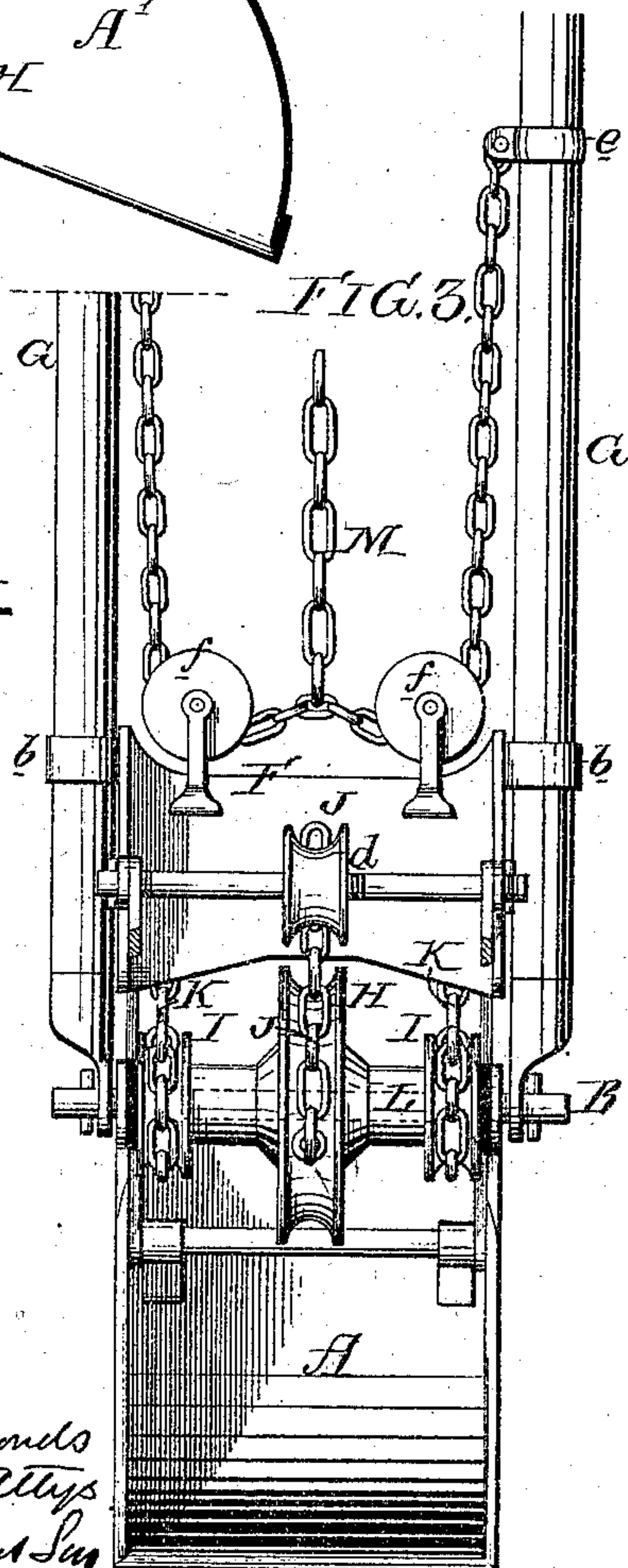
