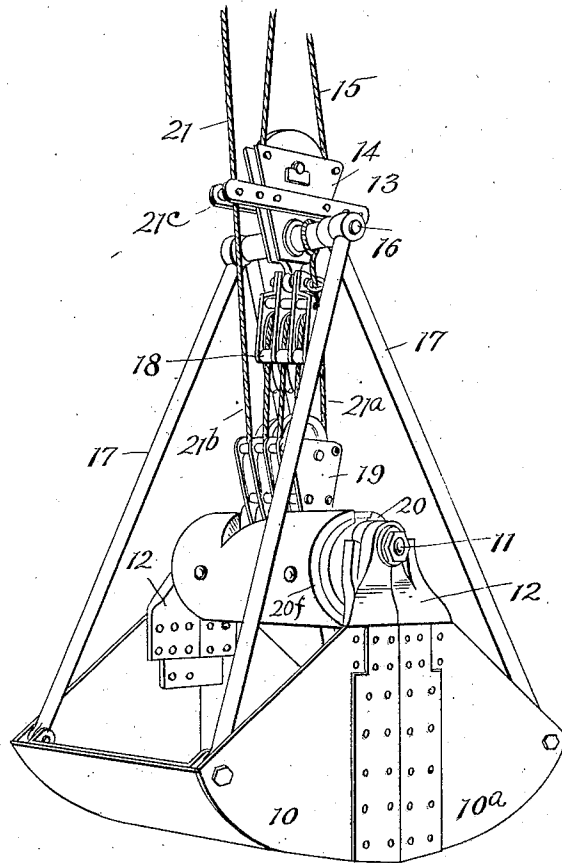


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GRAB BUCKET.
APPLICATION FILED FEB. 27, 1911.

1,058,539.

Patented Apr. 8, 1913.
3 SHEETS—SHEET 1.

Fig. 1.



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GRAB BUCKET.

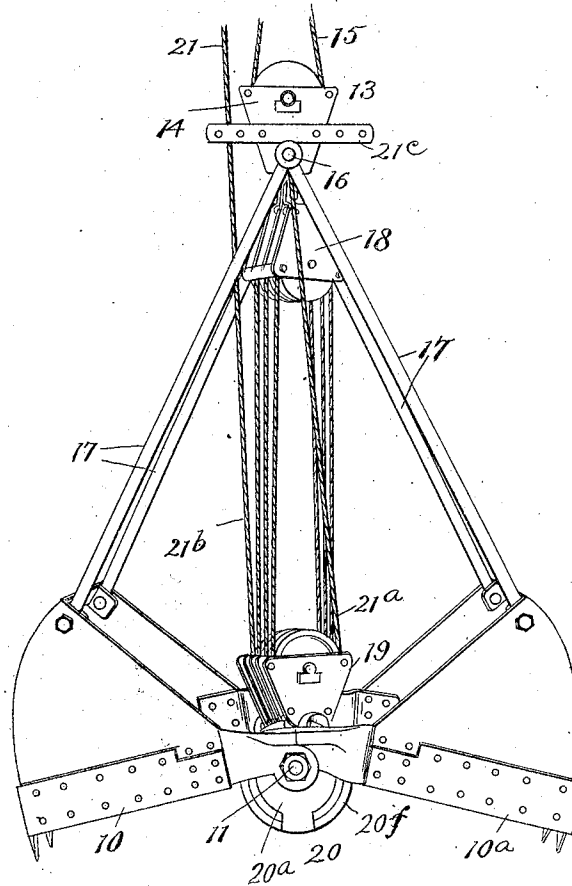
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3 SHEETS—SHEET 2.

Fig. 2.



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 3 SHEETS—SHEET 3.

Fig. 3.

