(No Model.)

A. W. ROBINSON.

BANK SPUD FOR EXCAVATORS.

No. 536,658. Patented Apr. 2, 1895.

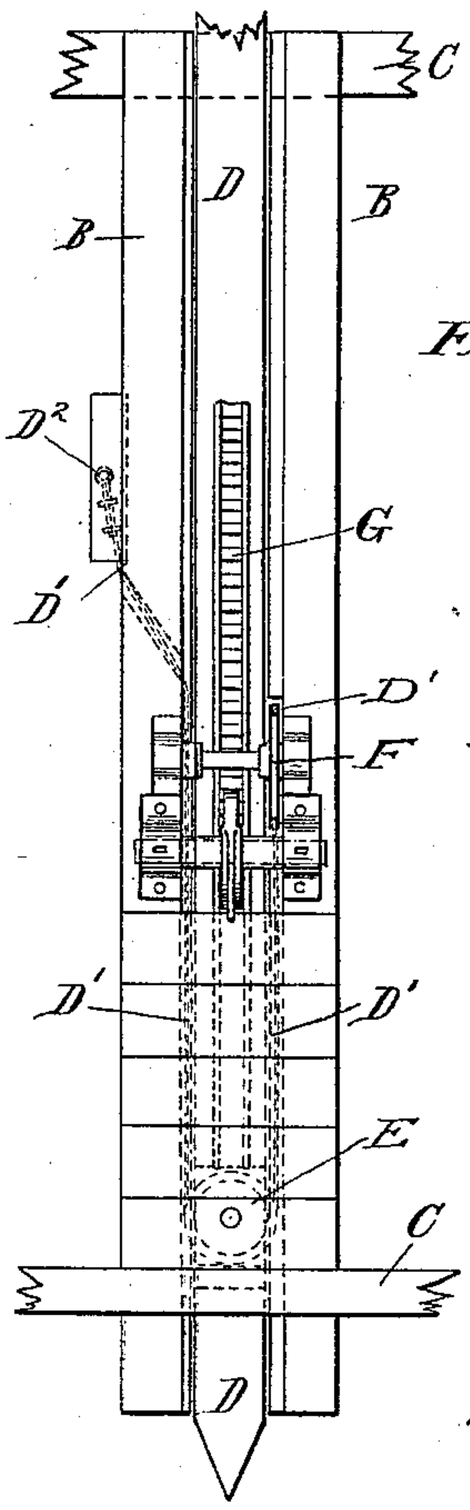