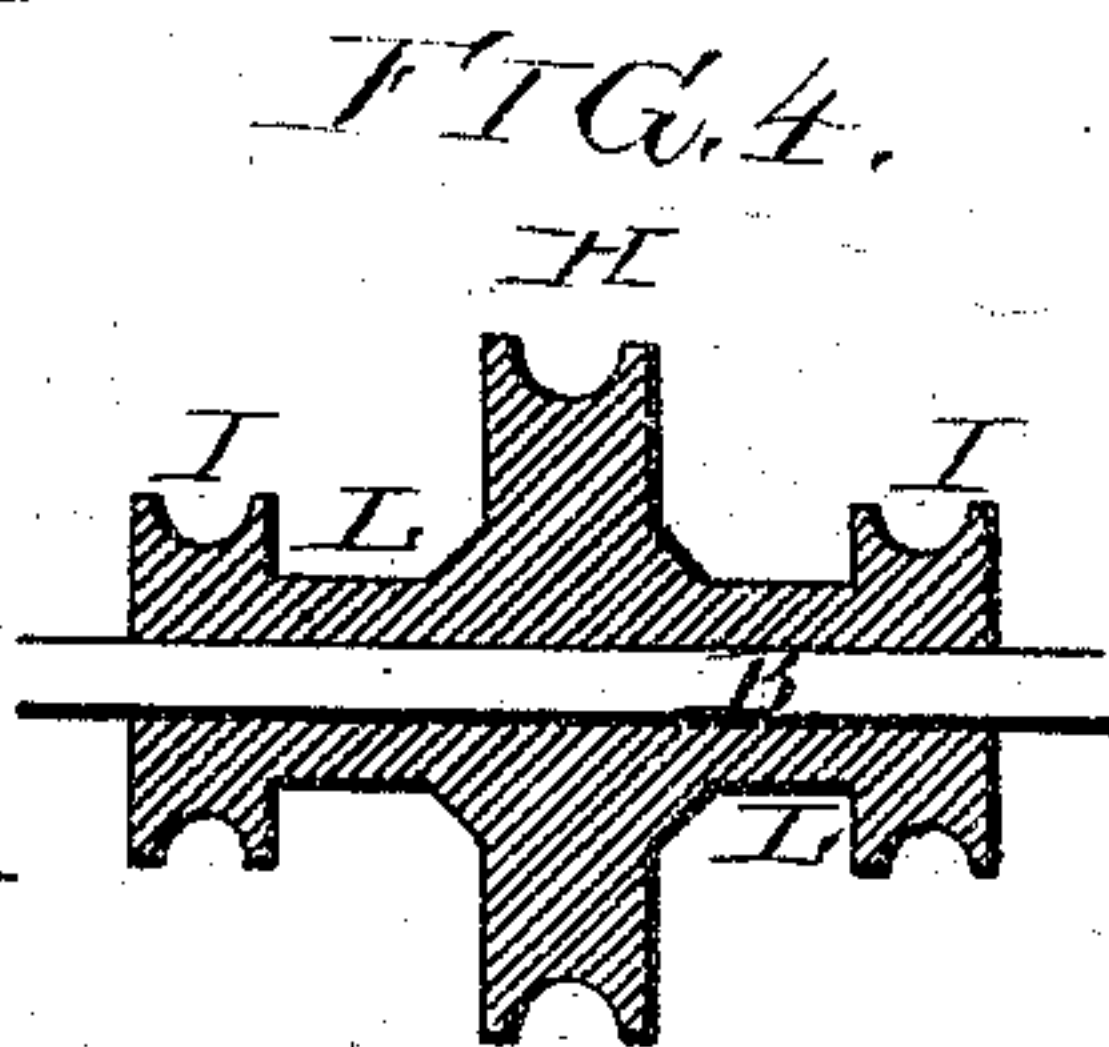
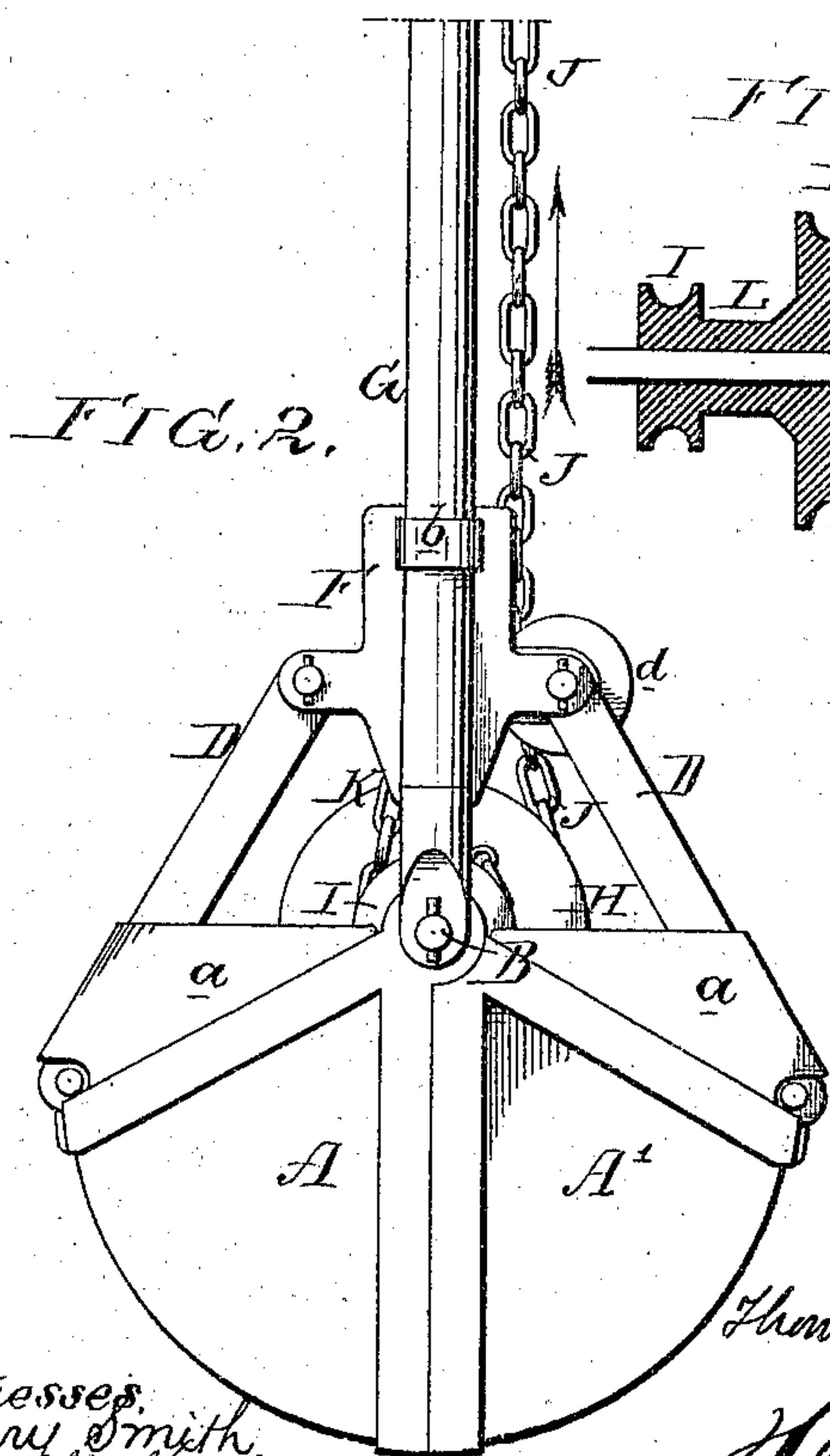
