

E. B. PETRIE.
CLUTCH FOR HOISTING APPARATUS.

APPLICATION FILED DEC. 18, 1912. RENEWED JULY 22, 1914.

1,120,741.

Patented Dec. 15, 1914.

2 SHEETS—SHEET 1.

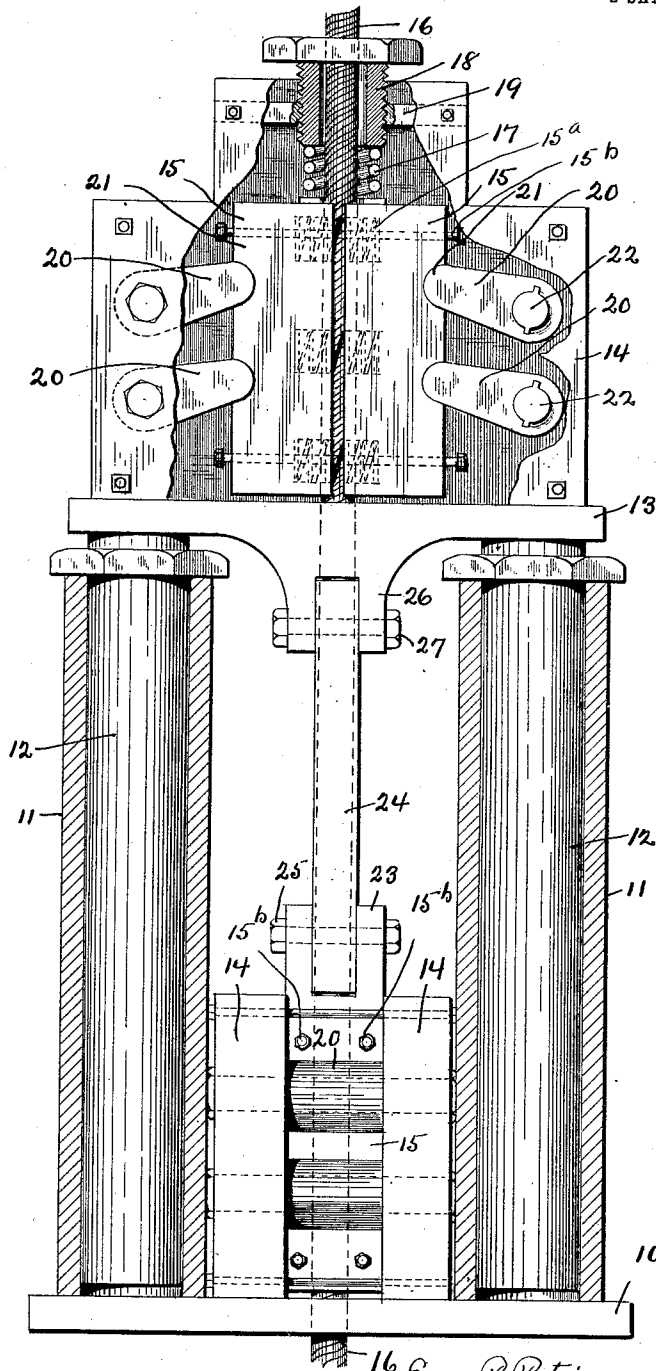


Fig. 1.

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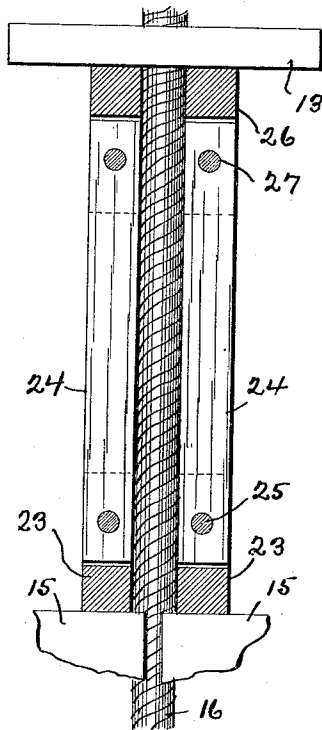


Fig. 2.

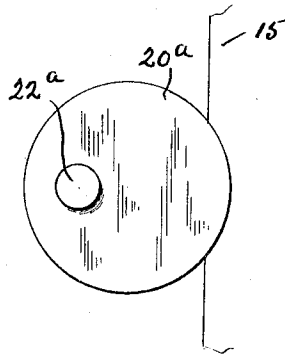


Fig. 3.

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UNITED STATES PATENT OFFICE.

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CLUTCH FOR HOISTING APPARATUS.

1,120,741.

Specification of Letters Patent.

Patented Dec. 15, 1914.

Application filed December 18, 1912, Serial No. 737,491. Renewed July 22, 1914. Serial No. 852,474.

To all whom it may concern:

Be it known that I, ENOS B. PETRIE, of the city of New York, county of Kings, and State of New York, have invented a new and useful Improvement in Clutches for Hoisting Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in clutches for hoisting apparatus, and more especially for improvements in clutches adapted for heavy work, and especially for use in hoisting sunken vessels, and can be used to advantage in connection with apparatus such as described in my application for Letters Patent of the United States No. 727,151, filed October 22nd, 1912.

The object of my present invention is to provide self acting clutches for engaging the heavy cables used in hoisting sunken vessels, to arrange so that the clutches will work automatically and alternately in connection with the lifting jacks, so that one clutch will hold the cable while it is being raised and the other will engage the cable and hold the load in its elevated position while the jacks go back for another lift, and so on.

