

No. 747,482.

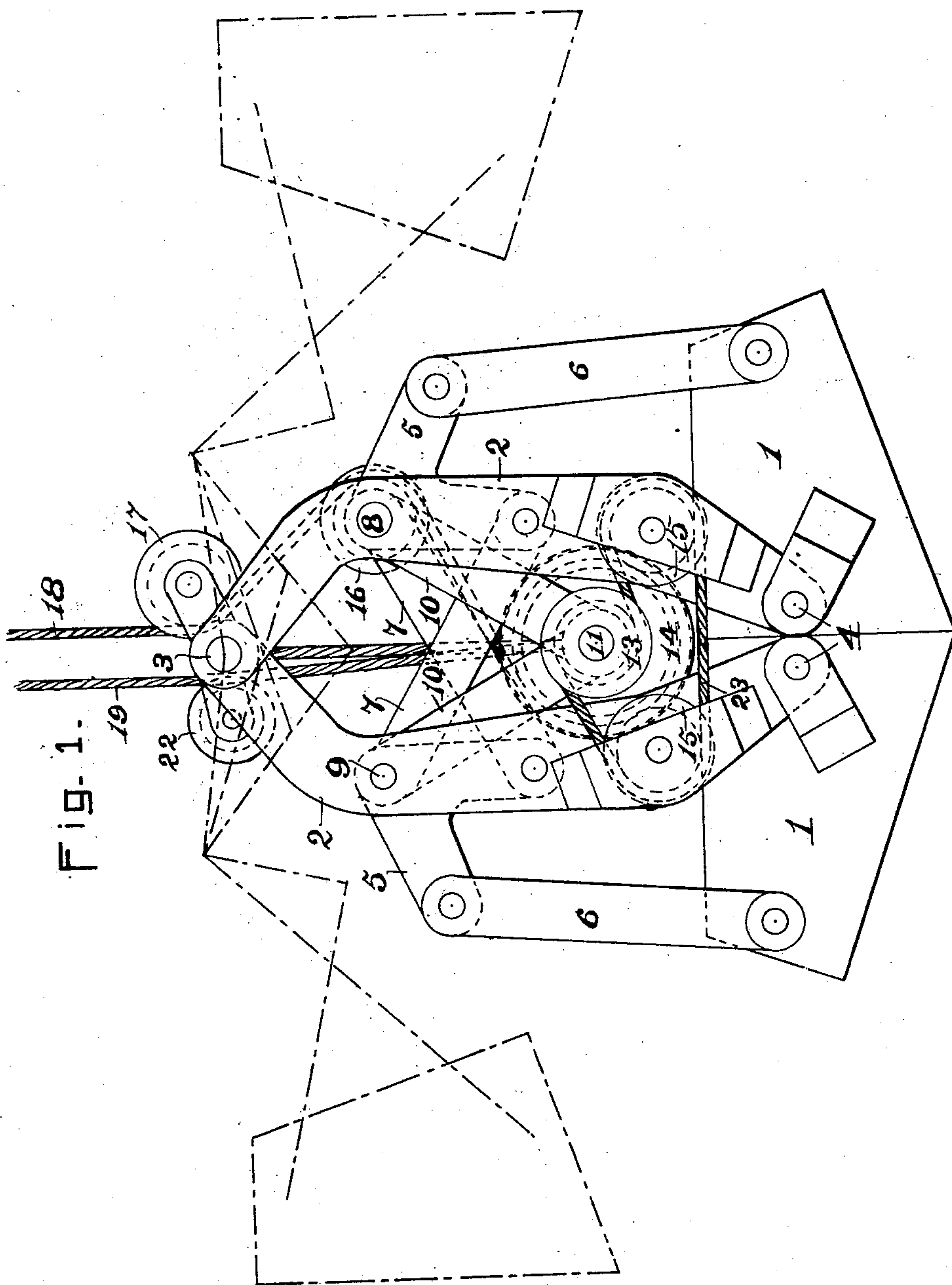
PATENTED DEC. 22, 1903.

H. L. REYNOLDS.
EXCAVATING BUCKET.

APPLICATION FILED JUNE 17, 1903.

2 SHEETS—SHEET 1.

NO MODEL.



WITNESSES:

Lee de Fouset.
Spencer Miller

INVENTOR

Henry L. Reynolds.

