

(No Model.)

2 Sheets—Sheet 1.

J. H. LANCASTER.

CLAM SHELL SCOOP OR DIGGING APPARATUS.

No. 597,422

Patented Jan. 18, 1898.

Fig 4.

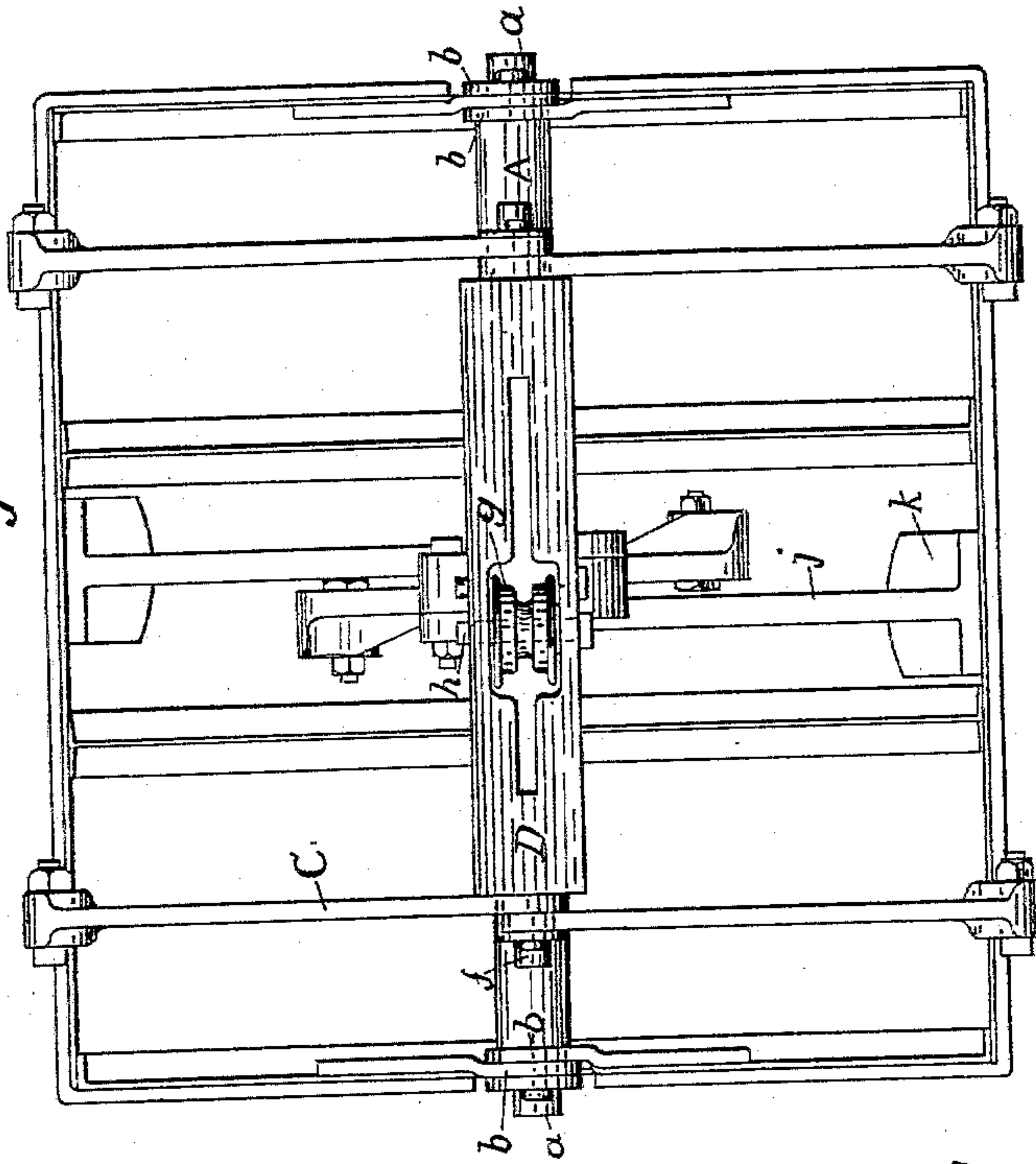
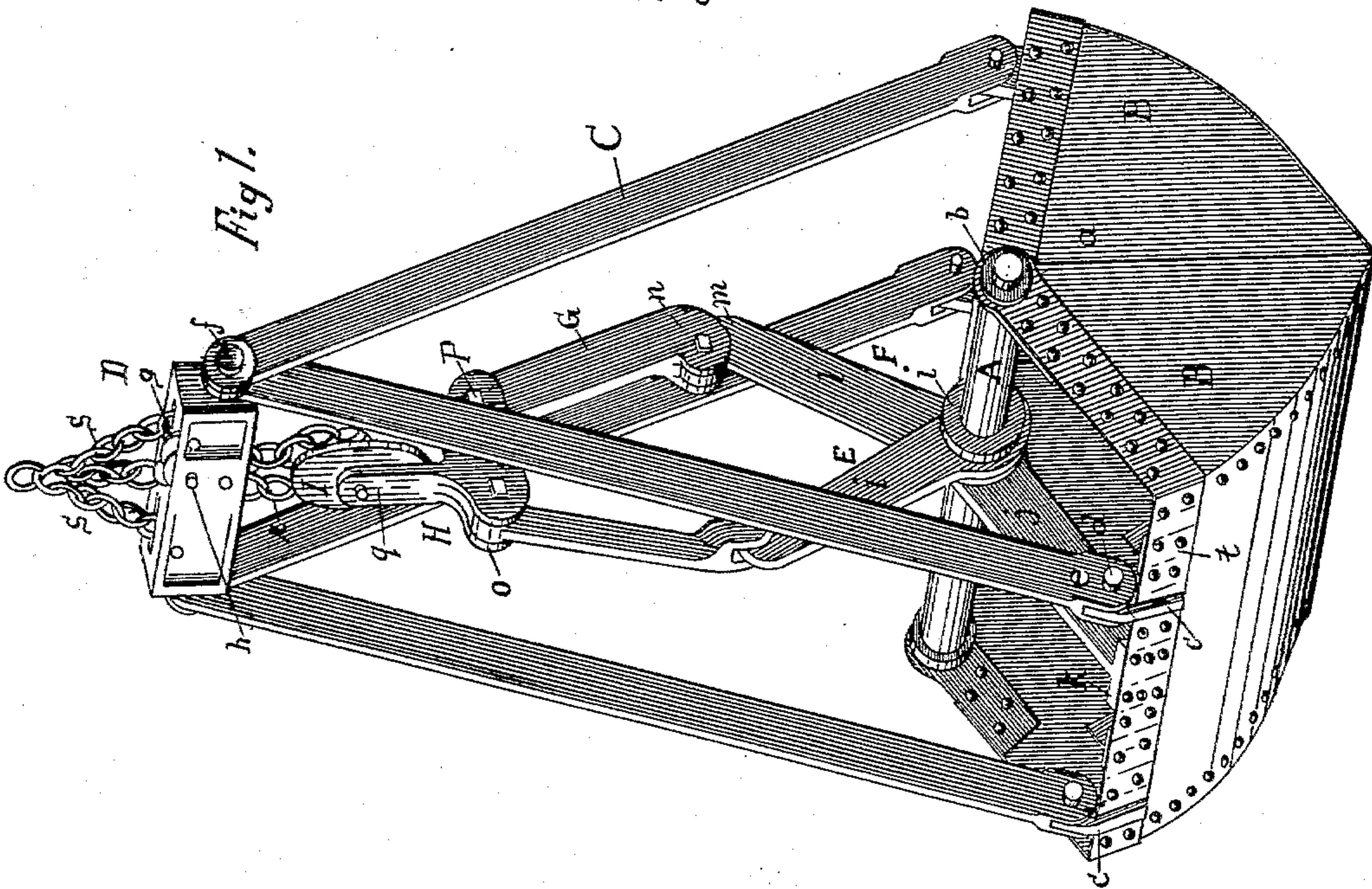


