No. 861,669. PATENTED JULY 30, 1907.

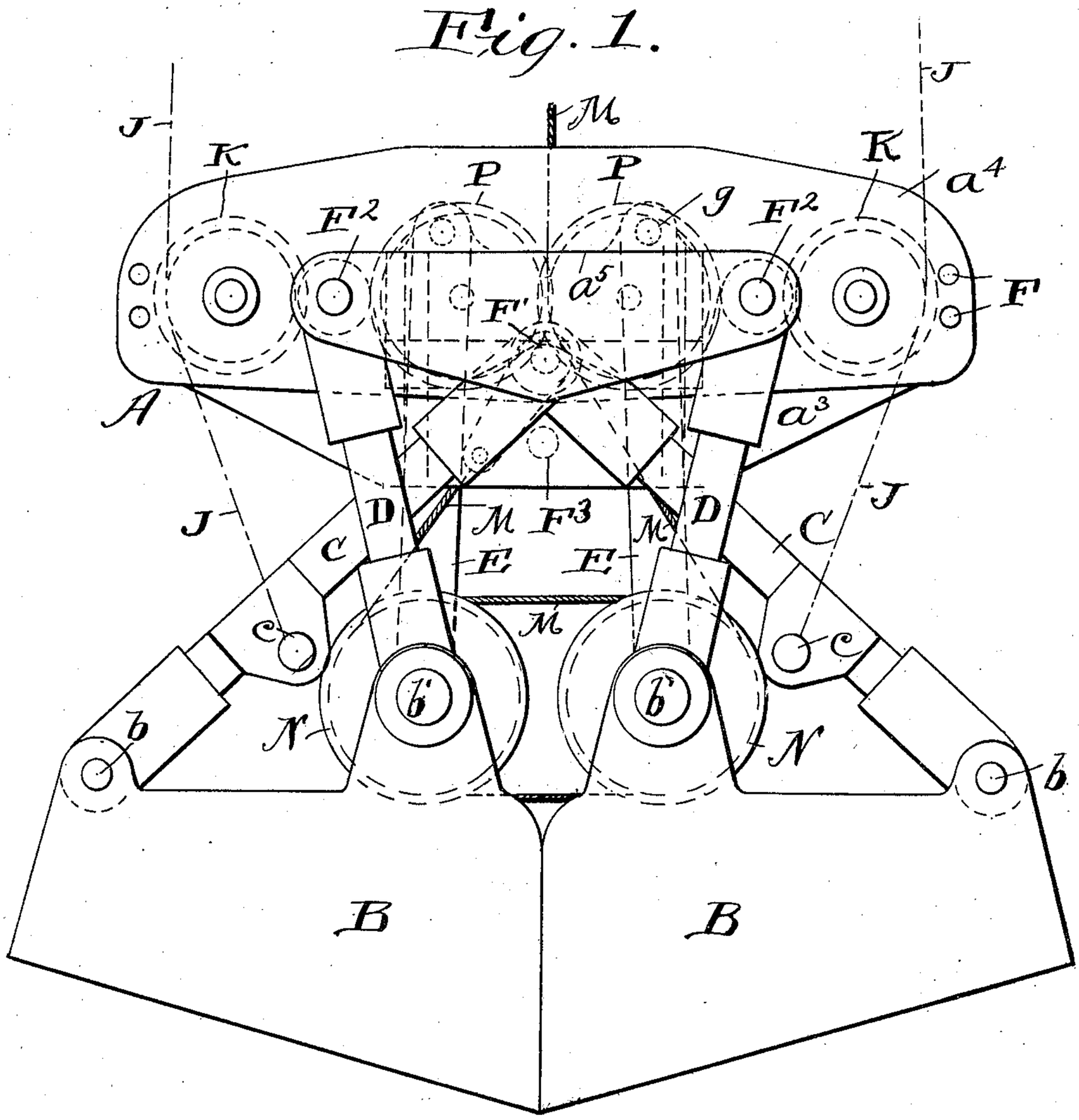
J. McMYLER.