Fig. 2

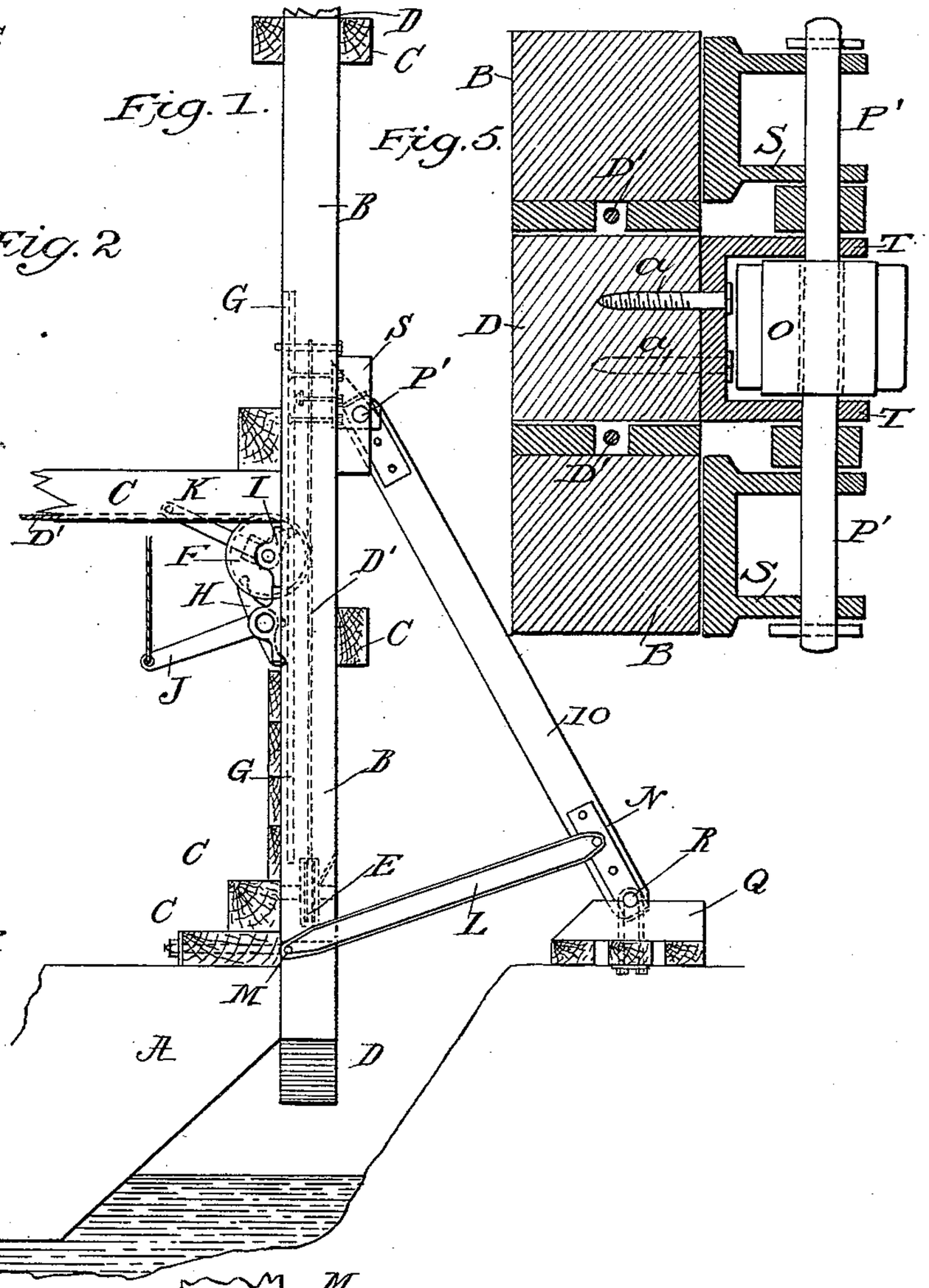

Fig. 1.

Fig. 5.

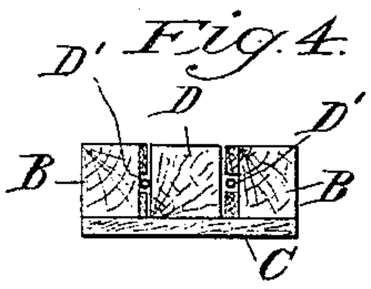

Fig. 4.

