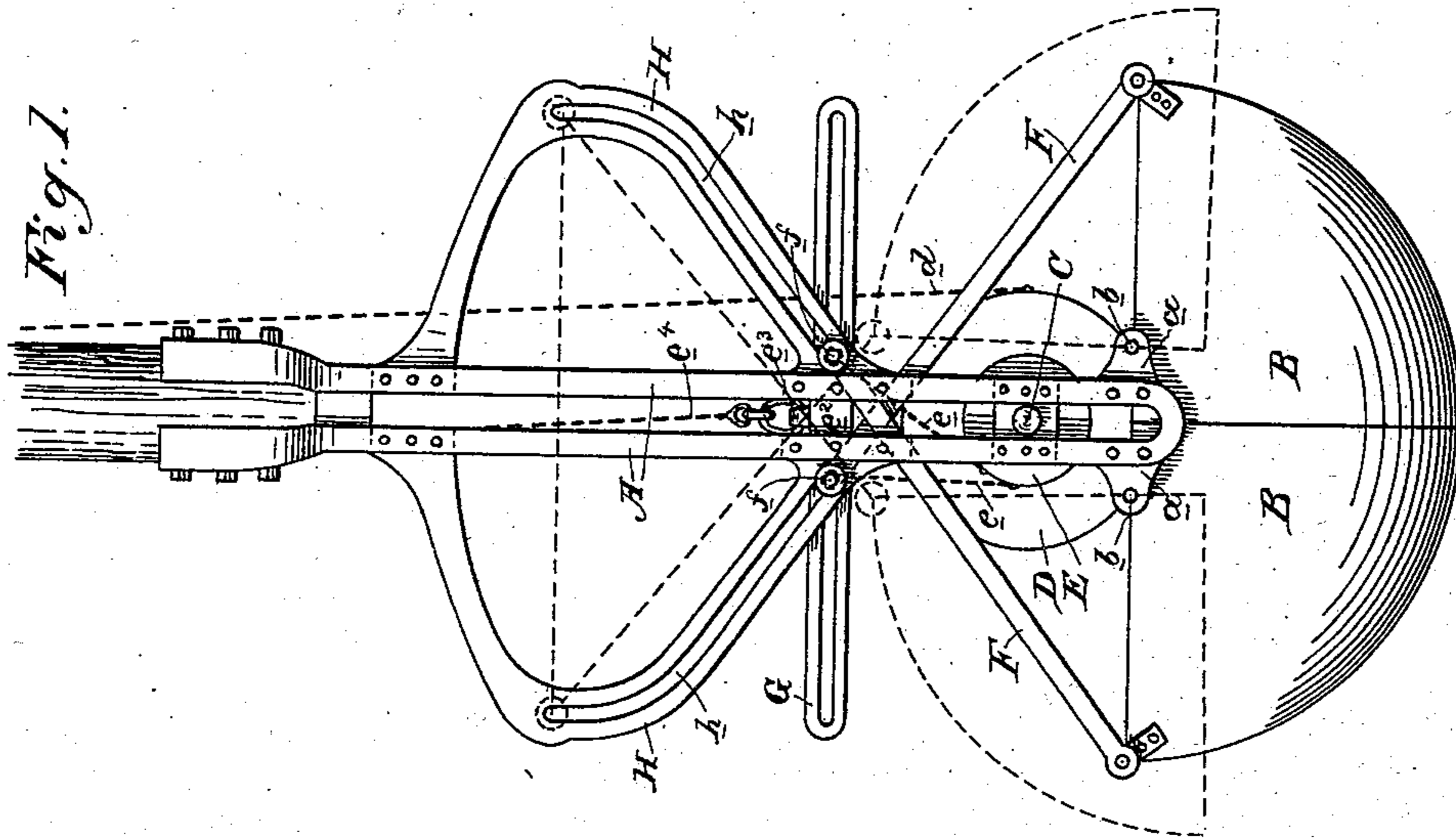
