming a part of the application,

Figure 1 is a side view of the device partly in section,

Figure 2 is a sectional view showing the device applied,

Figure 3 is a sectional view on the line 3—3 of Figure 2, the tube or casing being omitted,

Figure 4 is a view of the device as seen from the bottom side, with the tube in section and the slips in engagement therewith,

Figure 5 is a vertical sectional view similar to Figure 2, the device being shown in gripping position,

Figure 6 is a detail sectional view on the line 6—6 of Figure 1,

Figure 7 is an elevational view of the link connection between the arm of a slip and the pressure ring, and

Figure 8 is a sectional view of a modification.

Corresponding and like parts are referred to in the following description and designated in the several views of the drawings by like reference characters.

The device comprises a head 1 in which is formed a vertically disposed central opening 2 for the passage of the tube or casing 3. The walls of the opening 2 are upwardly flared and operate to contract the slips 4 and cause them to grip the sides of the tube or casing 3. A guide ring 5 is threaded or otherwise attached to the head 1 and the opening therein corresponds in size to the lower end of the opening 2 and acts therewith to hold the tube or casing 3 in vertical position and prevent it leaning to one side or the other and prematurely coming in contact with anyone of the slips 4. Recesses 6 are disposed at the sides of the opening 2 and are in communication with said opening by means of slots 7. The slips 4 are of wedge form and each is provided with an arm 8 which passes through a slot 7 and enters the recess 6. Each of the arms 8 is provided with a slot 9 in which operates a bolt 10 or analogous fastening adjustably connecting the arm with a link 11 which is movable in the head and guide ring. A contractile helical spring 12 connects each of the arms 8 with the outer wall of the recess 6 and normally operates to hold the slips 4 in outward position so as to clear the tube or casing 3.

Posts 13 are fixedly attached at their upper ends to a pressure ring 5^a and have a limited vertical movement with reference to the head 1 and are slotted at their upper ends to slidingly engage slotted projections 14 depending from the ring 5^a. Expansible helical springs 15 are mounted upon the links 11 and slotted projections 14 and normally hold the ring 5 elevated or at the limit of its upward movement.

While two slips 4 are sufficient for a small size tube or casing, nevertheless it is found advantageous to provide four slips for a large size tube or casing, as indicated in the modification shown in Figure 8, the remaining parts being substantially the same as herein indicated and designated by like reference numerals. Handles 16 are pivotally connected to the head 1 and provide convenient means for manipulating the device.

The hoisting mechanism includes a lifting ring 17 which engages under a coupling 18 when the tube 3 is suspended. However, when the lifting ring 17 engages and rests upon the ring 5^a the latter is depressed thereby admitting of the slips 4 coming into play to grip the tube 3 as indicated in Figure 5. After the tube has been gripped the rings 17 and 5^a continue to move downward,

thereby clearing the coupling 18, as shown by the dotted lines in Figure 5, so that the tube may be gripped by a wrench or other tool and held while coupling another length of tube thereto. The slotted connection between the parts 11 and 14 provides for the continued downward movement of the rings 17 and 5^c after the slips 4 have gripped the tube 3. When the ring 17 is lifted the ring 5^c is moved upwardly by the springs 15, thereby lifting the slips 4 which are automatically disengaged from the tube 3.

What is claimed is:

1. In an appliance of the character specified, a head provided with an upwardly flared opening having recesses at the sides of the flared opening, slips within the flared opening having arms projecting into the said recesses, springs in conjunctive relation with the slips to normally hold them in inactive position, a ring, connecting means between the ring and slips, and a second set of springs normally holding the ring elevated and lifting the slips against the tension of the springs in cooperative relation therewith.

2. An appliance of the character specified comprising a head provided with an upwardly flared opening and having recesses at the sides of the opening, slips within the flared opening and provided with arms extending into said recesses, a ring, connecting means between said ring and head and having a limited play, adjustable connections between the said ring and the slips, and springs coacting with said ring to normally hold it in elevated position.

3. An appliance of the character specified comprising a head provided with an upwardly flared opening and having recesses at the sides of the opening, a guide ring at the top of the head having its opening corresponding in size with the lower end of said flared opening, slips in the flared opening and having arms extending into the respective recesses, an operating ring, connecting means between the operating ring and head, adjustable connections between the operating ring and the slips and having adjustable connection with the arms of the latter, and springs normally holding the operating ring elevated.

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

HOLLY G. GREATHOUSE.

Witnesses:

JULIAN A. HANNA,

V. L. GREATHOUSE.