

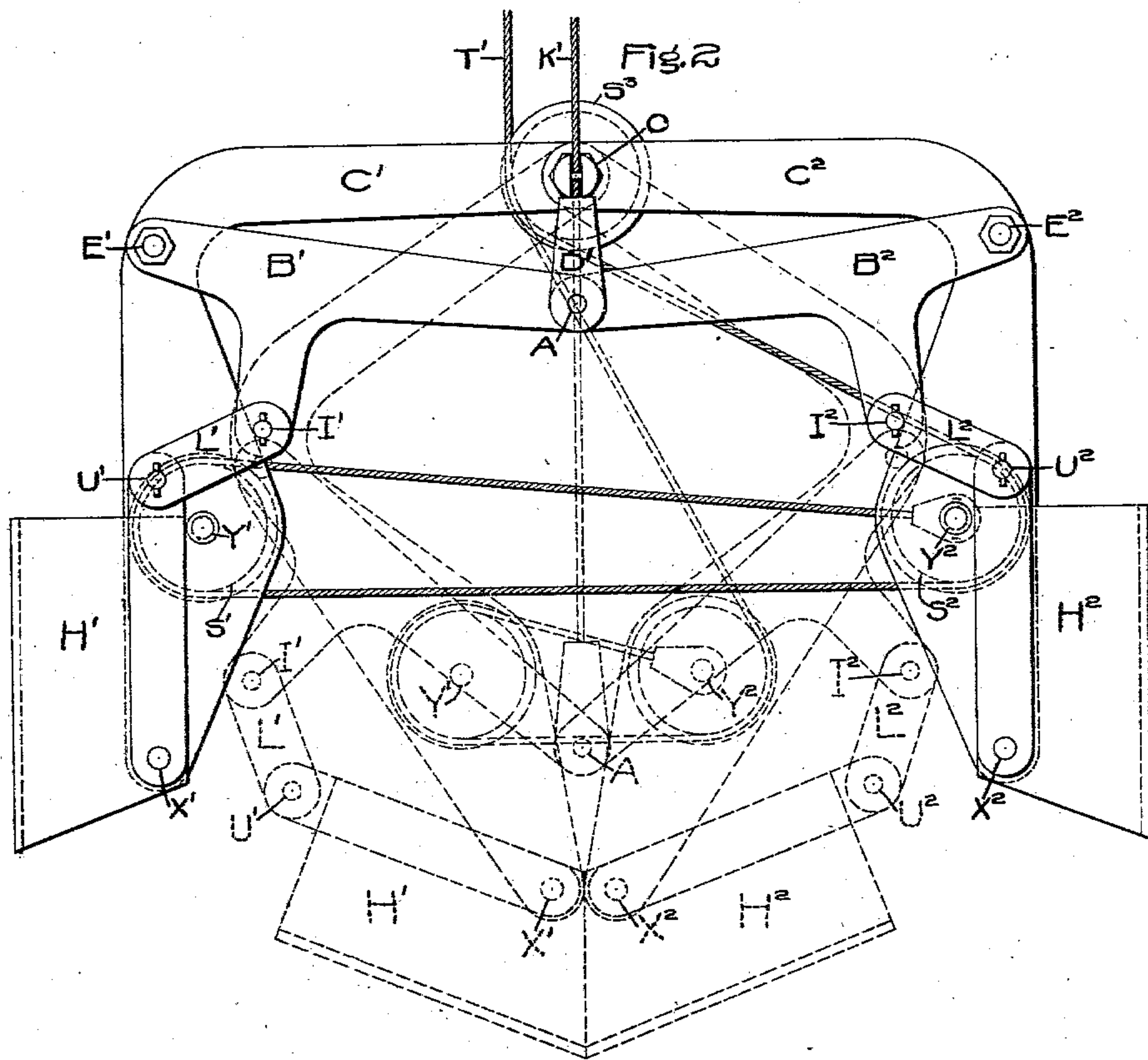
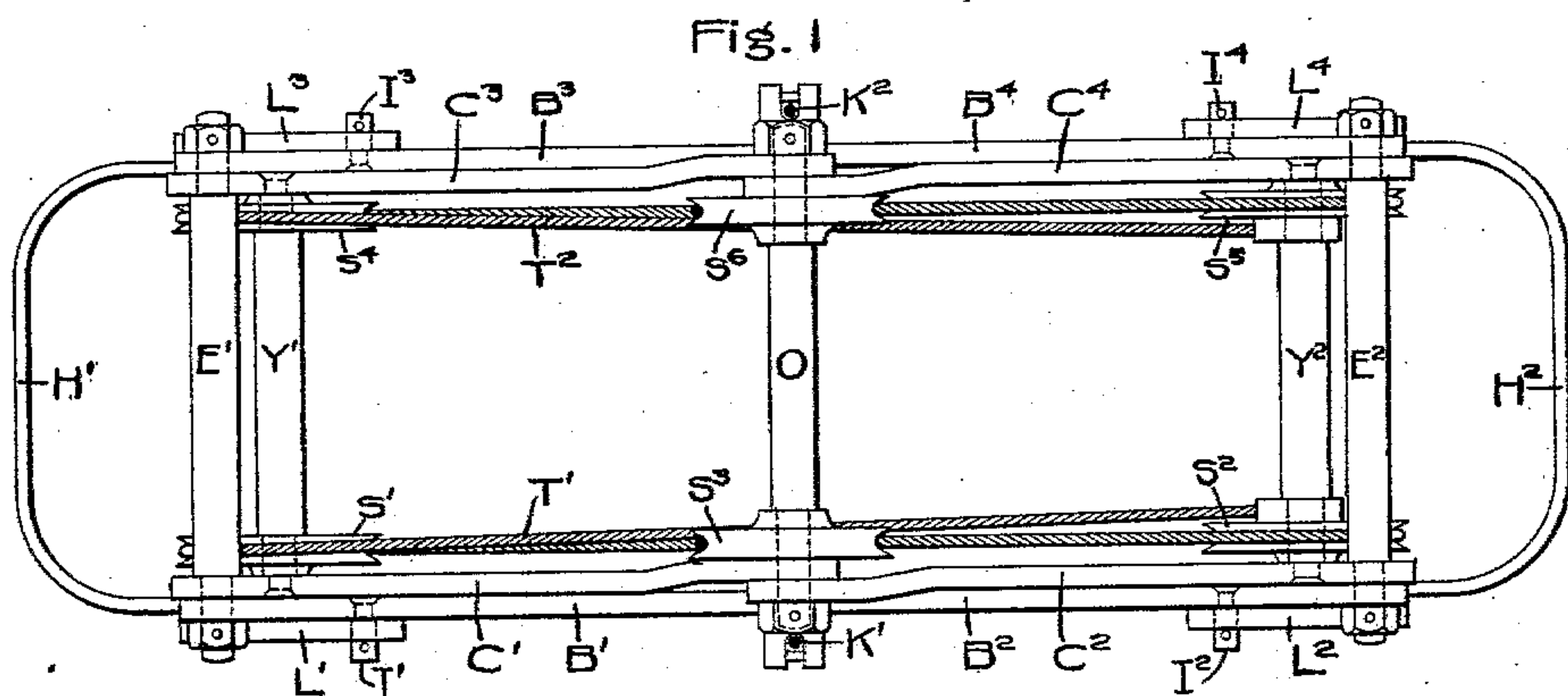
No. 720,983.

