No. 708,587. Patented Sept. 9, 1902.

A. W. ROBINSON.

DREDGE BUCKET.

(Application filed May 20, 1902.)

(No Model.)

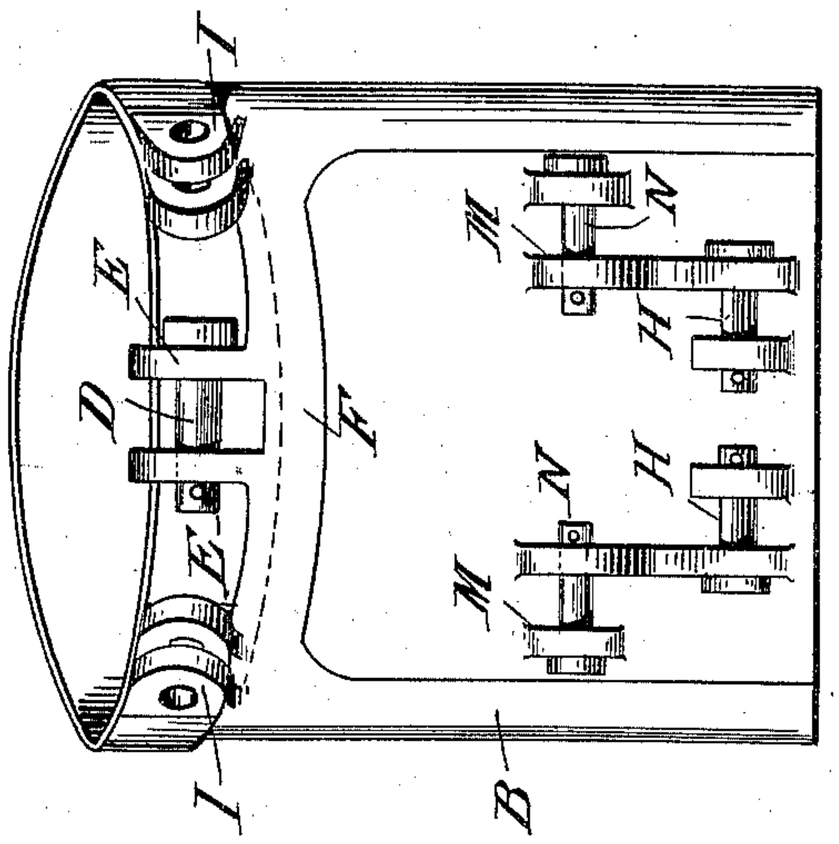

Fig. 3.