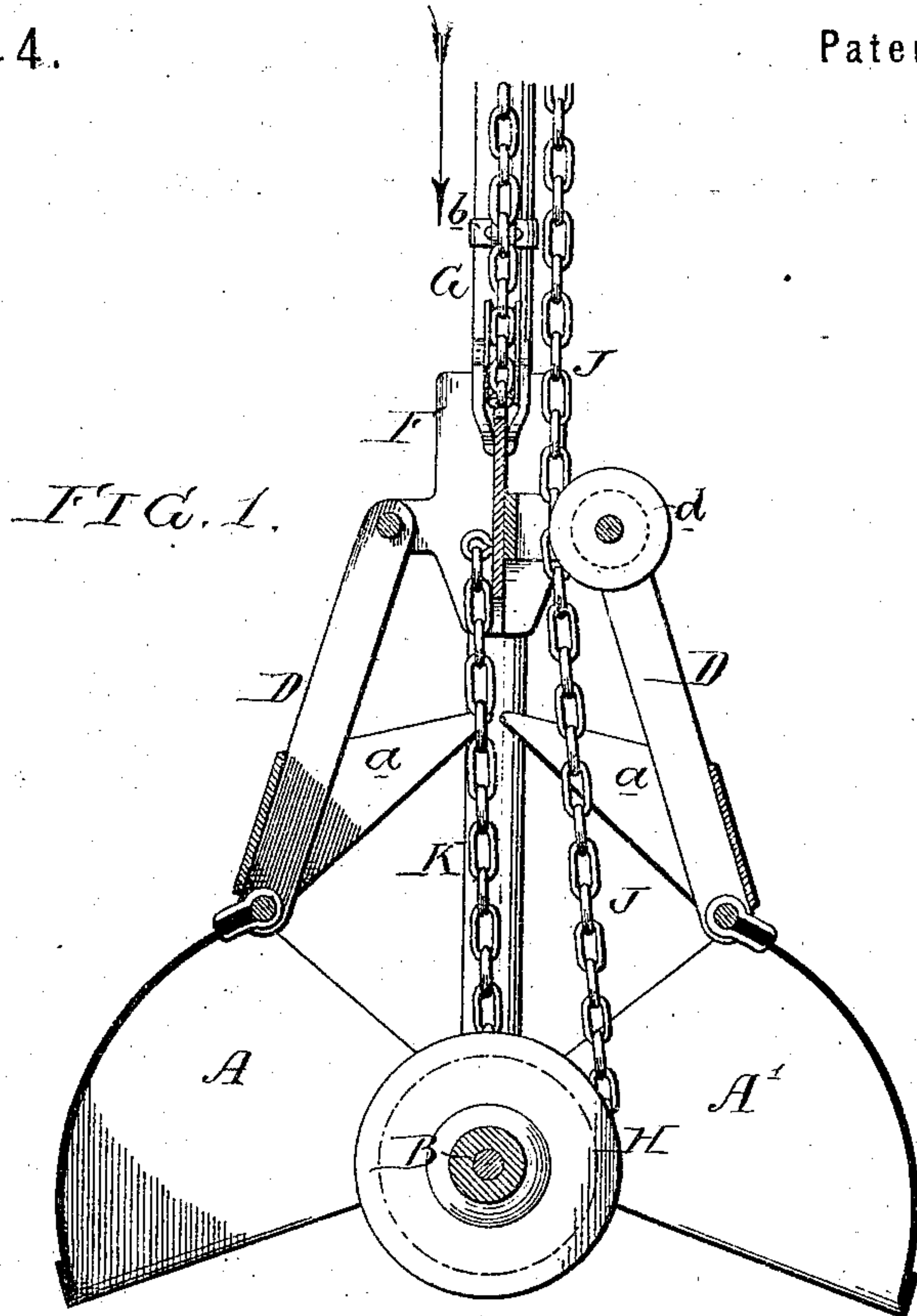


