

No. 696,581.

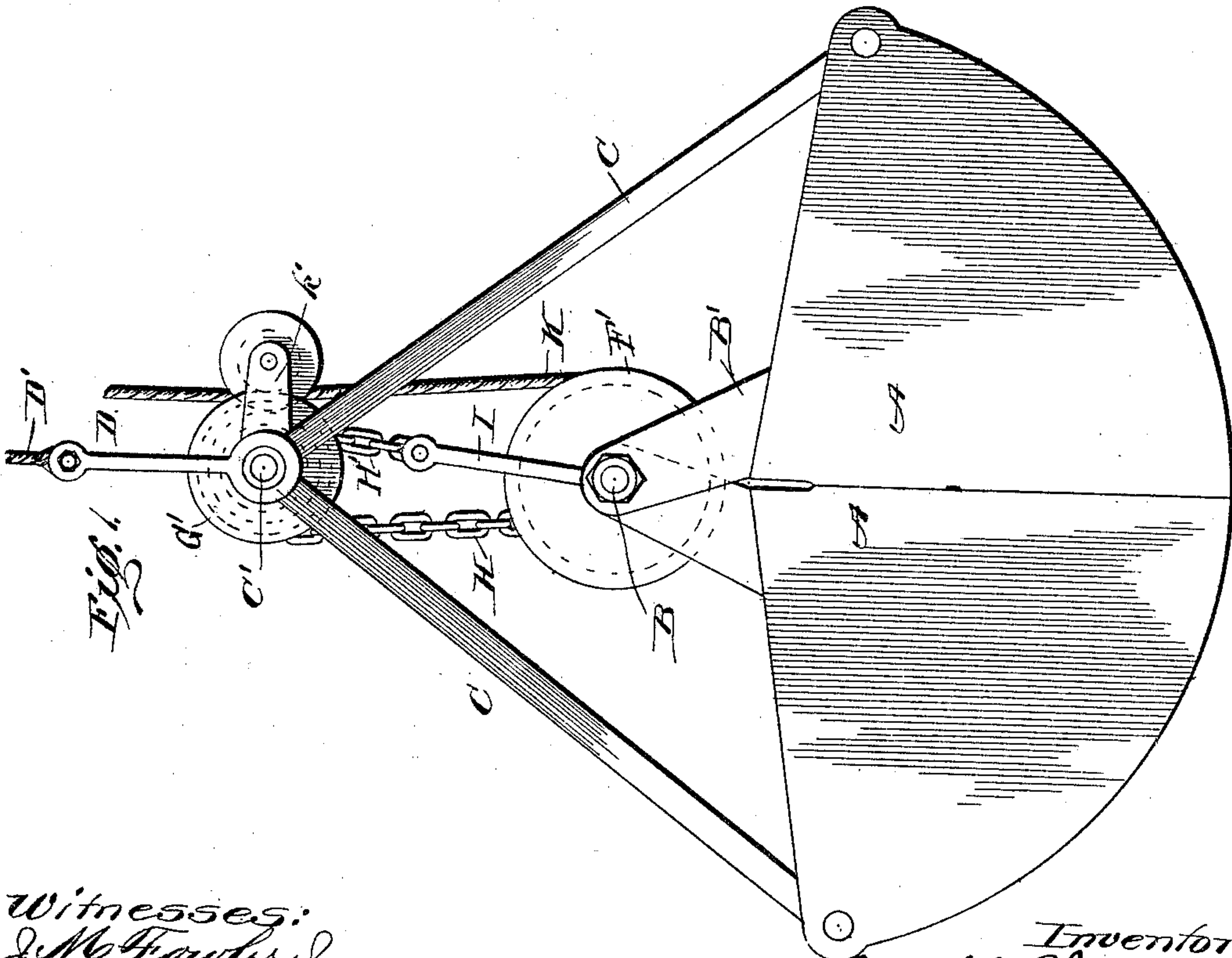