PATENTED FEB. 17, 1903.

F. H. STOLP.  
DREDGE.

APPLICATION FILED AUG. 5, 1901.

NO MODEL.



WITNESSES:

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*Samuel Johnson*

INVENTOR:

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by *[Signature]* Atty.



# UNITED STATES PATENT OFFICE.

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## DREDGE.

SPECIFICATION forming part of Letters Patent No. 720,983, dated February 17, 1903.

Application filed August 5, 1901. Serial No. 70,905. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK H. STOLP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dredges, of which the following is a specification.

The present invention relates to that class of devices that are used for dredging or for grabbing and taking up at one point and depositing at another any material, wet or dry, capable of being scooped up, in which the bucket consists of two parts adapted to be drawn together for the purpose of closing the bucket and scooping up or grabbing a load and adapted to be forced apart or allowed to separate and discharge the load when the desired point of discharge is reached, this class of devices being known as "clam-shell" dredges, regardless of the means used for manipulating the bucket or its component parts or of the material which it is used to handle.

The object of the invention is to provide improved means for manipulating the two parts of the bucket to the end that their action in separating to open the bucket shall be quick and positive and to the further end that they shall completely empty themselves, and in order to accomplish this latter the two parts of the bucket are in the opening process brought to positions in which their bottoms reach vertical or substantially vertical positions.

In carrying out these objects of the invention I use a system of arms herein called the "closing-arms" and a second system of arms herein called the "opening-arms," the arms of the two systems being so articulated and related that a pull upon the closing-cable, which is immediately associated with the closing-arms, will cause the bucket to close, while a pull upon the opening-cable, which is immediately associated with the opening-arms, will cause the bucket to open, each of the two parts of the bucket being carried partly by the closing-arms and partly by the opening-arms.