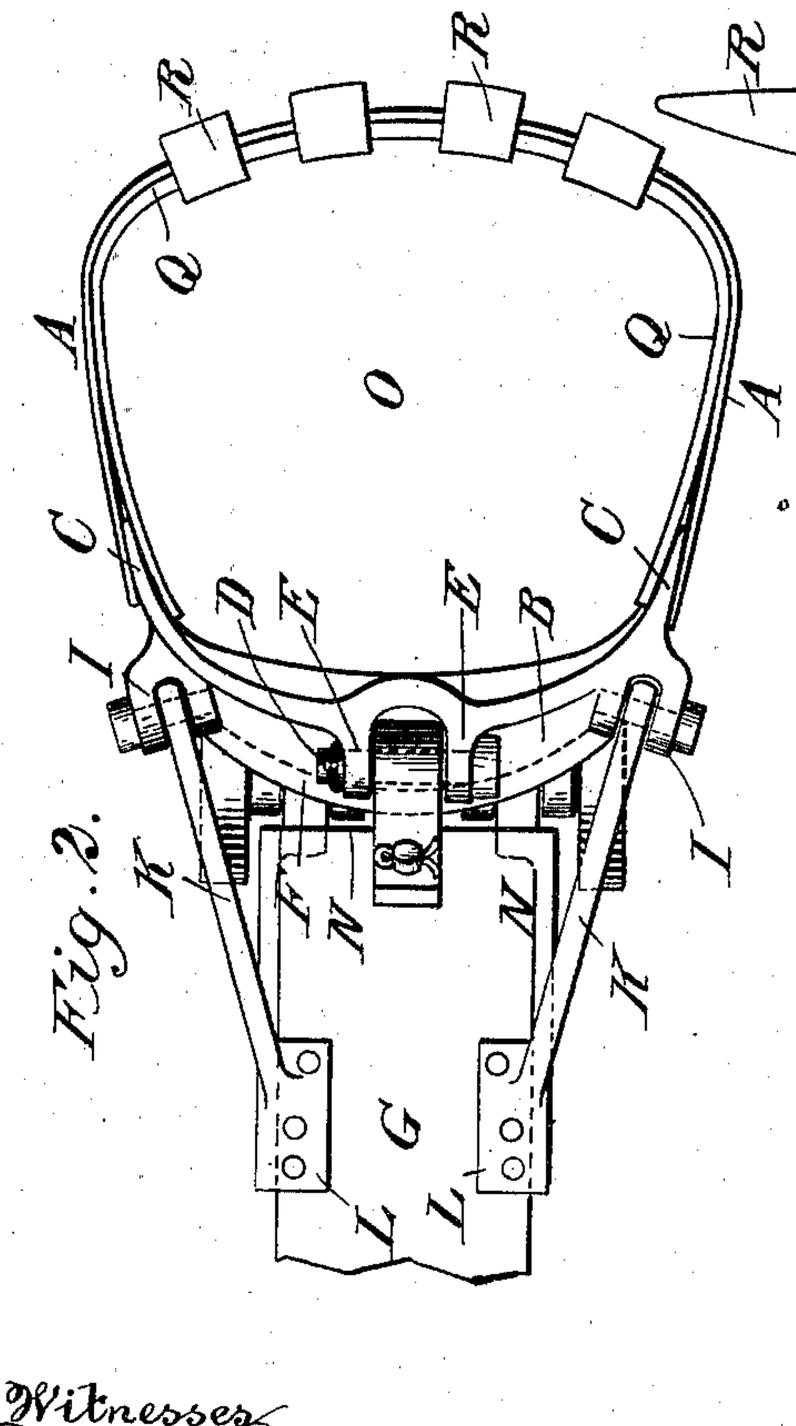

Fig. 2.