T. SYMONDS.
Dredging-Buckets

No. 150,444.

Patented May 5, 1874.



Witnesses:
Harry Smith,
Thomas M. Swan.

Thomas Symonds
by his Attys
Horsman and Son

UNITED STATES PATENT OFFICE.

THOMAS SYMONDS, OF CAMDEN, NEW JERSEY.

IMPROVEMENT IN DREDGING-BUCKETS.

Specification forming part of Letters Patent No. 150,444, dated May 5, 1874; application filed February 14, 1874.

To all whom it may concern:

Be it known that I, THOMAS SYMONDS, of the city and county of Camden, State of New Jersey, have invented certain Improvements in Dredging Apparatus, of which the following is a specification:

My invention relates to improvements in the dredging apparatus for which Letters Patent No. 136,187 were granted to me on the 25th day of February, A. D. 1873; and the object of my invention is to obtain a more positive and uniform movement of the parts in opening and closing the bucket, and to increase the strength and durability of the whole structure, which objects I attain by constructing the apparatus in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a sectional elevation of the apparatus with the bucket opened; Fig. 2, an exterior elevation with the bucket closed; Fig. 3, an edge view of Fig. 2; and Fig. 4, a detached sectional view of part of the apparatus.

As regards general construction my improved dredging-bucket is similar to that described in my aforesaid patent of February 25, 1873; the said bucket consisting of two sections, A and A', hinged together at the top by a rod, B, and connected by four pivoted arms, D, to a frame or cross-head, F, the said pivoted arms being braced by plates *a*, which also serve to increase the capacity of the bucket when the latter is closed, as shown in Fig. 2. The cross-head F has eyes *h h*, which slide upon poles G G, pivoted to the projecting ends of the rod B of the bucket. Upon this rod B, within the bucket, is a central grooved pulley, H, and at each side of the same a smaller grooved pulley, I, the closing chain J being secured to the periphery of the central pulley H, and extending upward between the cross-head F and a guiding-pulley, *d*, on the same, while short chains K K are secured to the peripheries of the smaller pulleys I I, and to the cross-head above.

In my former patent separate pulleys H and I were secured permanently to the rod B, which turned with the said pulleys, and caused a rapid wearing away of the ears of

the bucket. In the present instance, however, the whole of said pulleys are cast in one piece, with a sleeve, L, which turns loosely on the rod, as shown in the detached view, Fig. 4.

The opening-chain M is forked, as in my former patent; but, instead of being secured directly to the opposite sections of the bucket, it is connected to the poles G G at the points *e e*, Fig. 3, after having been passed beneath grooved pulleys *f f* on the cross-head F.

The operation of the apparatus is as follows: The bucket, opened to its full extent, as shown in Fig. 1, is lowered by means of the chain M, and is closed on the material to be raised by means of the chain J. The latter, before it begins to raise the bucket, is first unwound from the pulley H, which will turn the sleeve L in such a direction as to cause the connecting-chains K K to be wound upon the pulleys I, and the consequent drawing together of the cross-head F and rod B of the bucket will cause the latter to be closed through the medium of the pivoted arms D. In lowering the bucket by means of the forked chain M, the cross-head F will first be caused to slide upward over the poles G, or the latter downward through the cross-head, until the said cross-head and rod B have been separated to their full extent, the effect of which movement will be the opening of the bucket, as shown in Fig. 1, as well as the unwinding of the chains K from the pulleys I, and the corresponding winding in of the chain J upon the pulley H, the parts being thus restored to a proper position for instantly closing the bucket.

The poles G G may be of any desired length, and may be used to support the bucket and its appliances in moving the same about from point to point during the operation of dredging.

I claim as my invention—

1. The pulleys H and I I, combined with a sleeve, L, hung loosely to the rod B of the bucket, substantially as herein described.

2. The combination of the guiding-pulley *d* with the sliding cross-head F and closing-chain J, as specified.

3. The combination of the forked opening-chain M, pulleys *f f* on the cross-head, and

the poles G G, to which the ends of the said chain are attached, all substantially as and for the purpose set forth.

4. The plates *a*, extending round the entire upper edges of the buckets, and bracing and increasing the capacity thereof, as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

THOMAS SYMONDS.

Witnesses:

WM. A. STEEL,

HARRY SMITH.