

No. 747,479.

PATENTED DEC. 22, 1903.

H. L. REYNOLDS.
EXCAVATING BUCKET.

APPLICATION FILED NOV. 28, 1902.

NO MODEL.

Fig. 1.

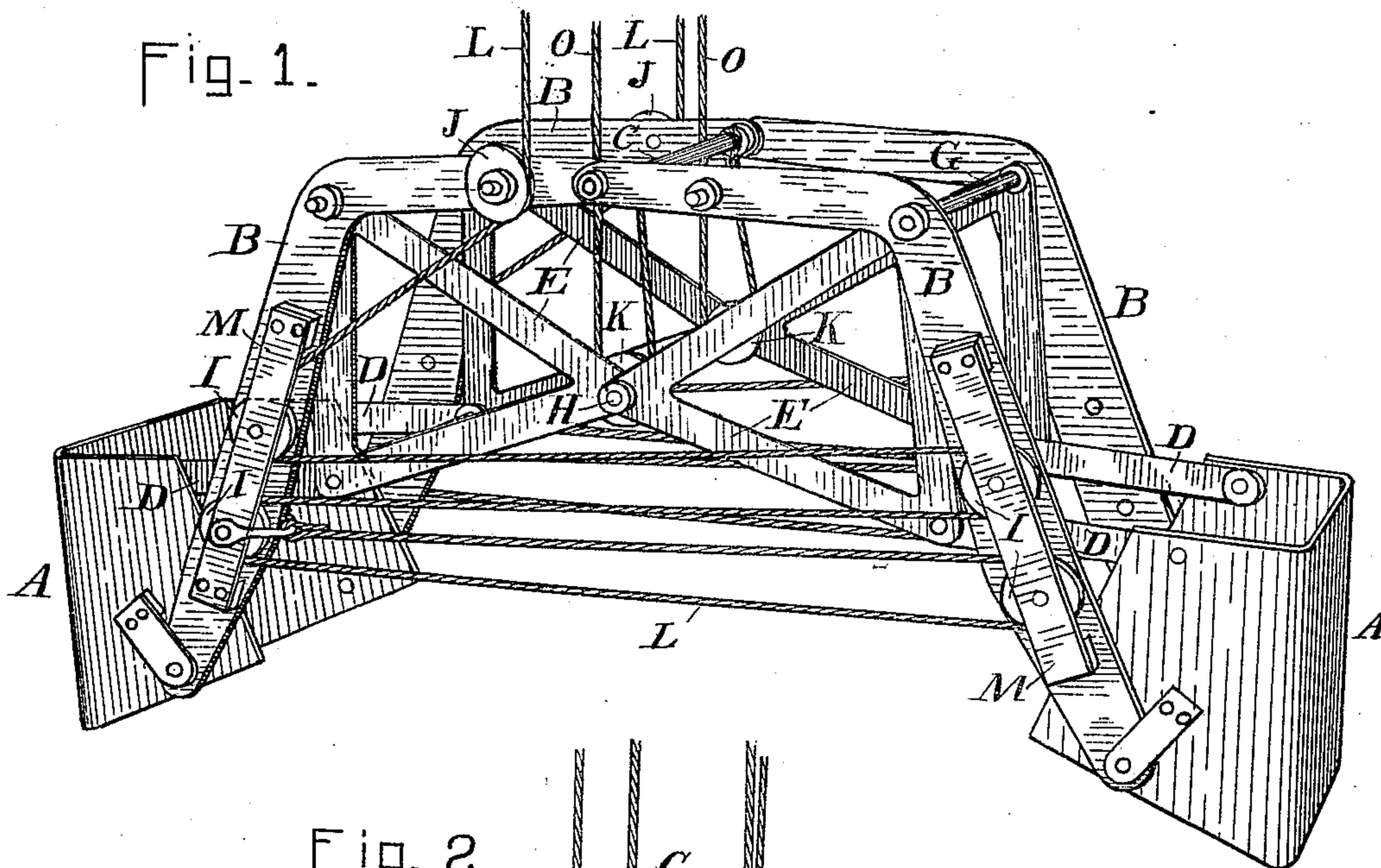
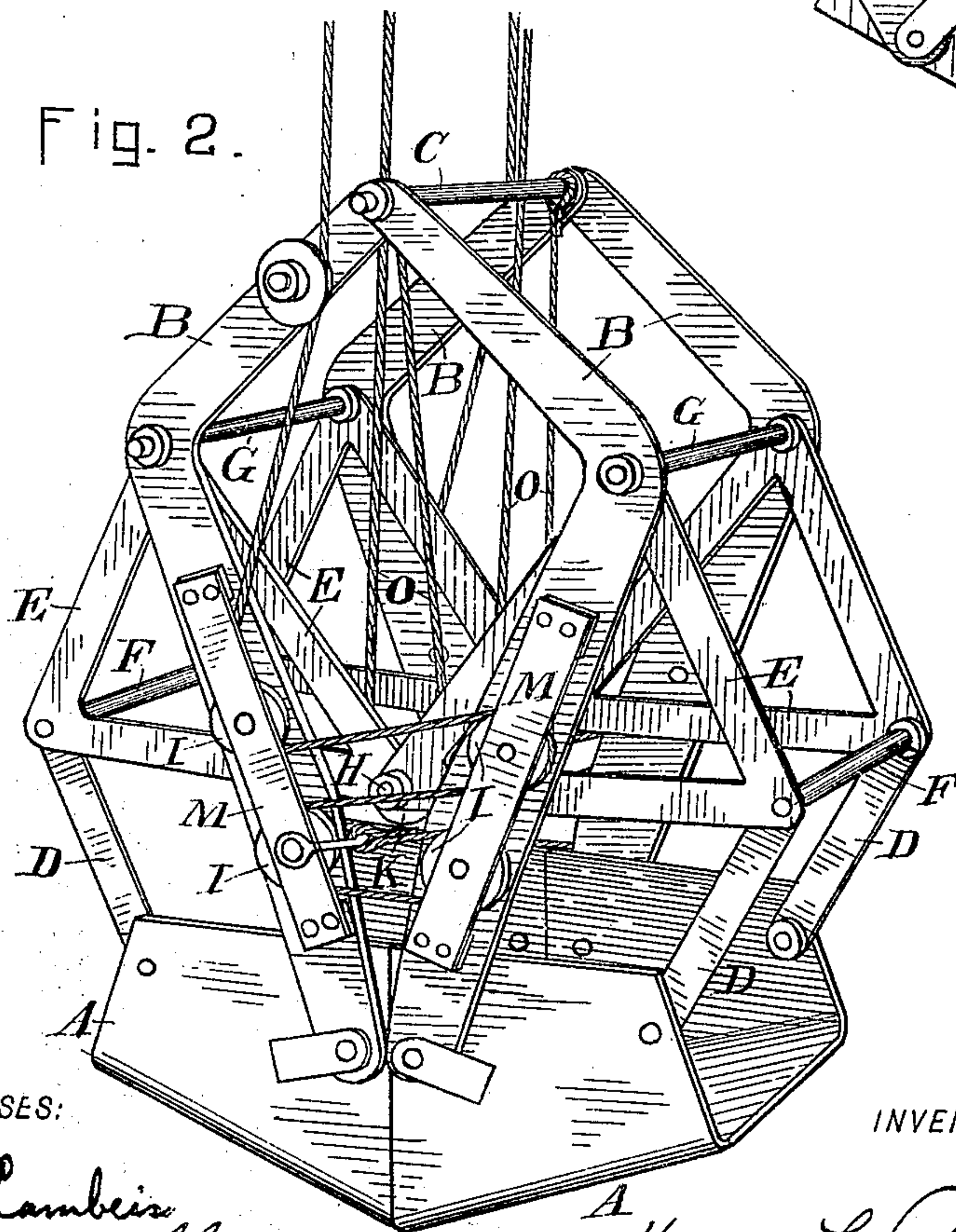