My invention also relates to means for releasing both jacks when it is necessary to free the cable entirely, as will be herein-after explained.

Another object of my invention is to make the apparatus as simple, strong, and reliable as possible.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a sectional elevation with parts broken away, of the apparatus embodying my invention. Fig. 2 is a detail section at right angles to that shown in Fig. 1, and illustrating the link connection between the upper cross-head and the lower clutch blocks, and Fig. 3 is a detail illustrating a slight modification of the apparatus.

As illustrated in my prior application above referred to, the apparatus is provided with lifting jacks which are usually hydraulic jacks, for the purpose of raising a load. These are represented by a pair of jacks in Fig. 1, comprising the customary cylinder 11 and pistons 12. The cylinder rests upon a suitable support 10 and the

pistons carry a cross head 13 on which is a framework or casing 14 in which are held so as to move in and out with relation to each other, the clutch blocks 15, which grip the hoisting cables 16. This is preferably arranged so as to move downward between the cylinders, as the drawing shows, and the clutch blocks are normally pressed down so as to quickly and frictionally engage the cable, by a stiff spiral spring 17 which is arranged between the blocks 15, and a nut 18 which turns in a suitable threaded rib 19 forming a part of the frame or casing. By means of the nut, the tension of the spring 17 can be regulated. The clutch blocks 15 are held on the ends of the cam arms 20 which are arranged in pairs, and the inner ends of which are rounded as shown at 21, and fit in corresponding recesses in the blocks 15. The blocks 15 move freely up and down, and the outer ends of the cam arms are pivoted as shown at 22 on the framework or casing 14. It will be seen, therefore, that when the pistons 12 are raised, the casing or framework 14 is raised with them, and this raises the pivots 22 and causes the inner ends of the cam arms to swing inward and downward so that the blocks 15 are moved into positive engagement with the cable 16, so that when great pressure is applied to raise a heavy load, the same pressure is exerted on the cam arms, and the blocks 15 are forced into such positive contact with the cable 16 that no slipping can possibly occur.

On the base plate 10 below the upper clutch just described, is a similar clutch which is shown in Fig. 1, but is arranged at right angles to the upper clutch just described. It will be seen, therefore, that when the water is withdrawn from the cylinder 11 to permit the pistons 12 to return to their lower position, the upper clutch will be released, but the lower clutch will automatically engage the cable so as to prevent it from slipping back, and the cylinders can then be refilled to raise the load a distance corresponding to the stroke of the pistons 12.

Sometimes, in rough seas and for various reasons, it is necessary to release both the lower and upper clutches so that the cable 16 can slip back freely. To provide for this I have shown means for connecting the lower clamping blocks 15 with the cross-head 13, so that the jacks may be set in

operation and the lower blocks 15 forcibly pulled upward to release the cable. Obviously the lower blocks might be connected with any part of the apparatus which is raised by the pistons. I have shown a simple means in which the lower blocks are provided with ears 23 between which are pivoted links 24, these being held in place by bolts 25. The upper ends of the links 24 can be connected with ears 26 on the under side of the cross-head 13, and the links are connected to the ears 26 by bolts 27.

When the apparatus is used in its normal way for lifting, the bolts 27 are disconnected so that the clutches work alternately and independently as described, but in case it becomes necessary to release the lower as well as the upper clutch, the links 24 are connected to the cross-head as described, wedges are placed between the upper clamping blocks 15 to prevent them from closing, and the pistons 12 are then forced upward sufficiently to lift the lower blocks 15 out of engagement with the cable 16, in which case the cable can slide freely through both the upper and lower clutches.

In Fig. 3 I have shown a slight modification in which a cam 20^a is pivoted at 22^a and substituted for an arm 20, but obviously the principle is the same in either case. In building the apparatus it is well to have the blocks 15 slide on bolts 15^b and close against the tension of strong springs 15^a, as referred to in the prior application above mentioned.

I claim:

1. An apparatus of the kind described, comprising a clutch adapted when moved endwise to automatically engage a cable, jacks connected to the clutch to move it, a second clutch arranged behind the first clutch and adapted to automatically engage and hold a cable against the back draft thereof, and means for releasing the second clutch by the movement of the jacks.

2. An apparatus of the kind described comprising jacks, a framework or support connected with and moved by the jacks, a clutch carried by the framework and adapted to automatically engage a cable, a second clutch arranged behind the first clutch and adapted to automatically engage a cable and hold it against its back draft, and an operative connection between the second clutch and the aforesaid framework, whereby the movement of the framework is transmitted to the clutch to release it.

3. An apparatus of the kind described comprising hoisting jacks, a framework or support carried by the jacks, a clutch actuated by the lifting of and operatively connected with the said framework or support and adapted to automatically engage a cable, a second clutch arranged behind the first clutch and having opposed gripping members adapted to automatically engage and hold a cable against its back draft, and a detachable connection between the gripping members of the second clutch and the aforesaid framework, whereby the lifting of the framework can be made to release the gripping members of the second clutch.

4. In an apparatus of the kind described, the combination with the jacks, the framework carried by the jacks, a clutch carried by the framework and adapted to automatically engage a cable when moved by the framework, a second clutch arranged behind the first clutch and having opposite gripping members to automatically engage the cable against its back draft, and detachable links connecting the gripping members of the second clutch with the aforesaid framework.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."