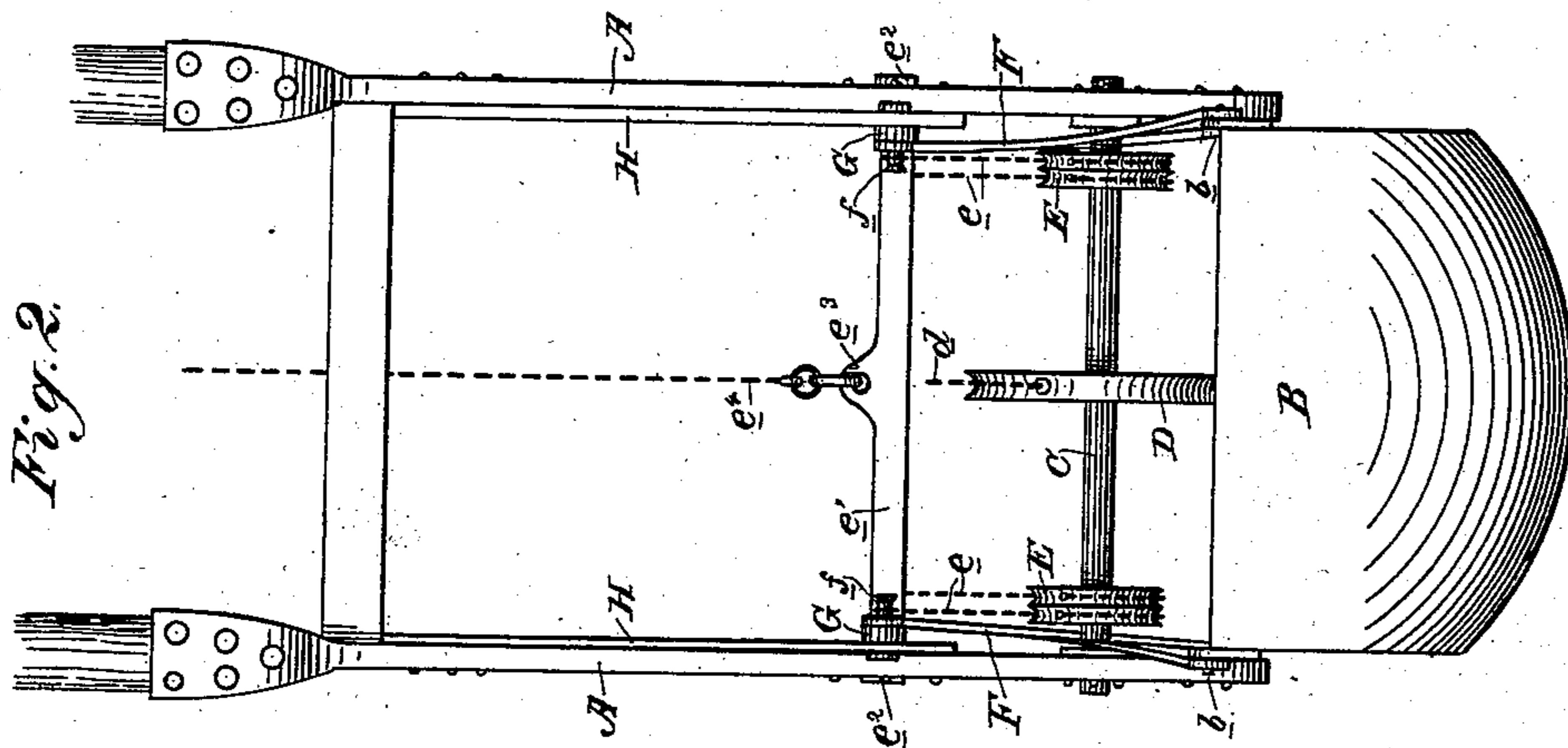