Fig. 2.



WITNESSES:

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EXCAVATING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 747,479, dated December 22, 1903.

Application filed November 28, 1902. Serial No. 133,061. (No model.)

To all whom it may concern:

Be it known that I, HENRY L. REYNOLDS, a citizen of the United States, and a resident of Jersey City, Hudson county, New Jersey, have
5 invented certain new and useful Improvements in Excavating-Buckets, of which the following is a specification.

My invention relates to an improvement in excavating-buckets, and comprises the novel
10 parts and combinations thereof hereinafter particularly pointed out in the claims.

Figure 1 is a perspective showing my device in its opened condition. Fig. 2 is a perspective showing my device in its closed condition.

15 My device belongs to that class of buckets designed for excavating either above or below the surface of the water which are adapted to open to a wide extent and to close by a scraping movement, such that in many materials it will at the same time loosen and load
20 the material.

The buckets A, which are two in number, are preferably made with only a bottom and two opposite sides, as shown, the back being
25 left open. It is, however, evident that the particular shape of buckets which is best adapted for handling the material working in may be employed. Each bucket has pivoted to its sides two of the main levers B, by which
30 power is applied to open and close the buckets. The upper ends of all four of these levers are pivoted upon a main pivot-bar or shaft C. The levers B are preferably pivoted to the sides of the buckets near their forward ends—
35 that is, the ends which meet when they are closed.

The position of the buckets is controlled by a system of auxiliary levers and links connecting the rear end of the buckets with the
40 main levers, and consisting of triangular levers E and links D. The triangular levers E are pivoted to the main levers by the rods G, which also serve to connect the levers upon opposite sides of the buckets and to thus
45 stiffen the construction. The triangular levers of opposite halves of the bucket are pivoted to each other by a similar rod H, and the links D are pivoted by one end to the other corner of the triangular levers and by their
50 other ends to the buckets. The pivot-shaft G is herein shown as located at some distance

from the center line of the bucket when it is closed, as shown in Fig. 2, the main levers being bent outward in shape, like a bent elbow or knee, to accommodate it. The exact loca-
55 tion of the various pivots and the proportions of the parts may be varied within wide limits without essentially changing the character of the device. The proportions herein shown are those which now seem to me to be best
60 adapted to secure the best average results under all conditions.

The system of levers described controls the position and operation of the buckets, and any desired means for opening and closing
65 the buckets may be employed. The means herein shown are those which are now preferred by me.

The closing mechanism is as follows: To the sides of the main levers B and preferably
70 as near to the buckets as conditions will permit are journaled sheaves or pulleys I, and a cable L has one end secured to a lever and is then reeved over the pulleys I, passing alternately from one side to the other and then
75 finally over a pulley J, journaled on a main lever near its upper end, or, if desired, upon the shaft C. This system of pulleys and cable is duplicated upon opposite sides of the device and forms a powerful closing mechan-
80 ism. Its power and speed may be varied by increasing or decreasing the number of pulleys used and the number of runs of cable extending between the two sides.

The opening mechanism shown consists of
85 cables O, which are secured by one end to the main pivot-shaft C and pass over pulleys K, carried upon the pivot-shaft H. It will be seen that the triangular levers E and the upper part of the main levers A form a pow-
90 erful toggle, by lifting upon which the main levers are swung outward to dump the buckets and to put them in position for loading.

I have shown bars M as placed outside the pulleys I, said bar forming a support and
95 protection for the pulleys and also insuring retention of the cable L in place.

It is evident that the triangular levers E are, in effect, only bell-crank levers, and except that they would be weakened thereby
100 any one of their sides might as well be dispensed with.

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

1. In an excavating-bucket, the combination with oppositely-disposed scoops, of pivoted main levers connected at one end to the scoops, of scoop-position-controlling mechanism comprising levers intermediately pivoted upon the main levers and at one end to each other to form an opening-toggle, and links pivoted to the scoops and to the other ends of the said levers.

2. In an excavating-bucket, the combination with oppositely-disposed scoops, and main levers pivoted upon a common support and to the scoops, of an opening-toggle for the main levers and links connecting said toggle with the scoops to control their position.

3. In an excavating-bucket, the combination with oppositely-disposed scoops and main levers pivoted to a common support and to the scoops, of an opening-toggle for the main levers, and a link connecting each scoop with that member of the toggle which is connected with the main lever supporting said scoop.

4. In an excavating-bucket, the combination with two scoops, and main levers pivoted upon a common support and to the scoops, said levers being bent outwardly in their upper portions, a pivot supported by said outwardly-bent portions, bell-crank levers supported by said pivots and having their inner ends constrained to move upon the center line of the device, and links connecting said bell-crank levers with the scoops.