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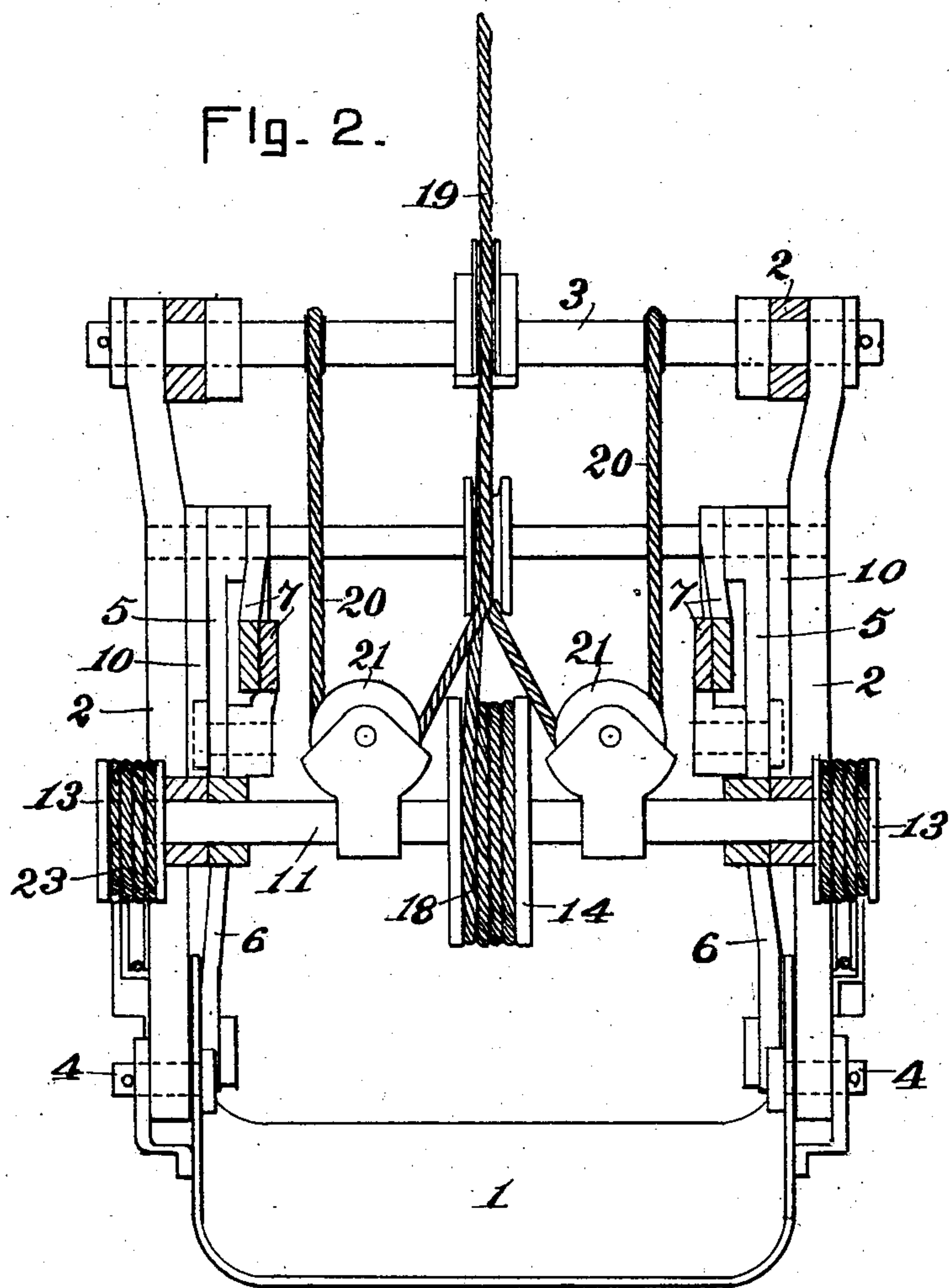
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Les de Forest
Spencer Miller

INVENTOR

Henry L. Reynolds.

UNITED STATES PATENT OFFICE.

HENRY L. REYNOLDS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
LIDGERWOOD MANUFACTURING COMPANY, OF NEW YORK, N. Y., A
CORPORATION.

EXCAVATING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 747,482, dated December 22, 1903.

Application filed June 17, 1903. Serial No. 161,895. (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 improvements in excavating or dredging buckets.

10 The object of my invention will be disclosed in the following specification, and its scope will be defined by the claims terminating the same.

In the drawings accompanying herewith I
15 have shown my invention embodied in a form now preferred by me.