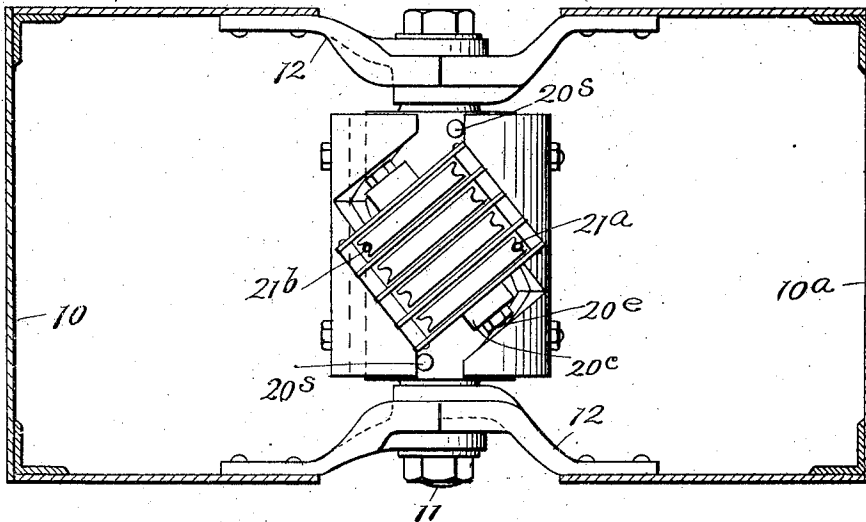


Fig. 4.

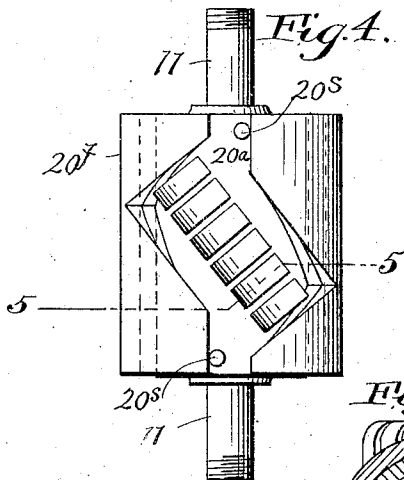


Fig. 6.

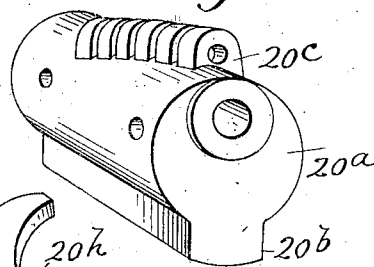


Fig. 5.

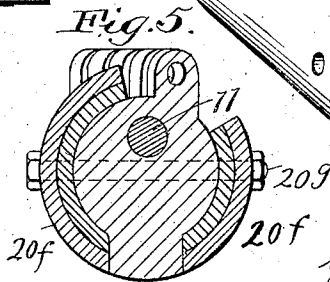


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM H. BOTTEN, OF CLEVELAND, OHIO, ASSIGNOR TO THE OWEN BUCKET COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

GRAB-BUCKET.

1,058,539.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed February 27, 1911. Serial No. 611,063.

To all whom it may concern:

Be it known that I, WILLIAM H. BOTTEN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Grab-Buckets, of which the following is a full, clear, and exact description.

This invention relates to grab or excavating buckets, and particularly to buckets of the clam shell type operated on the block and falls or tackle principle.

One of the objects of the invention is to provide a bucket having very great digging power, which is uniform throughout the stroke of the bucket jaws.

A further object is to provide a bucket wherein the digging power may be varied to suit the conditions of the material in which the bucket is working, whereby the bucket is enabled to dig in hard-pan or clay, as satisfactorily as in sand or other soft material.

Still further, the invention aims to provide a bucket having the above characteristics and which is in little danger of upsetting when lowered onto the material, and which hangs plumb when supported by either the opening or closing cables.

A still further object is to provide a bucket which is simple in its construction, strong and durable, and wherein there is little danger of the bights or sections of the cable becoming entangled or twisted.