CLAM SHELL BUCKET.

APPLICATION FILED JUNE 10, 1905. RENEWED OCT. 29, 1906.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
E. B. Gilchrist
N. L. Brennan

Inventor:
John McMyler
By his attorneys,
Thurston & Baker.

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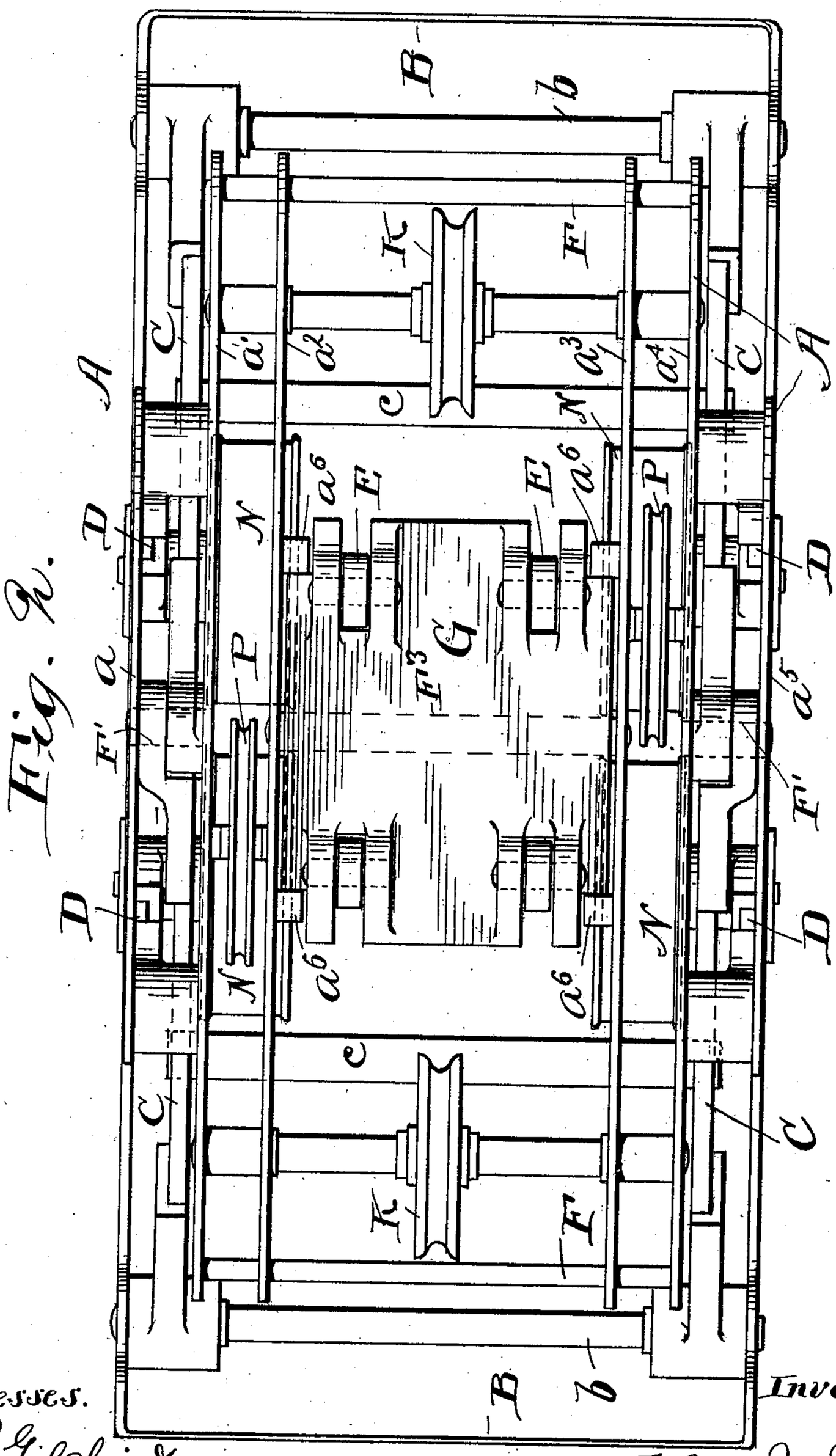
4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