In the drawings, Figure 1 is a side elevation of my device, the closed position being shown in full lines and the open position being indicated diagrammatically by broken lines, which outline the buckets or scoops and indicate the center lines of the various levers and links. Fig. 2 is a central sectional elevation at right angles to Fig 1, showing
25 one-half the device in elevation.

My device is of that type of excavating-buckets having two opposed scoops or buckets which are supported and operated by a system of levers and links, so as to widely
30 separate the buckets and then bring them together with a scraping action, so that in some materials it may loosen the material at the time of loading. With this latter object in view I have so designed the parts as to place
35 the buckets or scoops with their bottom surfaces in a substantially vertical plane when the scoops are at their extreme separation preliminary to loading and so that as the closing operation is commenced the scoops will
40 be rapidly tilted to a favorable digging or scraping angle and be then maintained approximately at this angle until completely closed. In order to secure this action, the "scoops," by which term I mean the lower
45 bucket-like members which contain the material, are pivotally carried by hangers or closing-levers, which in turn are pivoted at or near their upper ends, so as to swing toward and from each other. These scoops are
50 controlled in their angular position by means

of auxiliary mechanisms, which are in turn controlled by the swinging of the hangers, so as to obtain the peculiar action before mentioned.

In the drawings, 1 represents the scoops, 55 and 2 the hangers or closing-levers, the same being pivoted to the scoops by pivots 4 and to each other by a pivot 3, said pivot preferably consisting of a transverse bar or shaft which connects the hangers of opposite sides 60 of the bucket. These hangers are opened by means of links 10, which are connected to the hangers by means of shafts 8 and 9, to which said links are pivoted. The other ends of the links 10 are connected to a com- 65 mon pivot-shaft 11, which extends transversely of the bucket and connects the opening-links of opposite sides.

The angular-position-controlling mechanism for the scoops comprises levers 5, which 70 are journaled upon the hangers by means of said shafts 8 and 9 and are connected by one end with the scoops by means of links 6 and by their other ends with the hanger of the opposite part of the bucket by means of 75 links 7, said links being pivoted upon said shafts 8 and 9. There are therefore three members pivoted upon these shafts—first, the opening-links 10, the levers 5, and the links 7, which control the position of said le- 80 vers. As the hangers are swung outwardly to open the bucket, the links 7 draw one arm of the levers 5 inwardly or toward the center, which throws the other arm downwardly and inwardly, thus affecting the position of the 85 scoops 1 in such a manner that they are maintained approximately at a constant angular position through the major and inner portions of their travel and are rapidly turned into a vertical position during the outward 90 portions of their travel.

The opening-links 10, which constitute a toggle, are operated by means of the opening-rope 19. This rope may be connected directly to the shaft 11, forming the central 95 pivot of said toggle; but in order to increase the power applied thereto I prefer to mount pulleys 21 upon said shaft and to divide the end of the opening-rope 19 into two parts 20, which are passed about said pulleys 21, and 100

thence upwardly to a connection with the shaft 3.

The closing means employed comprises drums 13, carried by the outer ends of the shaft 11, and pulleys 15, carried by the hangers, together with ropes 23, which have their ends secured to the drums 13 and pass about said pulley 15. By turning these drums in one direction both ends of the rope will be wound thereon and the hangers, with the scoops carried thereby, will be brought together. The drums 13 are operated by means of a larger drum 14, which is centrally secured to the shaft 11 and is operated by means of a closing-rope 18, wound upon said drum, and which is carried over guide-pulleys 16 and 17, mounted, respectively, upon a transverse shaft 8 and upon an arm carried by the central pivot 3. The opening-rope 19 is confined to the central position by means of a pulley 22, similarly carried upon the shaft 3.

It is evident that the exact proportion and location of the various parts and pivots herein shown may be widely varied without essentially changing the character of the device. I do not, therefore, wish to be limited to the exact mechanism herein shown, but to be understood as claiming any form of construction which falls within the scope of the claims hereunto attached.

What I claim, and desire to secure by Letters Patent, is—

1. An excavating-bucket comprising opposed scoops, swinging hangers constituting closing-levers pivoted to the scoops, opening-links pivoted to the hangers, and scoop-controlling levers carried upon and operated by the hangers and connected with the scoops.

2. In a clam-shell dredge, the combination with a two-part bucket, of closing-levers, means connecting the two parts of the bucket with the closing-levers, opening-links pivotally connected to the closing-levers, and means independent of the opening-links for controlling the buckets.

