A. N. DOUD.

CLAM SHELL GRAB BUCKET.

APPLICATION FILED JUNE 1, 1911.

1,007,023.

Patented Oct. 24, 1911.

2 SHEETS—SHEET 1.

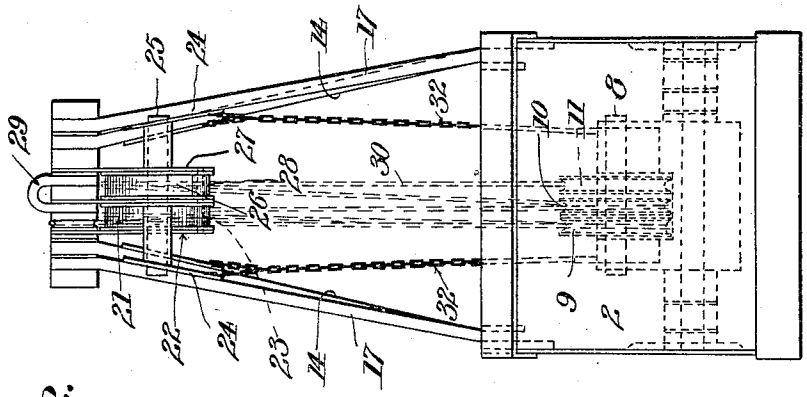

Fig. 2.

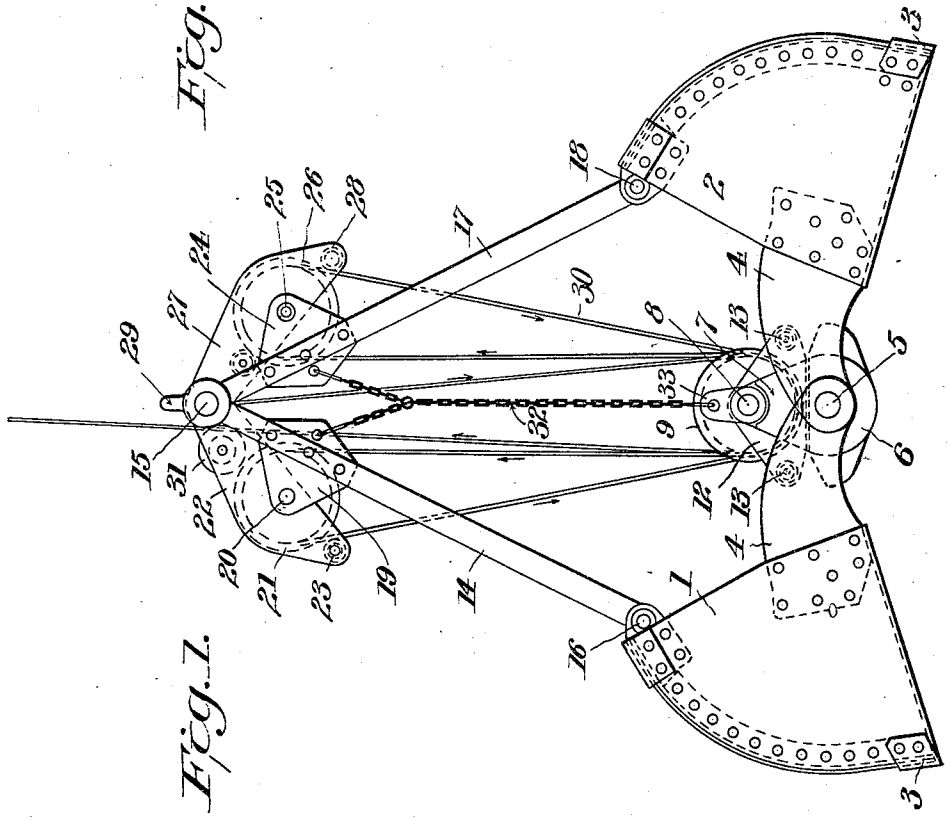

Fig. 1.

WITNESSES

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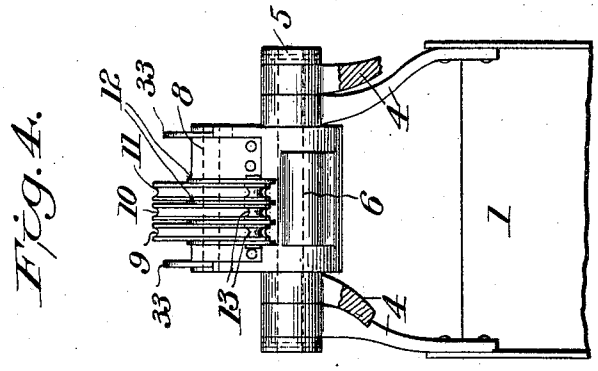
2 SHEETS—SHEET 2.