Fig 1.



Witnesses
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Geo. H. Miller

Inventor:-
James H. Lancaster.

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Fig 3.

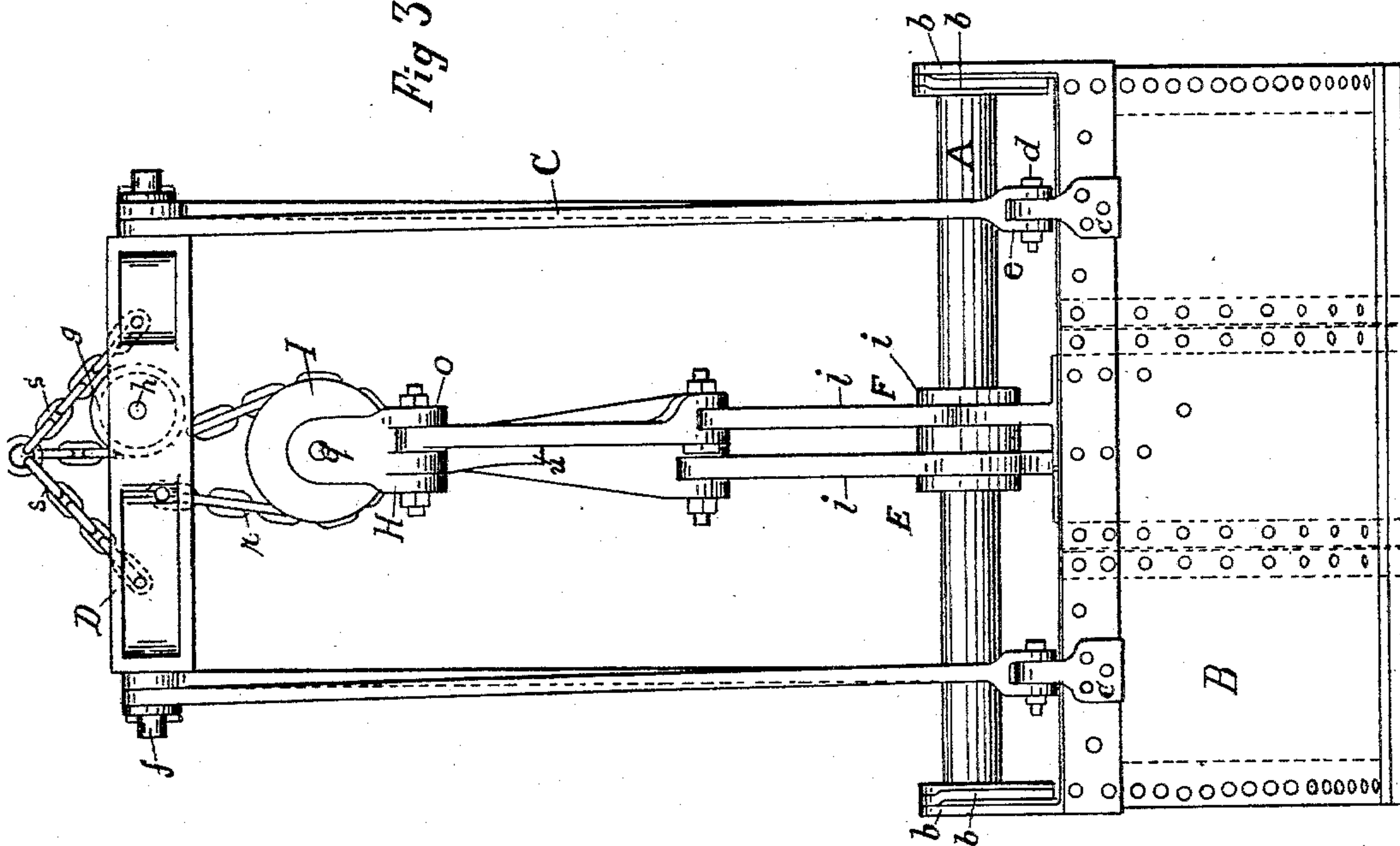
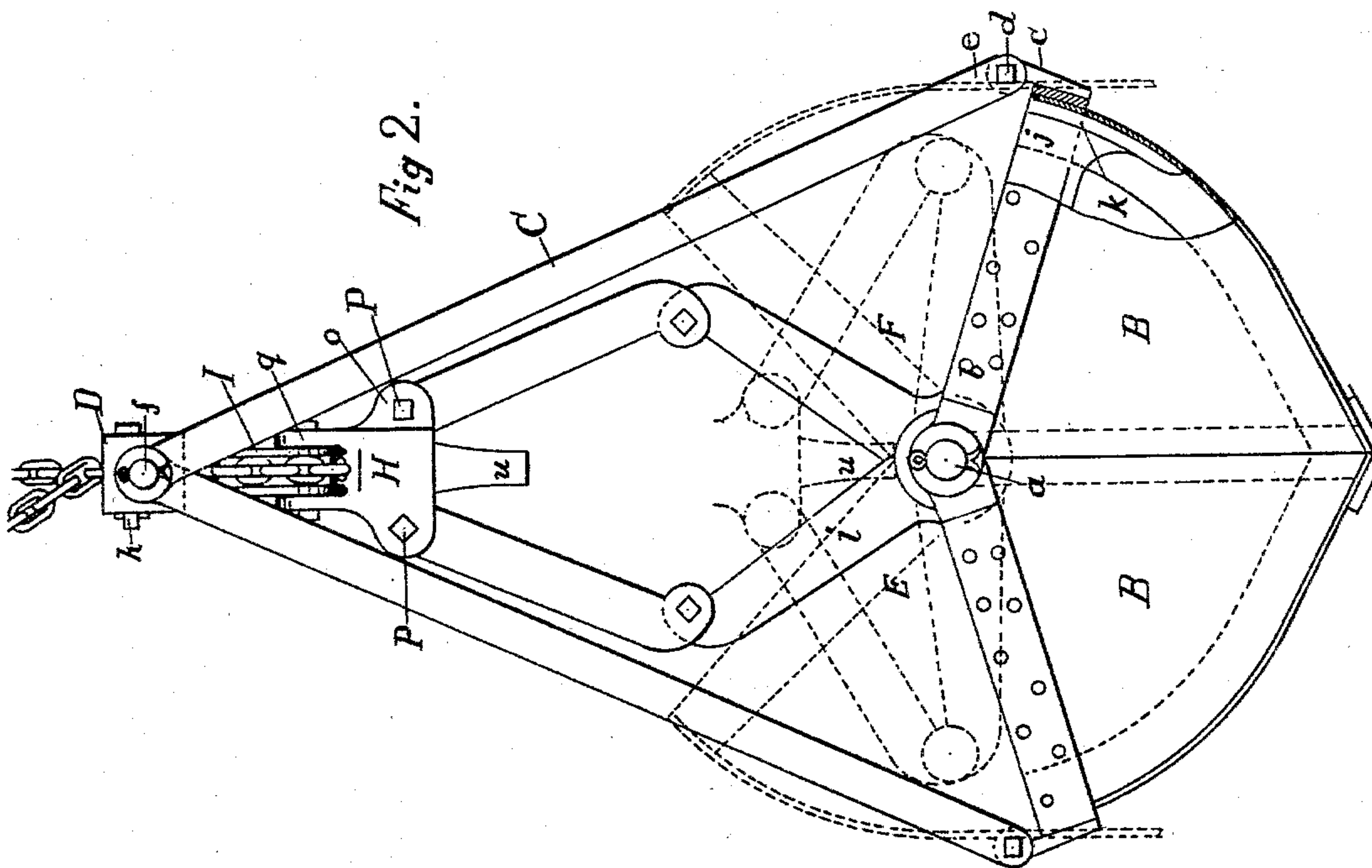