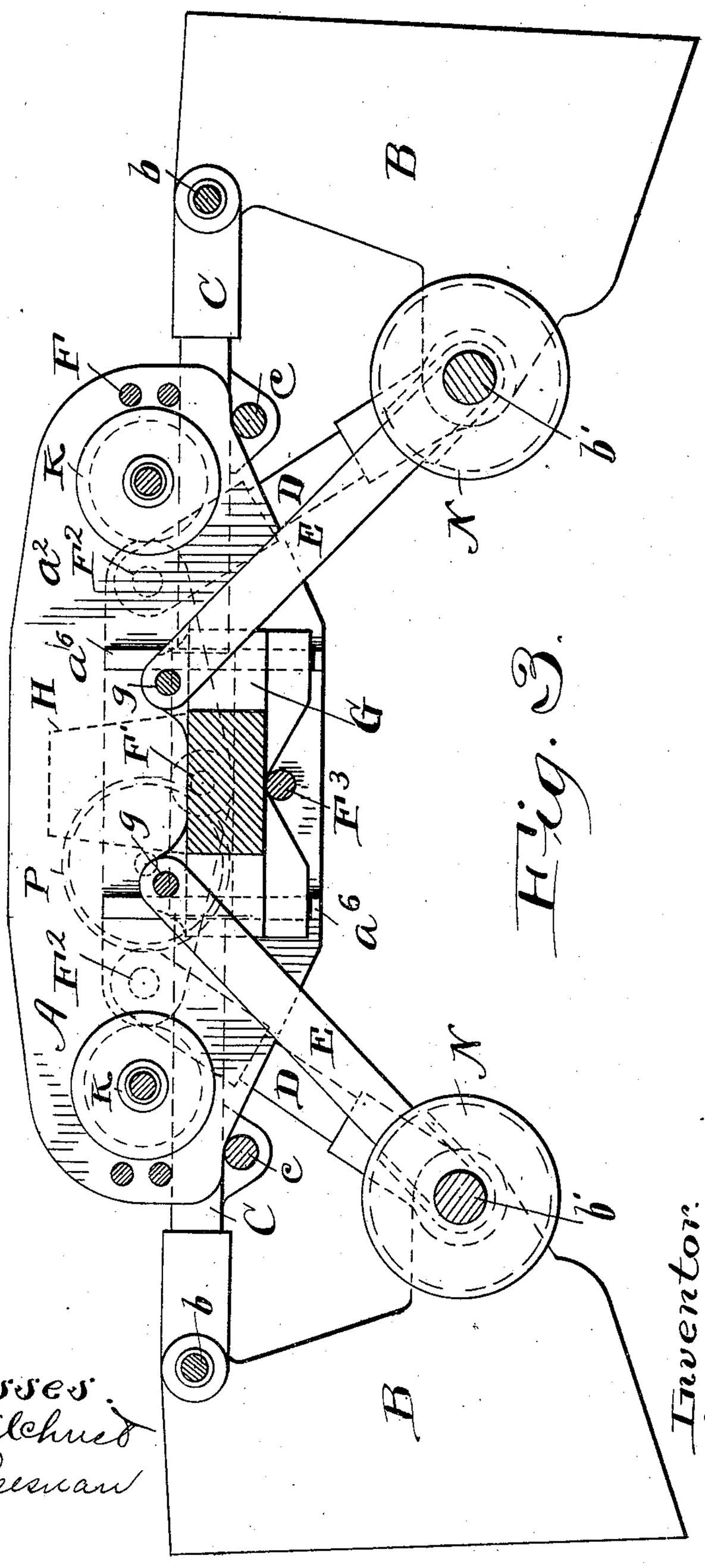

Fig. 3.

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4 SHEETS—SHEET 4.