(No Model.)

M. C. LAWTON.
DREDGER DIPPER.

No. 381,258.

Patented Apr. 17, 1888.



Witnesses,
Geo. H. Strong,
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UNITED STATES PATENT OFFICE.

MANLEY C. LAWTON, OF STATEN ISLAND, CALIFORNIA.

DREDGER-DIPPER.

SPECIFICATION forming part of Letters Patent No. 381,258, dated April 17, 1888.

Application filed February 8, 1888. Serial No. 263,421. (No model.)

To all whom it may concern:

Be it known that I, MANLEY C. LAWTON, of Staten Island, San Joaquin county, State of California, have invented an Improvement in Dredger-Dippers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of dredger dippers or buckets which are commonly known as "clam-shell," and which employ two opposing pivoted jaws, with mechanism for forcing them together and releasing them.

My invention consists, in connection with the jaws, of the crossing links, the sliding cross-heads, and a sliding or varying connection between the links and the cross-heads, as I shall hereinafter fully describe.

The object of my invention is to increase the power in closing the jaws and to apply this increase in the best manner.

Referring to the accompanying drawings, Figure 1 is an elevation of my dipper. Fig. 2 is a side elevation.

A represents slotted guide-frames of the dipper, to a bracket, *a*, on the lower end of which are pivoted, at *b*, the opposing jaws B. Mounted in the lower part of the frame is a rotary shaft, C, on the center of which is a sheave, D, and on each side of which are sheaves E, of smaller diameter. A chain, *d*, is secured to the larger sheave, and two chains, *e*, are secured to each of the smaller sheaves, the chains on the smaller sheave being wound in a direction opposite to the chain on the larger sheave. Mounted in the slotted guides and adapted to move up and down therein are the blocks *e*², which carry the cross-shaft *e*¹, having a bail or yoke-frame, *e*³, with lifting-chain *e*⁴ attached. Secured to the cross-shaft on each side is a cross-head, G, each of which is longitudinally slotted.

Secured to the frame A on each side are the guide-brackets H, which are provided with slots *h*, said slots at their outer ends being nearly vertical, and thence curving inwardly to the main frame.

F represents the links, the lower ends of which are pivoted to the jaws of the dipper. The links cross, and are provided at their upper ends with studs or pins *f*, which pass through the slots in the guide-brackets H and through the slots in the cross-head G. The end of one of the chains *e* on one side is attached to one of

these pins or studs *f*, and the end of the other chain on the same side is attached to the other pin or stud, the two chains *e* on the other side being similarly attached.

The operation is as follows: When the bucket has been lowered down in an open position to the bed of material in which it is to operate, the chain *d* is drawn up, so as to rotate the sheave D, and through said sheave and the shaft C to rotate the sheaves E, whereby they wind up their chains *e*, thus pulling down upon the links F. This causes said links to move downwardly, their pins or studs *f* moving downwardly in the slots of the brackets H and inwardly in the slots of the sliding cross-heads G until they reach their limit, when the jaws are closed. To open the dipper again, when hoisted by chain *e*⁴, the chain *d* is slacked up, so that the jaws are relieved. By this construction I gain a greater power of closing the jaws, due to the increased leverage of the links. This leverage is the greatest when the connection of the link and cross-head is at the outer limits, and on account of the vertical portion of the slots *h* the greatest leverage is maintained for a short time at the beginning of the operation, so that the jaws are enabled to dig into the material with sufficient power.

A further advantage in power is gained by the sliding or varying connection between the link and cross-heads, as I am enabled by the connection of the chains *e* to exert their power in the line of resistance.

Another advantage of the sliding connection between the links and the cross-heads is that said links may be shorter than they would have to be if they were attached permanently at the outer ends of the cross-heads.

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

1. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding cross-heads, and a sliding or varying connection between said cross-heads and the upper ends of the links, substantially as herein described.

2. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding longitudinally-slotted cross-heads, and pins or studs by which the upper ends of the links are con-

nected with and slide in the slotted cross-heads, substantially as herein described.

3. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding longitudinally-slotted cross-heads, the fixed slotted guide-brackets, and pins or studs in the upper ends of the links and passing through the slots in the guide-brackets and in the cross-heads, substantially as herein described.

4. In a dredger-dipper, the pivoted opposing jaws, in combination with the crossing links attached to said jaws, the sliding longitudinally-slotted cross-heads, the fixed guide-brackets having slots with approximately vertical outer ends and thence curving inwardly, and pins or studs in the upper ends of the links and passing through the slots in the guide-brackets and in the cross-heads, substantially as herein described.

5. In a dredger-dipper, the pivoted opposing jaws, the sliding cross-shaft with its lifting-chain, the rotary shaft having the large sheave with chain *d*, and the smaller sheaves with chains *e*, in combination with the crossing links attached to the jaws, the sliding slotted

cross-heads carried by the cross shaft, and the pins or studs in the tops of the links, and with which the chains *e* are connected, said pins or studs passing through the slotted cross-heads, substantially as herein described.

6. In a dredger-dipper, the combination of the pivoted opposing jaws, the sliding cross-shaft with its lifting-chain, the crossing links by which the jaws are operated, the sliding slotted cross-heads carried by the cross-shaft, the fixed slotted guide-brackets, and the pins or studs connecting the links with the slotted brackets and with the slotted cross-heads, the rotary shaft having the larger sheave and the smaller sheaves, the chain on the larger sheave, and the oppositely-wound chains on the smaller sheaves connected with the studs or pins of the links, all arranged and adapted to operate substantially as herein described.

In witness whereof I have hereunto set my hand.

MANLEY C. LAWTON.

Witnesses:

S. H. NOURSE,
H. C. LEE.