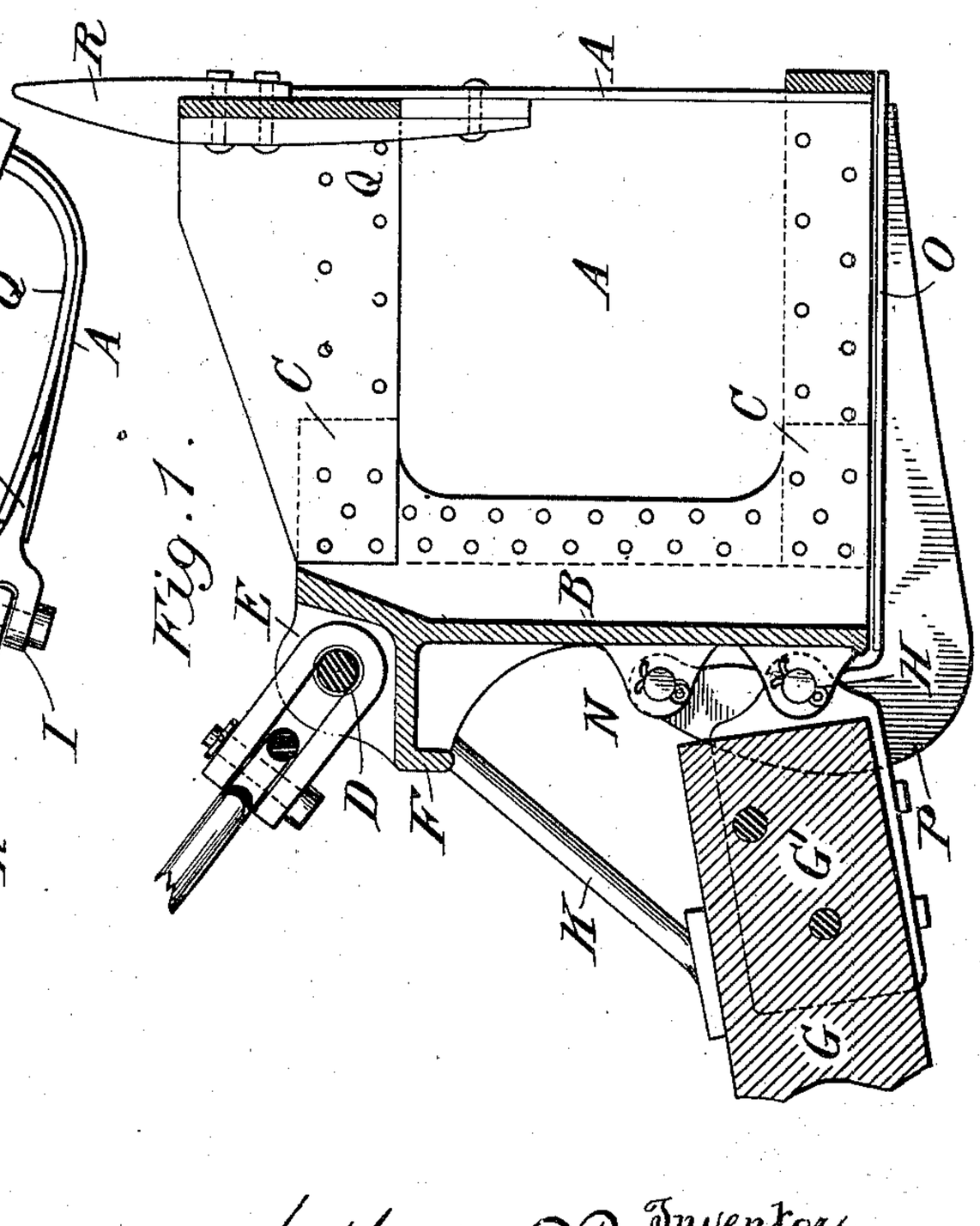

Fig. 1.

Witnesses
Edward Rowland.
F. M. Dowbach

Inventor.
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UNITED STATES PATENT OFFICE.

ARTHUR W. ROBINSON, OF MONTREAL, CANADA.

DREDGE-BUCKET.

SPECIFICATION forming part of Letters Patent No. 708,587, dated September 9, 1902.

Application filed May 20, 1902. Serial No. 108,269. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. ROBINSON, a citizen of the Dominion of Canada, and a resident of Montreal, Province of Quebec, Dominion of Canada, have invented a certain new and useful Improvement in Dredge-Buckets, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of dredge-buckets used with dipper-dredges, steam-shovels, and the like in which a single bucket is attached to the end of an arm and caused to excavate material by means of a hoisting rope or chain attached thereto. The buckets of the class stated are peculiarly subject to great strains not so much in doing the work normally as when under abnormal conditions—such as engagement under a ledge of rock, with a submerged tree-trunk, or the like—and the purpose of the present invention is to improve the construction of the bucket, whereby it is made stronger and simpler as a whole and its parts reduced in number and so arranged in conjunction with the boom as to meet and resist the stresses to which they and the bucket are incident in a more direct and safe manner than heretofore.

In the drawings, Figure 1 is an elevation, partly in vertical section. Fig. 2 is a plan view of the bucket. Fig. 3 is a rear view of the bucket disconnected from the arm.

A is the shell-plate of the bucket.

B is the back plate, preferably made of cast-steel and having all the lugs and attachments hereinafter referred to formed on it. It is fitted with two flanges C C, by means of which it is riveted, as shown, to the shell-plate A. The hoisting-tackle is attached directly to the upper edge of the back plate B, as shown at D, by means of the lugs E E, preferably cast integral with the back plate B. In order to provide for the great strain at this point and distribute the application of power equally throughout the back and both sides, the casting is formed with a flanged rib F, immediately beneath the pin connection D and extending laterally to right and left therefrom. This is an exceedingly important feature of my invention, for it not only resists the strains of the hoisting-tackle, but also gives great stiffness and rigidity to the structure as a whole, providing the necessary horizontal stiffness, while the bucket-plate itself provides the necessary vertical stiffness. The back plate is preferably slightly curved in form when seen in plan view, as shown in Fig. 2, which not only contributes to its strength, but increases the holding capacity of the bucket. It is also preferably made of reduced width as compared with the front of the bucket, as shown, although obviously the bucket may be made rectangular, circular, or any other preferred form.