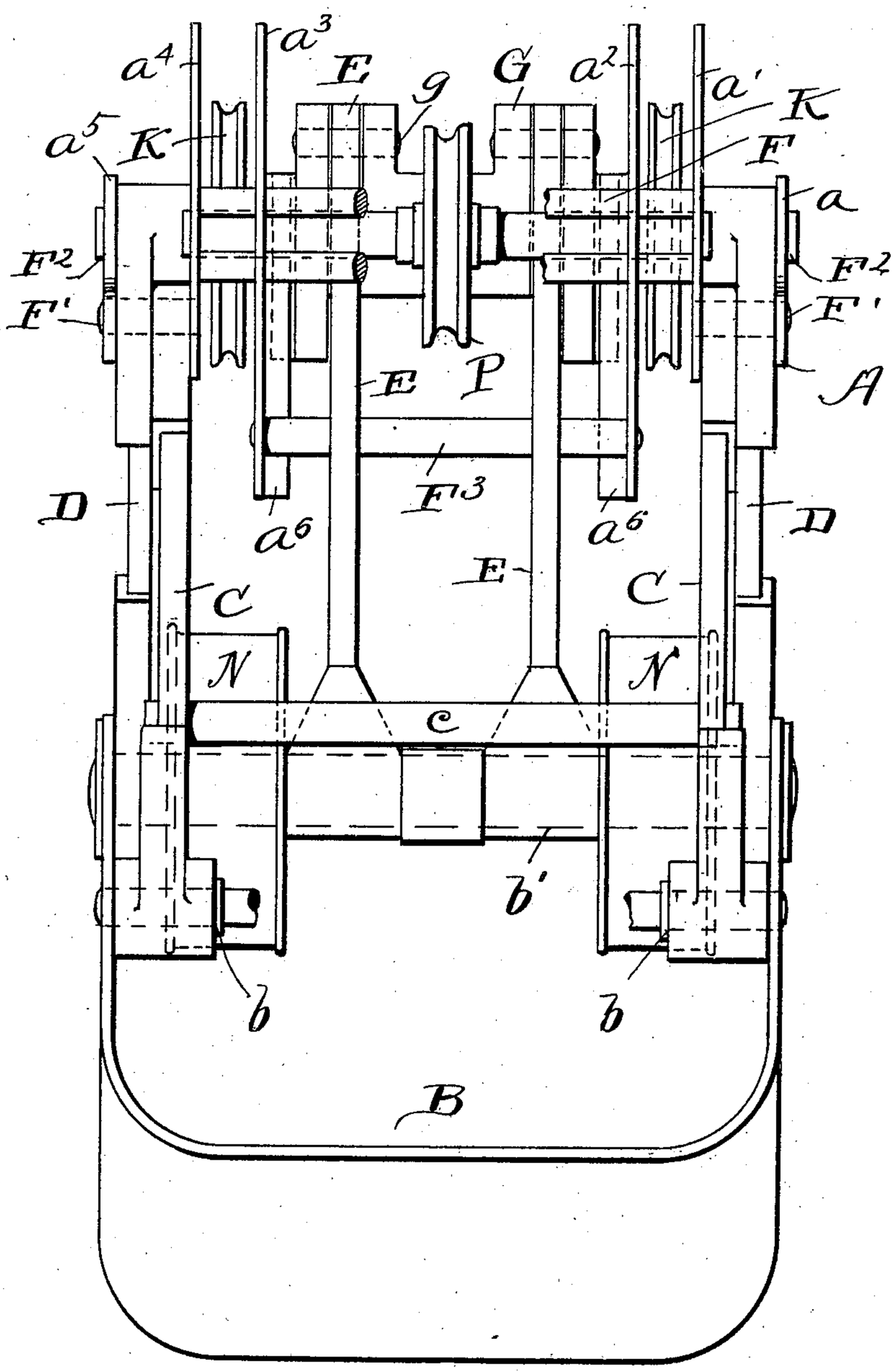

Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN McMYLER, OF CLEVELAND, OHIO.

CLAM-SHELL BUCKET.