5. In an excavating-bucket, the combination with two scoops, and main levers pivoted upon a common support and to the scoops, said levers being outwardly bent in their upper portions, of bell-crank levers pivoted upon said outwardly-bent portions of the main levers and centrally pivoted to each other, and links connecting said bell-crank levers with the scoops.

6. In an excavating-bucket, the combination with two scoops, and main levers pivoted upon a common support and to the scoops, of bell-crank levers pivoted to the main levers at points removed from the center line of the device and to each other upon said center line and links connecting each scoop with the bell-crank lever of the corresponding half of the device.

7. In an excavating-bucket, the combination with two scoops, main levers pivoted to a common support and to the scoops, bell-crank levers pivoted to the main levers and to each other, and links connecting the bell-crank levers with the scoops, of pulleys carried by opposite halves of the device and adapted to receive a closing-cable.

8. In an excavating-bucket, the combination with two scoops, main levers pivoted to a common support and to the scoops, bell-crank levers pivoted to the main levers and to each other, and links connecting the bell-

crank levers with the scoops, of pulleys carried by the main levers on opposite sides of the device, and a closing-cable reeved over said pulleys.

9. In an excavating-bucket, the combination with two scoops, main levers pivoted to a common support and to the scoops, bell-crank levers pivoted to the main levers and to each other, and links connecting said bell-crank levers with the scoops, of means for closing said scoops together, and an opening-cable connected with the common pivot of said bell-crank levers.

10. In an excavating-bucket, the combination with two scoops, main levers pivoted to a common support and to the scoops, bell-crank levers pivoted to the main levers and to each other and links connecting the bell-crank levers with the scoops, of pulleys supported by the main levers, a closing-cable reeved over said pulleys, and an opening-cable connected with the common pivot of the bell-crank levers.

11. In an excavating-bucket, the combination with two scoops, main levers pivoted to a common support and to the scoops, levers pivoted to the main levers and to each other to form an opening-toggle, a cable connected to said toggle, links connecting said toggle-levers and the scoops, pulleys carried by opposite main levers and a closing-cable reeved over said pulleys.

12. In an excavating bucket, the combination with the scoops, and main levers pivoted to a common support and to said scoops, of toggle-levers pivoted to each other and to the main levers, a pulley mounted at the common pivot of the toggle-levers and an opening-cable secured at the upper ends of the main levers and extending downward and over said pulley and then upward.

13. In an excavating-bucket, the combination with the scoops, main levers hinged together and to the scoops, auxiliary levers pivoted upon the main levers and to each other and links connecting the auxiliary levers with the scoops, of means for closing the scoops consisting of a closing-cable connected with one of the main levers and passing about suitable guides on the main levers above the connections thereof with the scoops and around a suitable guide located adjacent the hinge of the main levers.

14. In an excavating-bucket, the combination with oppositely-disposed scoops, main levers pivoted to a common support and to the scoops, and means for closing the scoops together, of means for opening the scoops consisting of two members pivoted to each other and to the main levers to form a toggle.

15. In an excavating apparatus, the combination with the scoops, the main levers pivoted to the scoops and auxiliary levers pivoted to the main levers and adapted to control the angle of inclination of the scoops, of means for opening and dumping the same consisting of a toggle formed by portions of

said auxiliary levers and the upper portions of the main levers, and a cable connected with said toggle.

16. The combination in an excavating-
5 bucket of a pair of scoops, pivoted and swing-
ing main levers carrying the same, a pulley
on each main lever, toggle-levers connecting
said main levers, a pulley carried by said
toggle-levers, a rope passing around said pul-
10 ley and having a dead end connected to the
pivot-pin of the main levers and a rope pass-
ing first around a pulley of one main lever
thence to and around a pulley of the other
main lever and thence back to the first main
15 lever.

17. The combination in an excavating-
bucket of a pair of scoops, pivoted and swing-
ing main levers therefor, toggle-links con-
nected to said main levers, a pair of pulleys
carried by said toggle-links, and a pair of 20
ropes passing around said pulleys and each
having a dead end connected to the pivot-
shaft of the main levers.

In testimony whereof I have hereunto af-
fixed my signature, this 25th day of Novem- 25
ber, 1902, in the presence of two witnesses.

HENRY L. REYNOLDS.

Witnesses:

BARBARA CAMBEIS,

JULIA M. McLAUGHLIN.