These and other objects are accomplished by my invention which may be briefly summarized as consisting in certain novel details of construction and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

In the accompanying sheets of drawings, Figure 1 is a perspective view of a bucket constructed in accordance with my invention, the bucket jaws being closed; Fig. 2 is a perspective view of the bucket with the jaws open; Fig. 3 is a sectional plan view with the bucket jaws open, the section being taken just above the lower closing block; Fig. 4 is a top plan view of a counterweight which is attached to the bucket with the removable jackets of the counterweight in position; Fig. 5 is a transverse section through the counterweight substantially along the irregular line 5—5 of Fig. 4; Fig.

6 is a perspective view of the inner or main portion of the counterweight which is permanently attached to the bucket; Fig. 7 is a perspective view of one of the jackets which is designed to be removably secured to the main portion of the counterweight shown in Fig. 6.

Referring now to the figures of the drawing wherein the preferred form of my invention is shown, 10 and 10^a represent the two bucket jaws, the inner upper portions of which are pivotally connected to a transverse shaft 11, the jaws having hinging arms 12 which are secured to the jaws and are connected to the shaft 11. Above the jaws is a bucket head 13 which includes an opening block 14 having a single sheave around which is reeved an opening cable 15, and the head also includes a rod 16 parallel to the shaft 11 and passing through the cheek plates of the blocks 14. Suitable arms 17 connect the outer ends of the rod 16 with the outer corners of the bucket jaws in the well known manner.

In order that the bucket may have good and uniform digging power, I employ a closing tackle consisting of an upper block 18 and a lower block 19, and an adjustable counterweight designated as a whole by the reference character 20 and mounted on the shaft 11. A suitable number of sheaves are employed in each of the blocks 18 and 19, which together with the counterweight 20 enable the bucket to have exceptional digging power, the arrangement being such that when the jaws are being closed, the head 13 and parts carried thereby will be lowered or pulled toward the lower block 19, instead of the latter being pulled upward toward the upper block 18. This digging power is due both to the counterweight and to multiplicity of sheaves in the closing tackle. The upper closing block 18 is secured by the customary shackle to the rod 16 and the lower closing block 19 is permanently connected to the counterweight.

The counterweight 20 wherein the main features of my invention reside, includes a main central portion 20^a which is permanently attached by some means, such as set screws 20^b to the shaft 11, the center of gravity of the counterweight being below the shaft. At the bottom of this portion 20^a of the counterweight is a rib 20^b for a purpose to be explained, and at the top are

a series of lugs 20^c separated by suitable slots. These lugs are arranged in a row at a decided angle with respect to the axis of the counterweight and of the shaft 11, and have alined openings for a pintle. The lower block 19 is rigidly and permanently attached to the portion 20^a of the counterweight by means of a pintle or bolt 20^e which passes through the alined openings in the lugs 20^c and through suitable openings in the cheek plates and division plates of the block 19, these plates of the block extending down into the slots between the lugs. The block 19 is therefore skewed or inclined with reference to the counterweight and the inclination is such that the end sections or legs of the closing cable 21 which is reeved about the sheaves of the upper and lower blocks 18 and 19, not only have clear leads, but engage the two end sheaves of the lower block 19 in the center plane of the bucket. This is shown clearly in Fig. 3. In the present case, one of these end sections which is designated 21^a extends upwardly from one of the end sheaves of the block 19 and is secured or dead-ended on the head 13, while the other section which may be designated 21^b extends upwardly through a guide 21^c carried by the head, this part of the cable being designed to be connected to the hoisting mechanism in the well known manner. Furthermore, the block 18 is also inclined and it is at an inclination such that its sheaves cross the sheaves of the lower block 19. The result of this construction is that the sections or portions 21^a and 21^b of the closing cable and all the different bights of the cable extending between the sheaves of the upper and lower blocks have clear leads, and further the bucket is supported by the cable on the center plane of the bucket, so that the latter will stand plumb and will not be tipped or inclined when empty or loaded.