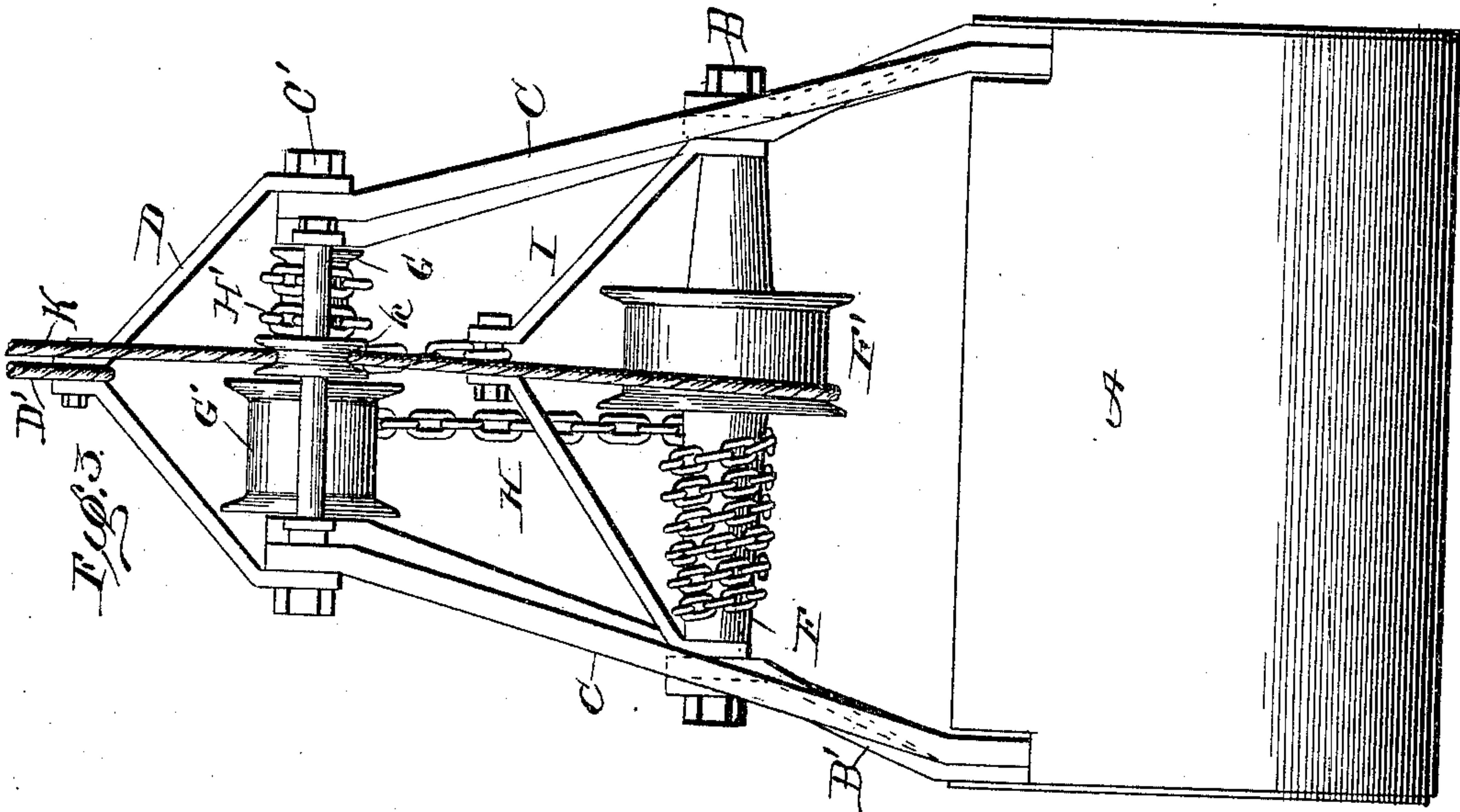
Patented Apr. 1, 1902.