I am aware that it is not broadly new in a device of the class described to use a system of arms corresponding with the arms herein

called the "closing-arms" and a second system of arms corresponding with what are herein called the "opening-arms" in combination with two cables or sets of cables each immediately associated with one of said sets of arms, so that a pull upon one cable will open the bucket and a pull upon the other cable will close it. I believe, however, that I am the first to connect the bucket with the opening-arms in such a manner that as the arms are moved under the influence of a pull upon the opening-cable the two parts of the bucket will be quickly tilted and brought to the position above described with their bottoms vertical, or practically so. Preferably I connect the two parts of the bucket with the opening-arms through the medium of links pivoted to the opening-arms and to the two parts of the bucket; but I desire to have it understood that in its broadest aspect my invention is not limited thereto, but, on the contrary, includes any means for connecting the opening-arms with the two parts of the bucket, so that in the process of opening the bucket the movement will be transmitted from the opening-arms to the two parts of the bucket and the latter thereby quickly tipped for the purpose of completely emptying them.

The invention consists in the features of novelty that are herein described.

In the accompanying drawings, which are made a part of this specification, Figure 1 is a plan view of a clam-shell dredge embodying the invention, the parts being shown in the positions which they occupy when the bucket is open. Fig. 2 is a side elevation thereof, the positions which the parts occupy when the bucket is closed being indicated by dotted lines.

C<sup>1</sup>, C<sup>2</sup>, C<sup>3</sup>, and C<sup>4</sup> are the closing-arms, which are pivotally connected in pairs through the medium of a pin or shaft O, about which they are free to move, the two arms upon each side of said pin being so connected that they move in unison. Upon the shaft O are journaled a pair of pulleys S<sup>3</sup> and S<sup>6</sup>, and upon shafts or pins Y<sup>1</sup> and Y<sup>2</sup> are journaled pulleys S<sup>1</sup>, S<sup>4</sup>, S<sup>2</sup>, and S<sup>5</sup>, respectively.

T' represents the closing-cables, which are



trained over the pulleys  $S^3 S^6$ , thence over the pulleys  $S^2 S^5$ , thence over the pulleys  $S' S^4$ , and thence back to the shaft  $Y^2$ , which carries the pulleys  $S^2 S^5$ , their extremities being permanently secured to said shaft. With this system of cables and pulleys it is manifest that if an upward pull be exerted upon the cables the effect will be to draw the two pairs of pulleys  $S' S^4$  and  $S^2 S^5$  toward each other, as indicated by dotted lines in Fig. 2.

$B' B^2 B^3 B^4$  are the opening-arms, which are pivoted to shafts or pins  $E' E^2$ , that are carried by the closing-arms, each of the two pairs  $B' B^2$  and  $B^3 B^4$  of the opening-arms being also pivotally connected to the sockets  $D' D^2$ , to which the opening-cables  $K'$  are attached. The two parts  $H' H^2$  of the bucket are pivotally connected to the closing-arms, as at  $X' X^2$ , and the opening-arms are connected to the buckets through the medium of links  $L' L^2 L^3 L^4$ . The pivotal connections between the links and corresponding opening-arms are at  $I', I^2, I^3$ , and  $I^4$ , respectively, and the pivotal connections between the links and the two parts of the bucket are at  $U', U^2, U^3$ , and  $U^4$ , respectively. These opening-arms are in their relations to each other and in their mode of operation nothing more nor less than toggles, which in moving toward alignment force the closing-arms apart and at the same time, operating through the links aforesaid, tilt the two parts of the bucket upon the pivotal points  $X'$  and  $X^2$ , so that when the parts have reached the limit of their possible movement under the influence of the opening-cables  $K'$  and  $K^2$  the two parts of the bucket will occupy

positions that will insure their being completely emptied.

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

1. In a clam-shell dredge the combination with a two-part bucket, of closing-arms, means connecting the two parts of the bucket with the closing-arms, opening-arms pivotally connected to the closing-arms, and other means connecting the opening-arms with the two parts of the bucket in rear of the points of connection of the closing-arms therewith, substantially as described.

2. In a clam-shell dredge the combination with a two-part bucket, of closing-arms, means pivotally connecting the two parts of the bucket with the closing-arms, opening-arms, means pivotally connecting the opening-arms to the closing-arms, and links connecting the opening-arms with the two parts of the bucket substantially as described.

3. In a clam-shell dredge the combination of a two-part bucket, closing-arms pivotally connected with each other, means pivotally connecting the two parts of the bucket with the closing-arms, means for drawing the closing-arms together for the purpose of closing the bucket, opening-arms pivotally connected with the closing-arms and arranged after the manner of toggles, and links connecting the opening-arms with the two parts of the bucket substantially as described.

FRANK H. STOLP.

Witnesses:

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