As before stated, the digging power of my improved bucket may be varied to suit requirements, and this I accomplish by providing an adjustable counterweight, including the portion 20^a which is permanently attached to the bucket, and removable jackets 20^f which are curved and rounded, and conform to the shape of the permanent portion 20^a of the counterweight, which portion is somewhat cylindrical in contour, and these jackets 20^f are secured to the portion 20^a by through bolts 20^g. Each of the jackets is provided with a notch 20^h which accommodates or receives lugs 20^c on the top of the counterweight member 20^a. The lower portions of the jackets extend to the sides of the rib 20^b at the bottom of the counterweight member 20^a, but do not overlap the rib. Therefore when the bucket is lowered, these jackets are not liable to be injured in case the counterweight strikes a

rock or other hard substance with considerable force. With this construction, if the bucket is being used on hard material, such as clay or hard pan, the jackets 20^f will be added to the counterweight member 20^a so as to increase the weight of the lower portion of the bucket, and consequently its digging power. If, on the other hand, the bucket is being used in gravel or other soft material, less digging power is required and the jackets 20^f or any number of them may be removed so that it will not be necessary for the hoisting mechanism to carry and operate an unnecessarily large dead weight.

While I have shown a counterweight provided with two sets of jackets, it will be understood, of course, that the number of sets of jackets may be greater, if necessary.

Having thus described my invention, what I claim is.

1. In a grab bucket, a pair of pivoted bucket jaws, a bucket head to which the jaws are connected, a counterweight at the pivotal axis of the jaws, and means for opening and closing the jaws, said counterweight comprising a main portion permanently fastened in position and having the bucket closing means connected to the top thereof, and a plurality of jackets removably secured to said main portion and extending along the same substantially from end to end thereof on opposite sides of the attachment to the bucket closing means.

2. In a grab bucket, a pair of pivoted bucket jaws, a head to which the jaws are connected, a counterweight at the pivotal axis of the jaws, means for closing the jaws comprising an upper block attached to the head and a lower block, a counterweight comprising a main portion permanently fastened in position and having said lower block connected thereto, and a plurality of removable jackets secured to said main portion on opposite sides of the connection with the lower block and extending substantially from one end to the other of said main portion of the counterweight.

3. In a grab bucket, a pair of pivoted jaws, a bucket head to which the jaws are connected, means for closing the jaws comprising an upper block and a lower block, a counterweight at the pivotal axis of the jaws, said counterweight comprising a substantially cylindrical main portion permanently fastened in position and connected at the top to said lower block, and a plurality of rounded jackets secured to said main portion on opposite sides of the connection with the lower block and each partially enveloping said main portion and said jackets being divided or separated from each other along the top and bottom of said main portion of the counterweight.

4. In a grab bucket, a pair of pivoted jaws, a head to which the jaws are con-

needed, a counterweight at the pivotal axis of the jaws, a tackle for closing the jaws comprising an upper block and lower block, said counterweight comprising a main portion permanently fastened in position and having at the bottom a rib and at the top means for forming a connection with the lower block, and a plurality of removable counterweight sections secured to the opposite sides of said main portion between the rib and the block connecting means.

5. In a grab bucket, a pair of bucket jaws having their inner portions pivotally connected together, an upper rod, arms connecting the rod with the outer portions of the jaws, a counterweight supported by the jaws at their pivotal axis and comprising a main portion permanently fastened in position, and jackets removably secured to said main portion, said main portion having at

the top thereof a plurality of lugs arranged in a line at an angle to the axis of the counterweight, a closing tackle comprising a multiple sheave upper block suspended from the rod, a multiple sheave lower block secured to said upwardly projecting lugs of the counterweight, and a closing cable reeved about the sheaves of the tackle, the lower closing block being inclined at an angle such that the portions of the cable extending upwardly from the two end sheaves of the lower block are in substantially the center plane of the bucket.

In testimony whereof, I hereunto affix signature in the presence of two witnesses.

WILLIAM H. BOTTEN.

Witnesses:

H. R. SULLIVAN,
A. F. KWIS.