J. A. MUMFORD.
SELF LOADING BUCKET FOR DREDGING.

(Application filed Aug. 27, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Thomas Durant

Inventor:
Joseph A. Mumford
by Church & Church
his Atty.

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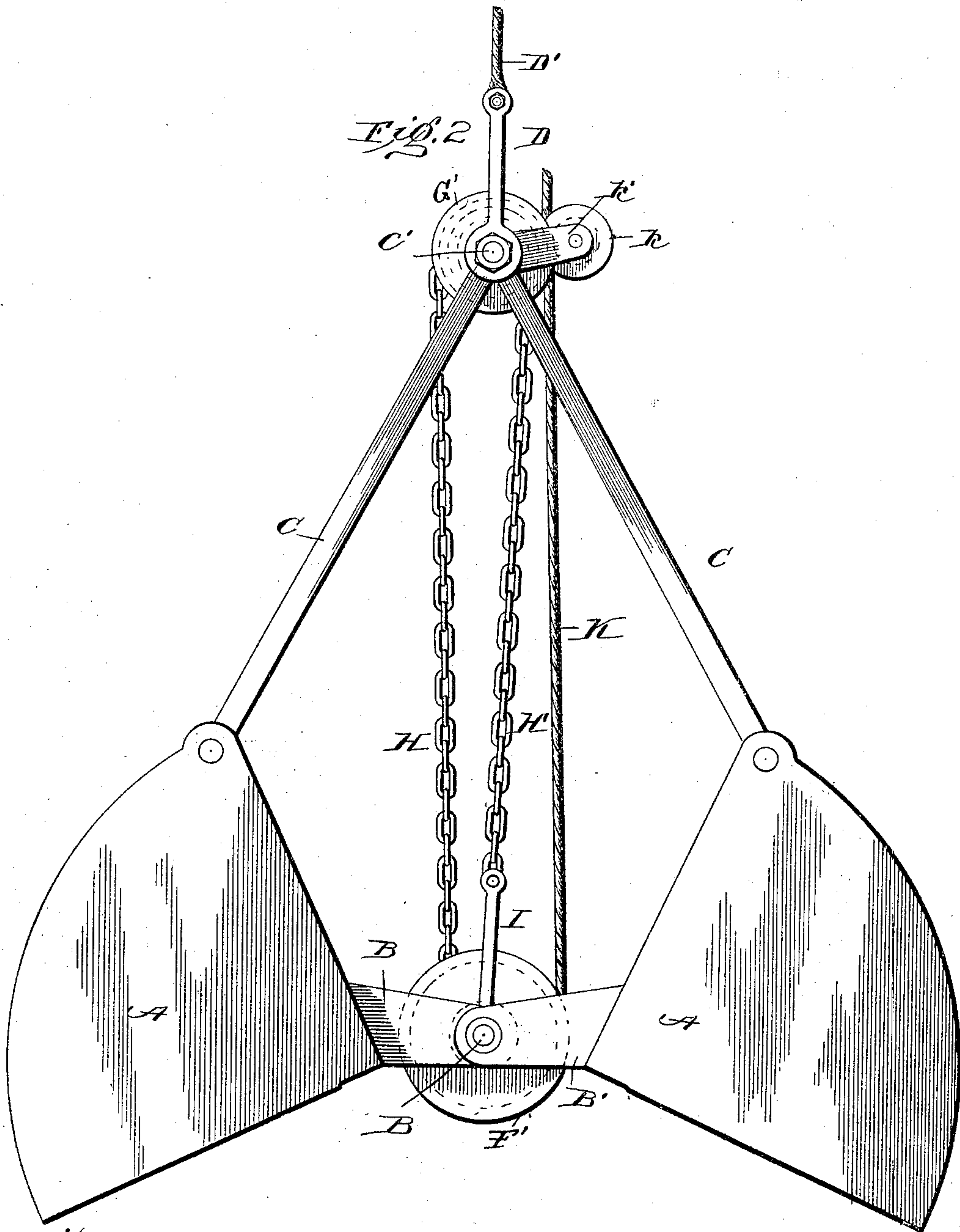
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UNITED STATES PATENT OFFICE.

JOSEPH A. MUMFORD, OF ROSLYN, NEW YORK.

SELF-LOADING BUCKET FOR DREDGING.

SPECIFICATION forming part of Letters Patent No. 696,581, dated April 1, 1902.

Application filed August 27, 1901. Serial No. 73,466. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. MUMFORD, a citizen of the United States, residing at Roslyn, in the county of Nassau and State of New York, have invented certain new and useful Improvements in Self-Loading Buckets for Dredging, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in buckets used in dredging or handling loose material—such as coal, sand, &c.—and commonly known as “clam-shell” buckets, the objects of the invention being to provide a self-loading bucket in which the operating mechanism shall be simple, powerful, compact, and capable of being operated through flexible connections, whereby the supporting of the bucket on rigid connections is avoided.

The invention consists of a bucket of the clam-shell type having a windlass for bringing the sections together and a second windlass for operating the first-mentioned windlass, said second windlass being operated by a flexible connection with the power mechanism.

The invention further consists in certain novel details of construction and combinations and arrangements of parts, as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a side elevation of a bucket embodying the present improvements with the bucket-sections closed. Fig. 2 is a similar view of the sections open. Fig. 3 is an elevation at right angles to Fig. 1.

Similar letters of reference in the several figures denote the same parts.

In said drawings the letters A A indicate the two bucket-sections pivotally connected at B, the pivotal connection being preferably formed by a cross pin or shaft and side brackets B', projecting from the bucket-sections, although said bucket-sections and the means for pivoting them together may be of any other usual or well-known construction. Suspension-links C are, as usual, pivotally connected with the outer ends of the buckets

and at their upper ends pivotally connected together by a cross-shaft C' and preferably connected with a yoke D, to which the suspension or hoisting cable or rope D' is attached.