No. 861,669. Specification of Letters Patent. Patented July 30, 1907.

Application filed June 10, 1905, Serial No. 264,571. Renewed October 29, 1906. Serial No. 341,131.

To all whom it may concern:

Be it known that I, JOHN MCMYLER, 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 Clam-Shell Buckets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention belongs to the class of clam shell buckets, which find their greatest field of usefulness in the unloading of ore from the holds of vessels.

The object of the invention is to produce an inexpensive bucket which will pick up and hold a full load under the different conditions which are met with in this work.

The invention consists of the construction and combinations of parts hereinafter described and pointed out definitely in the claims.

In the drawing, Figure 1, is a side elevation of a clam shell bucket embodying the invention, when the bucket jaws are closed. Fig. 2 is an enlarged plan view of the bucket under similar conditions. Fig. 3 is a side elevation of the bucket when the jaws are opened wide; and Fig. 4 is an enlarged end view of the bucket when the jaws are closed.

The frame A of the bucket consists of various parallel vertical plates a a^1, a^2, a^3, a^4 and a^5, of which six are shown in the drawing. These plates are connected together to form a rigid structure by tie rods F and various shafts which will be presently referred to.

Numerous swinging bars are suspended from the frame, and are pivotally connected at their lower ends with the bucket jaws. In the construction shown four of these suspension bars are associated with each bucket jaw, two on each side of each jaw. The four bars C, two associated with each bucket are all pivoted on the same horizontal axis F′ midway between the ends of the frame, and therefore directly above the plane in which the bucket jaws meet; the lower ends of each pair of these bars loosely embrace the transverse rods b associated respectively with the two bucket jaws. In other words these bars b serve to pivotally connect the lower ends of said bars C with the rear ends of the two bucket jaws. Each of the two bucket jaws is provided with two transverse rods b and b'. Both extend between and are secured to the sides of the bucket jaw,—the rod b being secured thereto near the rear end of the bucket, and the rod b' being secured thereto at a point more or less near the front end of the bucket.

The lower ends of one pair of bars D are pivotally connected with the front end of one bucket jaw, by loosely embracing the rod b'; and the upper ends of the bars of this pair are pivoted in the same axial line, to the frame,—said pivotal axis F^2 being on one side of the pivotal axis F′ of bars C, and above a point about midway between the ends of the associated bucket jaw. The other pair of bars D associated with the other bucket jaw, are similarly connected thereto and to the frame. Because of the described connections between the bucket jaws and frame, it is clear that when the jaws are caused to swing apart they swing into the substantially vertical position shown in Fig. 3; and when they are swung toward each other, they swing into the substantially horizontal position shown in Fig. 1.

In addition to the suspension bars above mentioned there are other bars E associated with the bucket jaws. Two of such bars are shown associated with each bucket jaw, but the number is not important. The lower ends of each pair of said bars E rotatively embrace the rod b' on its associated bucket jaw; and the upper ends of said bars E are pivoted on a horizontal axis to a vertically movable block G which has a guided movement in frame A,—the pivotal axis g of one pair of bars being in a vertical plane between the pivotal axis F′ of the bars C, and the pivotal axis F^2 of the bars D associated with the same bucket jaw. This block G is slidably fitted between the two middle frame plates a^2 a^3, and is guided in a vertical path by four ribs a^6 secured to the inner faces of said plates. When the jaws open this block moves down in the frame, being prevented from moving down too far by a tie rod F^3 with which it comes into contact. The opening movement of the jaws is still further controlled by the engagement with the frame plates a' a^4 of the projecting ends of transverse bars c, each of which bars extends between and is connected with the bars C constituting a pair of such bars. When the jaws are closing, this block G must move up in frame A. It might be supposed that this would render difficult the closing of the jaws,—that, perhaps, since they are closed by the same ropes by which the bucket is elevated, the bucket would be lifted out of the ore pile before the jaws are closed. This however is not the fact if the block is of the proper weight; but on the contrary it really aids the jaws in picking up a full load, and it is for this reason that it is used. The weight of the block must be determined for the particular material with which the bucket is to be used. The block may be made heavier by putting a weight H (indicated by dotted lines in Fig. 3) on top of it.