Fig. 4.



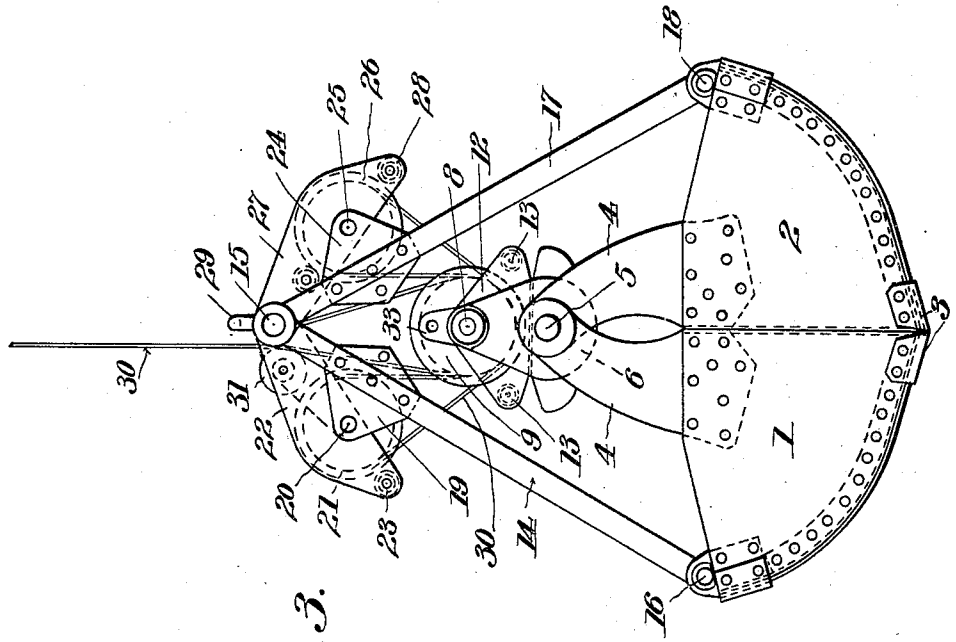


Fig. 3.

WITNESSES

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CLAM-SHELL GRAB-BUCKET.

1,007,023. Specification of Letters Patent. Patented Oct. 24, 1911.

Application filed June 1, 1911. Serial No. 630,698.

To all whom it may concern:

Be it known that I, ARTHUR N. DOUD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Clam-Shell Grab-Buckets, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

The invention relates to new and useful improvements in lifting buckets, and more especially to buckets of the clam shell type wherein the sections of the bucket which are pivoted together, are normally opened or spread when the bucket descends, and said sections are brought together in order to load the material into the bucket.

An object of the invention is to provide means whereby the outer edges of the bucket sections may be forced down positively by the lifting or closing rope.

In the drawings which show by way of illustration one embodiment of the invention; Figure 1 is a side elevation showing a bucket having my improvements applied thereto, with the bucket sections open; Fig. 2 is an end view of the same; Fig. 3 is a view similar to Fig. 1, showing the sections of the bucket closed; Fig. 4 is a detail of the central connecting bracket for the bucket sections.

My improved bucket consists of two sections 1 and 2, which are each shaped like the ordinary clam shell grab bucket sections. At the lower or inner edges of the bucket sections, are formed the usual cutting members 3. Each bucket section is formed with outwardly projecting arms 4, which are pivotally connected by a shaft 5. Mounted on the shaft 5, is a cylindrical weight 6, which is formed at its outer ends with projecting arms 7. Said projecting arms 7 are connected by a shaft 8 on which are mounted, as herein shown, three sheaves 9, 10 and 11. Located between each of the sheave blocks and on the outer sides thereof, are plates 12. These plates 12 carry guide rollers 13, which aid in guiding the rope properly on the sheave blocks over which it runs.