In operating buckets of this character the problem is to force the two sections together with the greatest power and with the least possible lifting effort, whereby the advancing edges of the sections will be caused to enter and scoop up a load of material sufficient to fill the bucket. This result is accomplished by drawing the upper ends of the links downwardly while preventing the downward movement of the pivot between the sections, thereby forcing the sections to turn on such pivot and their forward edges to bite into and scoop up a full load of material.

In accordance with the present invention the structure illustrated employs two windlasses, one located in proximity to the pivot B and the other in proximity to the pivot C'. Said windlasses may be and preferably are located on the cross-shafts forming the pivots, and they each consist of two drums, the lower one having a drum F of small diameter and a drum F' of large diameter rigidly connected thereto. The upper windlass is of similar construction—that is to say, with a small drum G and a larger drum G' connected thereto.

The drum G' is located opposite to the drum F, and a chain or flexible connection H, connected at opposite ends to said drums, is adapted to be wound back and forth from one to the other. A similar connection H' is attached at one end to the drum G' and at the opposite end to a secondary yoke I, extending up from the pivot B of the bucket-sections. The drum F is adapted for the attachment of the end of the operating cable or rope K, which latter may pass behind a guide-pulley L, suitably supported from the shaft C' by a bracket L' or otherwise.

The operating-cable and flexible connections are so arranged that said cable is wound on its drum when the sections are opened, as in Fig. 2, while the connections from the smaller lower drum is wound on the large upper drum and the connection from the small upper drum to the lower yoke is unwound. The opposite conditions exist when the sections of the bucket are closed.

In operation the weight of the bucket and

its connections cause the parts to assume the position indicated in Fig. 2 when the operating-rope is slack, in which position the bucket is lowered into the material. The operating-rope is then tightened, thereby unwinding it from the lower drum, rotating the latter. This rotation draws on the connection with the larger upper drum, rotating the upper windlass and winding up the connection between its smaller drum and the pivotal point of the bracket connections, thereby forcing the sections of the bucket together with a power proportionate to the relative diameters of the drums and leverage exerted thereby.

By the employment of a double-windlass arrangement the diameters of the drums may be made small. Then they will not interfere with the proper working of the apparatus, and the construction is so simple and compact that not only are the working parts inconspicuous, but they are not liable to become fouled with other objects.

It will be particularly noted that the operating mechanism requires the use of but three additional parts, and with such parts practically any desired leverage can be secured without additional complication, but simply by changing the relative diameters of the drums.

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

1. In an apparatus such as described, the combination with the bucket-sections pivotally connected together at proximate sides and links pivotally connected together and to the outer sides of the sections, of a windlass journaled in proximity to the pivot of the bucket-sections, a second windlass journaled in proximity to the link-pivot, each of said windlasses having a drum of large and a drum of small diameter, a flexible connection winding from the smaller drum of the lower windlass to the larger drum of the upper windlass, a flexible connection extending from the smaller drum of the upper windlass to the proximate sides of the bucket-sections, and an operating flexible connection extending from the large drum of the lower windlass; substantially as described.

2. In a self-loading bucket, the combination with the bucket-sections pivotally con-

nected together, and the links pivoted to the outer sides of the sections and pivotally connected together, of means for drawing the pivot between the sections and the pivot between the links toward each other to close the sections, embodying two windlasses one moving with each pivot and each having a large and small drum, an operating connection with the larger drum of one windlass for rotating it, a connection between the smaller drum of that windlass and the larger drum of the other windlass and a flexible connection winding on the smaller drum of the latter windlass for drawing said pivotal points toward each other; substantially as described.

3. The combination with a clam-shell bucket, of means for closing the sections of the bucket embodying two windlasses each having drums of relatively large and small diameter, a flexible connection with the smaller drum of one windlass for closing said sections, a flexible connection between the larger drum of that windlass and the smaller drum of the other windlass and a flexible operating connection with the larger drum of the latter windlass; substantially as described.

4. The combination with the bucket-sections pivotally connected together, links pivotally connected together and to the respective bucket-sections, and a suspension-cable connected with said links, of windlasses journaled on the pivot-pins of the bucket-sections and pivot-pin connecting the links respectively, each of said windlasses having drums of relatively large and small diameter, a flexible connection extending from the smaller drum of the upper windlass to the pivot-pin of the bucket-sections, a flexible connection extending from the larger drum of said windlass to the smaller drum of the lower windlass, a flexible operating connection connected with the larger drum of the latter windlass and a guide-pulley for said flexible connection; substantially as described.

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