The opening ropes J, of which there may be two, pass down in contact with the outer peripheries of the two sheaves K, K, mounted on the frame at opposite ends thereof. There is a connection between the opening ropes J and the rear ends of the two bucket jaws respectively. Preferably this is not a direct connection, but instead said ropes are connected respectively with the bars c which, as stated, are connected with the suspension bars C, C.

There are two closing ropes M M, both are connected at their ends to the frame, at suitable points. One

rope then passes down under rotatable sheaves N N respectively mounted on the two rods *b'* associated with the two bucket jaws, and may be looped around said sheaves as many times as desired and then passes up in engagement with a sheave P mounted in the frame. The other rope passes in the opposite direction around two other sheaves N—N on the same rods *b'*, and then up in engagement with another sheave P mounted in the frame.

Having described my invention, I claim:

1. In a clam shell bucket, the combination of the frame, and two bucket jaws, with suspension bars C which are pivotally connected with the rear ends of said bucket jaws, and all of said bars are pivotally connected with the frame on the same centrally disposed axis, and other suspension bars D, which at their lower ends, are pivotally connected with the front ends of said bucket jaws, and, at their upper ends, are pivotally connected with the frame on axes which are on either side of said centrally disposed axis, and are respectively above the associated bucket jaws, substantially as specified.

2. In a clam shell bucket, the combination of the frame, and two bucket jaws, and suspension bars which are pivotally connected with the frame and with the front and rear ends of said bucket jaws, with a block movable vertically in said frame, bars E pivotally connected at their lower ends with the front ends of the bucket jaws, and, at their upper ends, with said sliding block.

3. In a clam shell bucket, the combination of the frame, two bucket jaws, and suspension bars C and D which are pivoted at their lower ends to the rear and front ends respectively of the bucket jaws,—said bars C being all pivoted to the frame on the same centrally disposed axis, and said bars D being pivoted to the frame on axes which are on either side of said centrally disposed axis, and are respectively above the bucket jaws with which said bars D are severally associated, with a block movable vertically in said frame, and suspension bars E, whose lower ends are pivotally connected with the front ends of the bucket jaws respectively, and, whose upper ends, are pivotally connected with said block on axes which are in vertical planes lying between the vertical planes containing said centrally disposed axis the vertical planes containing the axes on which the bars D are pivotally connected with the frame.

4. In a clam shell bucket, the combination of the frame, two bucket jaws, and suspension bars C and D which are pivoted at their lower ends to the rear and front ends respectively, of the bucket jaws,—the said bars C being all pivoted to the frame on the same centrally disposed axis, and said bars C having portions adapted to engage with the frame when the bucket jaws have been opened as far as desirable, the said bars D being pivoted at the upper ends to said frame on axes which are located respectively on opposite sides of said centrally disposed axis.

5. In a clam shell bucket, the combination of the frame, two bucket jaws, and suspension bars C and D respectively pivoted at their lower ends to the rear and front ends of said bucket jaws, and, at their upper ends to said frame, a block movable vertically in said frame, bars pivotally connected thereto and to the front ends of the bucket, and a stop carried by the frame for engagement with said block to limit the downward movement thereof.

6. In a clam shell bucket, the combination of a frame, and two bucket jaws, with suspension bars C pivoted to said frame at their upper ends, and pivotally connected, at their lower ends, with said bucket jaws respectively near the rear ends thereof, other suspension bars D pivoted to said frame at points located on opposite sides of the connections between the first named bars and frame, which bars D cross the corresponding bars C and are respectively connected pivotally at their lower ends with said bucket jaws, a vertically movable block mounted in the frame, and bars pivotally connected at their upper ends with said block and suitably connected at their lower ends with the bucket jaws respectively.

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

JOHN McMYLER.

Witnesses:
E. B. GILCHRIST,
E. L. THURSTON.