Fig 2.



Witnesses
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Inventor:—
James H. Lancaster.

UNITED STATES PATENT OFFICE.

JAMES H. LANCASTER, OF NEW YORK, N. Y.

CLAM-SHELL SCOOP OR DIGGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 597,422, dated January 18, 1898.

Application filed July 3, 1893. Serial No. 479,447. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. LANCASTER, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Clam-Shell Scoops or Digging Apparatus, of which the following is a full, clear, and exact specification.

The present invention has reference to clam-shell dredges, buckets, or digging apparatus; and it consists in the improved construction hereinafter described, whereby a dredge grapple, bucket, or dipper is produced which shall not only be of more durable and simple character than previous types, but which will be more positive in operation.

The invention further contemplates provision that will limit the opening of the scoop or tooth sections and relieve the parts of undue strain or thrust, thereby preventing the connections from becoming jammed.

In the drawings forming part of this specification, Figure 1 is a perspective view of a clam-shell dredge or bucket embodying my improvements. Fig. 2 is a side elevation of the same partly broken away and showing by full and dotted lines the position of the parts when the bucket is both in a closed and open position. Fig. 3 is an end elevation of the improved bucket or dredge. Fig. 4 is a top plan view of the same.

The ends of the bar or shaft A are reduced to present the cylindrical bearings a, on which are hung the eyes b b, carried by straps secured to the scoop-sections B B, said eyes being bent slightly out of horizontal alinement in order that they will hang in companion pairs on the bearing ends a, and thus the adjacent edges of the scoop-sections will register and practically form a water-tight bucket.

To the outer edge portion of each scoop-section B are bolted a pair of ears c c, each transversely perforated for the reception of a pivot-bolt d, which also engages the bifurcated ends e of an outwardly-inclined bar C, the upper perforated end of which movably engages a lug f, projecting from the end of a cross-head D. It will be noted that each pair of end bars C depends and is suspended from the same pivot-lug f.

The cross-head D has a central recess enlarged at a certain point to admit of the loca-

tion of a groove-roller g, the journals h of which bear in the vertical sides of the cross-head.