3. In a clam-shell dredge, the combination with a two-part bucket, of closing-levers, means pivotally connecting the two parts of the bucket with the closing-levers, opening-links, means pivotally connecting the opening-links to the closing-levers, and means independent of the opening-links for controlling the buckets.

4. In a clam-shell dredge, the combination of a two-part bucket, closing-levers pivotally connected with each other, means pivotally connecting the two parts of the bucket with the closing-levers, means for drawing the closing-levers together to close the bucket, opening-links pivotally connected with the closing-levers and connected to form toggles, and means independent of the opening-links for controlling the buckets.

5. An excavating-bucket comprising opposed scoops, swinging hangers pivoted to the scoops, opening-links pivoted to the hangers

and connected to form toggles, scoop-controlling levers pivoted to the hangers and links connecting said levers respectively with the opposite hanger and with a scoop.

6. An excavating-bucket comprising opposed scoops, swinging hangers pivoted to the scoops, opening-links pivoted to the hangers and connected to form toggles, scoop-controlling levers pivoted to the hangers, links connecting each of said levers with its respective scoop, and means for controlling said levers from the opposite hanger.

7. An excavating-bucket comprising opposed scoops, swinging hangers pivoted to the scoops, opening-links pivoted to the hangers and connected to form toggles, scoop-controlling levers pivoted to the hangers, and links each pivoted to one of said levers and to the opposite hanger, the connection of said links with the hanger being at a greater distance from the pivot of said hanger than its connection with the lever is from the pivot of said lever.

8. An excavating-bucket comprising opposed scoops, swinging hangers pivoted to the scoops, pivot-rods carried by said hangers laterally removed from the center line of the bucket, opening toggle-links and scoop-controlling levers mounted on said pivot-rods, links connecting the said levers with the pivot-rod of the opposite hanger, and links connecting said levers with the scoops.

9. An excavating-bucket comprising opposed scoops, swinging hangers carrying said scoops, opening-links pivoted together and to said hangers to form toggles, a shaft connecting said toggles upon opposite sides of the bucket, a drum on said shaft adapted to receive an operating-rope, pulleys on the hangers, and drums upon said shaft adapted to receive a rope leading about said pulleys.

10. An excavating-bucket comprising two parts pivoted together, an opening-toggle therefor, and a closing mechanism comprising a drum carried by the central pivot of said toggle, and means for closing the two parts of the bucket by the rotation of said drum.

11. An excavating-bucket comprising two parts pivoted together, an opening-toggle therefor, and a closing mechanism comprising a drum carried by the central pivot of said toggle, other drums carried by the same pivot and turned by said drum and closing-ropes secured to said other drums and connected with the two parts of the bucket.

12. An excavating-bucket comprising two parts pivoted together, opening-toggles therefor, closing-drums carried at opposite sides of the bucket by the central pivot of said toggles, ropes secured to said drums and connected with the two parts of the bucket, and an operating-drum connected to turn with said closing-drums.

13. An excavating-bucket comprising two parts pivoted together, opening-toggles therefor, closing-drums carried at opposite sides of the bucket by the central pivot of said tog-

gles, ropes secured to said drums and connected with the two parts of the bucket, and an operating-drum connected to turn with said closing-drums, a rope winding upon said operating-drum, and guides for said rope located substantially, one in line with a pivotal connection of the opening-toggle with one part of the bucket and the other adjacent the pivot between the two parts of the bucket.

10 14. A closing means for a clam-shell or two-part excavating-bucket, comprising a central windlass device, a rope-receiving drum for operating said windlass, pulleys carried by opposite parts of the bucket, and closing-ropes having their ends secured to the windlass and passing about the pulleys upon opposite parts of the bucket.

15 15. A closing means for buckets of the clam-shell type, comprising a windlass device carried beneath the pivot of the two parts of the bucket, pulleys upon opposite parts of the bucket, ropes passing about said pulleys on

both parts and having its ends secured to the windlass, and means for turning said windlass.

25 16. A closing means for excavating-buckets of the clam-shell type comprising a windlass device, means for supporting and maintaining said windlass device centrally of the bucket and beneath the pivot upon which its two parts swing, ropes secured to said windlass and connected with the opposite parts of the bucket, and means for moving said windlass vertically to maintain said ropes substantially horizontal as the bucket opens and closes.

30 In testimony whereof I have hereunto affixed my signature, this 15th day of June, 1903, in the presence of two witnesses.

HENRY L. REYNOLDS.

Witnesses:

SPENCER MILLER,
EMERSON R. NEWELL.