A pair of bail-arms 14 are pivoted at their upper ends to the head shaft or other suitable support 15, and at their lower ends at 16 to the outer edges of the bucket section 1. A pair of bail-arms 17 are also pivoted at 15 to the supporting frame, and at their other ends are pivoted at 18 to the upper outer edge of the bucket section 2. Mounted on the bail-arms 14 are brackets 19 which are rigidly connected to the arms. A short shaft 20 connects the brackets 19 and on said short shaft is mounted a sheave 21. Guiding plates 22 are mounted at their upper ends on the supporting frame, and are also mounted intermediate their ends on the shaft 20. Pivoted between the guiding plates 22 is a guide roll 23, which aids in holding the rope on the sheave 21. On the bail-arms 17 is a pair of brackets 24, in which brackets is mounted a shaft 25 carrying a sheave block 26. Guiding plates 27 similar to the plates 22, are mounted on the supporting frame and the shaft 25 and carry a guiding roll 28. A lifting ring 29 is attached to the head shaft, and serves as a means for lifting and lowering the bucket. A rope is attached at one end of the head shaft, and this rope 30 passes over the sheaves in the following order; sheave 9, sheave 21, sheave 10, sheave 26, sheave 11, and thence between a guiding roller 31 and the supporting frame for the bucket.

In order to limit the opening movement of the sections of the bucket, I have provided limiting chains 32 which are connected to the brackets 33 mounted at the ends of the shaft 8, and at their upper ends said chains are connected to the brackets 19 and 24.

In the operation of my device, the weighted member on the shaft 5 will carry down the center connection between the bucket sections when the closing rope is released, and this will position the bucket sections as shown in Fig. 1. With the parts in this position, the bucket is lowered into contact with the material which is to be lifted and the sharp cutting edges 3, 3, of the bucket will enter the material. A pull on the lifting or closing rope will lift the center connecting portion of the bucket sections and draw the bucket sections to the position shown in Fig. 3. The pull of the rope in closing the bucket will exert a force on the bail-arms 14 and 17, which will tend to crowd the cutting parts 3, 3, of the bucket sections into the material. This is accomplished by reason of the fact that the sheave members over which the closing rope runs are mounted on brackets directly carried by the bail-arms, and the lifting of the center section of the bucket will tend to draw the

sheave 21 toward the sheave 26, and vice versa, which of course tends to crowd the lower ends of the bail-arms 14 and 17 toward each other, and therefore, as soon as the pivotal center between the sections is above a line joining the pivotal centers 16 and 18, this force operates to close the bucket.

It is obvious that minor changes in the details of construction may be made, without departing from the spirit of my invention as set forth in the appended claims.

Having thus particularly described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination of a pair of pivotally connected bucket sections, pairs of bail-arms pivoted to said sections at the outer edges thereof, a head shaft to which said bail-arms are pivotally connected at their upper ends, sheaves carried by the bucket sections adjacent their pivotal connections, sheaves mounted on each pair of bail-arms, and a lifting rope passing over said sheaves for closing the bucket sections.

2. The combination of a pair of pivotally connected bucket sections, pairs of bail-arms pivoted to said sections at the outer edges thereof, a head shaft to which said bail-arms are pivotally connected at their upper ends, a weighted member located adjacent the pivotal connection of the bucket section, brackets carried by said weighted member, sheaves mounted on the shaft supported by said brackets, pairs of brackets carried by the bail-arms adjacent their upper ends, a sheave carried by each pair of brackets, and a rope passing over said sheaves for closing the bucket sections.

3. The combination of a pair of bucket sections, brackets connected to each bucket section and projecting laterally therefrom, means for pivotally connecting said brackets, pairs of bail-arms pivoted to said sections at the outer edges thereof, a head shaft to which said bail-arms are pivotally connected at their upper ends, sheaves carried by the bucket sections adjacent their pivotal connections, sheaves mounted on each pair of bail-arms, and a lifting rope passing over said sheaves for closing the bucket sections.

4. The combination of a pair of pivotally connected bucket sections, pairs of bail-arms pivoted to said sections at the outer edges thereof, a head shaft to which said bail-arms are pivotally connected at their upper ends, brackets mounted on the outer faces of the bail-arms, a shaft connecting each pair of brackets, a sheave mounted on each shaft, sheaves carried by the bucket sections adjacent their pivotal connections, and a lifting rope passing over the sheaves for closing the bucket sections.

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

ARTHUR N. DOUD.

Witnesses:
HARRY W. FISHER,
C. H. FORCE.