It has heretofore been customary to attach the hoisting-tackle not directly to the bucket-frame, but to a bail connected with the bucket at opposite sides and extending upwardly and over it. There are several objections to this construction, among them the fact that the bail obstructs the mouth of the bucket and frequently prevents the entrance of large masses of material which would otherwise enter the bucket and be removed. Also the bail is very apt to become distorted under strains, so that it pulls unevenly on the bucket structure, and likewise the strain on it tends to collapse the sides of the bucket. By my improved construction all this is done away with. The hoisting-tackle makes direct contact with the frame of the bucket. The strains are direct and without leverage, and the whole top or mouth of the bucket is left free and unobstructed for the entrance of large or irregular masses of material.

The bucket is attached to the handle or arm G by means of a pair of pin-connected lugs H, with which the casting or castings G′, which are bolted to the end of the arm G, engage by means of the cross-pin, as shown. There is also a pair of lugs I I near the top of the back plate with which the back braces K K, which are bolted, as shown, to the arm G at L, connect. There are other lugs M M, each having the cross-pin N N, to which the door O is connected by bell-crank arms P. The braces K K may be made adjustable, if preferred, in any of the ways now known. I do not show this detail because it forms no material part of the present invention.

The lap or upper rim of the bucket is reinforced by a heavy plate Q, which may be on the inside or outside of the shell-plate of the

bucket, as preferred. In the present instance it is shown on the inside, and this reinforcing-plate preferably carries the teeth R R, if they are used. I show teeth in Figs. 1 and 2, but none in Fig. 3. Their presence or absence from the structure will depend upon the character of the work the bucket is called upon to perform. As the maximum strains occur when the hoisting-tackle is pulling in the direction illustrated in Fig. 1, it will be observed that the line of strain of the hoisting-tackle and the digging resistance along the line of the teeth and the resistance of the arm produce three lines of force, which meet at or near a common point. The bucket is therefore free from any considerable twisting strains or movements and also the back braces K are likewise freed from any excessive strains, and also the bucket is unusually stiff, strong, and simple in construction, the entire back plate being made of a single steel casting and integral with which all the lugs for the braces, the arm connections, and the door are cast, and also it has integrally cast with it the horizontal stiffening-flange near its upper edge with supporting-brackets thereunder. Furthermore, by reason of the direct attachment of the hoisting-tackle to this stiff strong back plate the mouth of the bucket is left entirely open, and no distorting strains are exerted upon it in normal use. Also, owing to the absence of the bail, the bucket may be lifted much higher than usual for the same elevation of the boom.

It will be obvious to those who are familiar with this art that modifications may be made in the details of construction of my invention without departing from the essentials thereof. I therefore do not limit myself to such details.

Having described my invention, I claim—

1. A bucket the back of which is composed of a single continuous casting having a horizontal stiffening-flange near its upper edge and means for the direct attachment of the hoisting-tackle to said casting.

2. A bucket the back of which is composed of a single continuous casting having a horizontal stiffening-flange near its upper edge, lugs for the attachment of the hoisting-tackle and for engagement with the arm and back braces cast integral with said casting.

3. A bucket the back of which is composed of a single continuous casting having lugs for the attachment of the hoisting-tackle and for engagement with the arm and the braces thereof and for hinging the bottom, all cast integral therewith.

4. A bucket the back of which is composed of a single continuous casting having lugs cast integral therewith for the direct attachment of the hoisting-tackle to said casting.

5. A bucket the back of which is composed of a single continuous casting and having a horizontal stiffening-flange and projecting parts C, C, to which the shell-plate of the bucket may be bolted, means whereby the hoisting-tackle may make direct attachment with said casting and a reinforcing band or plate at the upper edge of the mouth of the bucket shell-plate upon which the teeth are supported.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of April, 1902.

ARTHUR W. ROBINSON.

Witnesses:

J. B. ROBINSON,

E. M. CORBET.