On the pivot-shaft A are shrunk rings i, serving to clamp in position a pair of bell-crank levers E F, which are mounted on such shaft at their elbows.

As will be noted from the several figures of the drawings, the horizontal member j of each bell-crank lever carries a flattened head k at its outer extremity, which bears on the inner face of the adjacent scoop-section B at about the center thereof and is bolted thereto.

The vertical member l of each bell-crank lever terminates at its upper free end in an eye m, which is embraced by the lower bifurcated end n of a depending link G, said bifurcated end being perforated for the passage of a bolt to secure its pivotal attachment to the eye of the vertical member l. It will be noted that the vertical members l normally slightly diverge toward their upper ends, while the links G converge toward their upper ends, at which point they are respectively secured between bearing-ears o, carried by a pulley-casting H and pierced by a pivot-bolt p. The said pulley-casting is of the form most clearly shown in Fig. 2, and, besides the lower horizontal portion, forming the ear o, also includes a vertical pair of ears q, in which is journaled a grooved pulley I, around which passes a chain r, one end of which is permanently attached in the recess of the head D, while the rest of the chain is in operative connection with the hoisting-drum or other equivalent mechanism. Short lengths s of chain are mutually attached for the connection of a second hoisting-chain, it being intended to first exert traction on the chain r to close the scoop-sections through the medium of the lever devices and thereafter operate both chains to cause the elevation of the entire apparatus in a manner well understood in this class of constructions.

The scoop-sections B can be made exceedingly light as well as durable, as it is intended to construct them of sheet or boiler steel suitably braced and reinforced at the edges by metallic straps t.

An important feature connected with the present improvements consists in having the bell-crank levers E F fulcrumed upon a com-

mon bearing—*i. e.*, the shaft A—which in turn also serves as a common bearing or journal for each pair of end eyes of the scoop-sections B. Such an arrangement is not only simple, but it enables the employment of a comparatively small number of parts and at the same time insures the positive operation of the scoop-sections.

As will be readily apparent, if the pulley-casting H is lowered to an extent that it would wedge in between the links G or reach a dead-center with respect to the same then the parts are sure to experience an undue strain or thrust. To avoid such a result, I provide said pulley-casting H with a depending extension *u*, designed to contact with or between the “pinch” of the vertical members *l* of the bell-crank levers E and F, and thus limit and brace the scoop-sections against an excessive opening.

It will be obvious that the improvements previously explained with reference to clam-shell buckets or dredges are susceptible of application to the construction of grapples generally. Thus, for instance, in lieu of the scoop-sections B outer horizontal bars or segment portions may be pivotally hung by arms upon the shaft A, said bars or segments being provided with depending tines or teeth, removable or otherwise.

I claim—

1. In a dredge, bucket or digging device, the combination with the main shaft A, of scoop or digging sections pivotally hung thereon at their inner upper angles, a cross-head, bars movably depending therefrom and pivotally connected to the outer portions of the sections together with bell-crank levers mounted at their elbows on the shaft A, and having their horizontal members secured to the outer portions of said sections and their vertical members to operating means for vibrating them, substantially as set forth.

2. In a dredge, bucket or digging device, the combination with the main shaft A, of scoop or digging sections pivotally hung thereon at their inner upper angles, a cross-head, bars movably depending therefrom and pivotally connected to the outer portions of the sections, together with bell-crank levers mounted at their elbows on the shaft A, and having their horizontal members secured to the outer portions of said sections and their vertical members by links to a chain-operated casting, substantially as set forth.

3. In a dredge, dipper or digging apparatus of the character described, the combination with the scoop or digging sections pivotally suspended on the same shaft A, bell-crank levers for operating the said scoop-sections, also pivotally mounted on said shaft, a casting H, connected by links to the vertical members of said bell-crank levers, and having a lower extension *u*, for limiting the descent of said casting and the opening of the scoop-sections, substantially as set forth.

4. In a dredge, bucket or digging apparatus, the combination with scoop or digging sections both pivotally hung on the same shaft A, and connected to the scoop or digging sections for operating the same, a recessed cross-head, suspending bars depending from the latter and connected to said scoop-sections at their outer edges, a casting H, connected by links to the vertical members of bell-crank levers and carrying a pulley, a chain connected to the cross-head and passing around said pulley through the recess of said head, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of June, 1893.

JAMES H. LANCASTER.

Witnesses:

WILLIAM PAXTON,
HERBERT W. E. HANNAM.