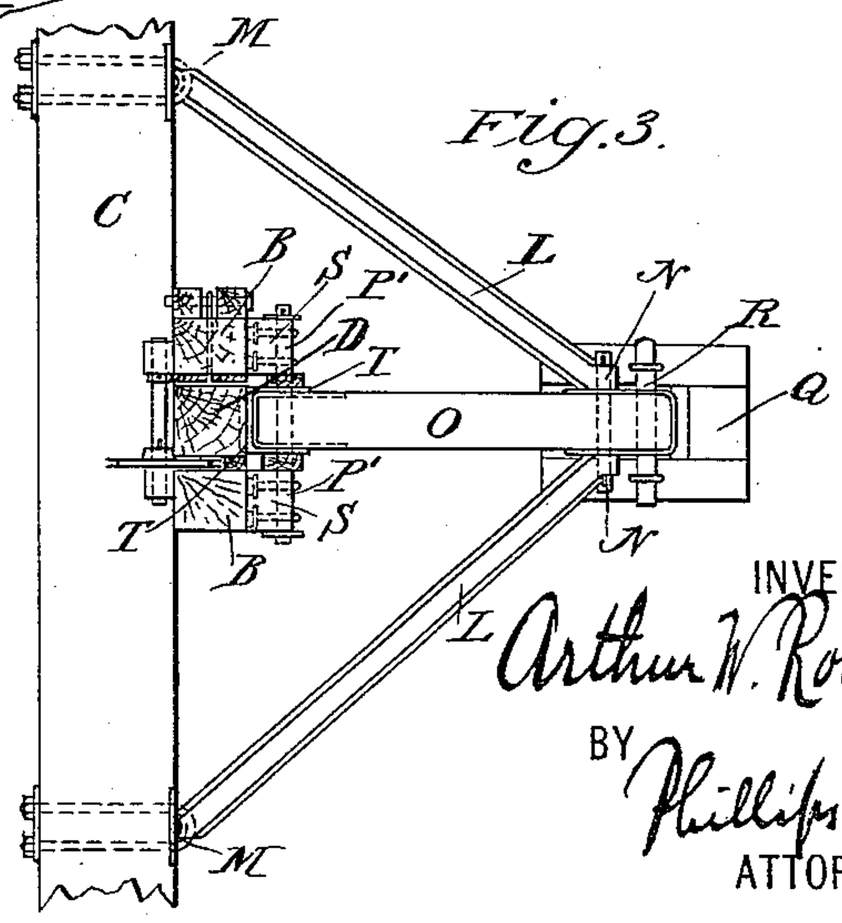

Fig. 3.

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BANK-SPUD FOR EXCAVATORS.

SPECIFICATION forming part of Letters Patent No. 536,658, dated April 2, 1895.

Application filed August 24, 1894. Serial No. 521,155. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. ROBINSON, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Bank-Spuds for Excavators, of which the following is a specification.

My invention relates to improvements in bank spuds, so called, used upon dredges, steam shovels, and similar machinery, whether erected upon a float, scow, or car, or otherwise supported, and the essential features of the invention generally stated are the peculiar combination of a bank spud, with a perpendicular or deep water spud as hereinafter specified. The details of construction will be referred to hereinafter.

Figure 1, illustrates an elevation looking fore and aft, of a scow, showing my spud invention erected thereon. (One side of the scow and consequently a single spud device only are shown.) Fig. 2, illustrates an elevation at right angles to that shown at Fig. 1, looking from the center of the scow outwardly. Fig. 3, illustrates a plan view of that which is shown in Fig. 1. Fig. 4, illustrates a detail. Fig. 5, illustrates a horizontal sectional view of the devices whereby the brace beam is connected to the sliding spud. The section is taken through the longitudinal center of the pin P′, but it and the end of the brace beam are shown in plan.

A is the scow.

B, B are two uprights supported upon a frame C, C.

D is a vertically sliding spud, which is supported by and slides within the frame composed of the vertical beams B, B. This spud may be raised, lowered and rigidly held in position by any of the usual and well known devices for this purpose.

In the drawings, I show a wire rope hoist D′, which passes over a sheave E, set in a mortise in the lower part of the spud D, and which is carried around another sheave F, and thence off to any suitable hoisting drum. One end of the hoist rope is made fast as at D^2, the other end, of course, going around the drum. By this means, as will be at once understood, the spud is raised and lowered. The devices for holding it in any preferred position are provided by a rack G let into the spud, preferably on its inner side, with which rack, suitable pawls, H and I, which are controlled by levers J, K, respectively, engage.

The hoisting, lowering and locking mechanisms above described are given as an example only of many devices or mechanisms which may be employed for this purpose.

The part of the invention, which constitutes the bank spud proper is as follows:

L, L are two bars, which I call the radius bars. They are hinged at M, M, to the hull or equivalent part of the structure, and at the outer ends they come nearly together, and are hinged as at N, N, to a third side bar, or brace beam O, which at its upper end P is pivoted to the vertical spud D, and at the lower end there is a platform composed of plank or timbers for providing a bearing against the bank. The platform is hinged to the lower end of the beam O, as shown at R, so that it always maintains substantially a horizontal position, irrespective of movement by the beam O.

S, S are two slide blocks, which are carried by a large pin P′ (see Figs. 3 and 5, in the latter figure the brace beam O being shown as hanging vertically, so that its upper end and the metallic strap *b* inclosing it only are shown) which also serves to pivot the beam O to the vertically sliding spud D. The purpose of these slide blocks is to make a bearing against the spud slide frame, *i. e.*, the beams B, B, so that they act as it were, like a cross-head in taking the thrust of the arm B.

A wrought iron bracket T is bolted to the spud D, by bolts *a*, *a* as shown, and has two holes in its side plates, through which the hinged pin, P, passes, and it is so arranged that it can be readily removed, whereupon the beam O will be disconnected from the spud D, and the parts which constitute the bank spud proper may then be lifted and supported in an elevated position, and the mechanism may then be used with the spud D operating as usual, without any connection with the bank spud parts.

The operation of the device is apparent— that is to say, by my invention, a dredge, float or equivalent structure is provided with

means whereby it may be supported either on a level lower than the bottom of the dredge. In other words, by the vertical or deep water spud, or when desired, it may be supported upon a bank higher than, or laterally of, the scow or other support for the mechanism, whichever method is most desirable, or may be necessitated by the character of the work being performed. Of course the range of movement of the perpendicular spud may be arranged to suit the requirements of the case—that is to say, it will ordinarily have to operate in a higher position, when worked in connection with the bank spud, than when it is used alone, as in the latter case, it ordinarily has to move down to a greater depth. Its length, however, is sufficient to allow for this, and furthermore, the point of connection between the beam O and the spud D will be determined by the necessity of each case. I ordinarily prefer to provide means whereby the adjustment suggested may be conveniently accomplished, such as affording a plurality of places where the bracket T may be attached to the spud D.

The advantages secured by my construction are many. In the first place, the diverging position of the radius bars L, L, and their coming together at substantially a point where they are hinged to the vertical beam O, gives the structure the greatest possible strength with the least possible material, as I believe, and prevents racking of the mechanism by reason of longitudinal movement on the part of the scow. Furthermore, the same raising, lowering and locking mechanisms which perform those functions for the spud, likewise perform them for the bank spud, thus saving a duplication of these devices. Moreover the structure, as a whole is very greatly simplified, because there is nothing upon the deck of the scow, platform of the car, or other supporting structure when the bank spuds are used, more than when the ordinary vertical spud is used; because both kinds of spud are actuated by identically the same mechanism. Consequently the cost is greatly reduced; repair account, also liability to accident by reason of multiplication of machinery, moving parts, &c., are all avoided or lessened.

Having described my invention, I claim—

1. The combination in a dredge or excavating device, of a bank spud and a vertical spud pivotally connected together, substantially as set forth.

2. The combination in a dredge or excavating device, of a bank spud and a vertical spud, pivotally connected together, and both operated by one and the same set of mechanism, substantially as set forth.

3. The combination in an excavating apparatus of a vertical spud and a bank spud, the bank spud comprising one or more radius bars in combination with an upwardly extending beam, said beam being pivoted to the vertical spud, at its upper end, and said radius bars pivoted to the float at their inner ends, substantially as set forth.

4. The combination in an excavating apparatus of a vertical spud and a bank spud, the bank spud comprising one or more radius bars in combination with an upwardly extending beam, said beam being pivoted to the vertical spud, at its upper end, and said radius bars pivoted to the float at their inner ends, and a platform at the lower end of said upwardly extending beam, substantially as set forth.

5. The combination in an excavating apparatus of a vertical spud and a bank spud, the bank spud comprising one or more radius bars in combination with an upwardly extending beam, said beam being pivoted to the vertical spud at its upper end, and said radius bars pivoted to the float at their inner ends, and thrust blocks connected with the said upwardly extending beam whereby its thrust is taken upon the frame of the vertical spud, substantially as set forth.

Signed at South Milwaukee, in the county of Milwaukee and State of Wisconsin, this 28th day of July, A. D. 1894.

ARTHUR W. ROBINSON.

Witnesses:
E. K. SWIGART,
J. B. GIVENS.