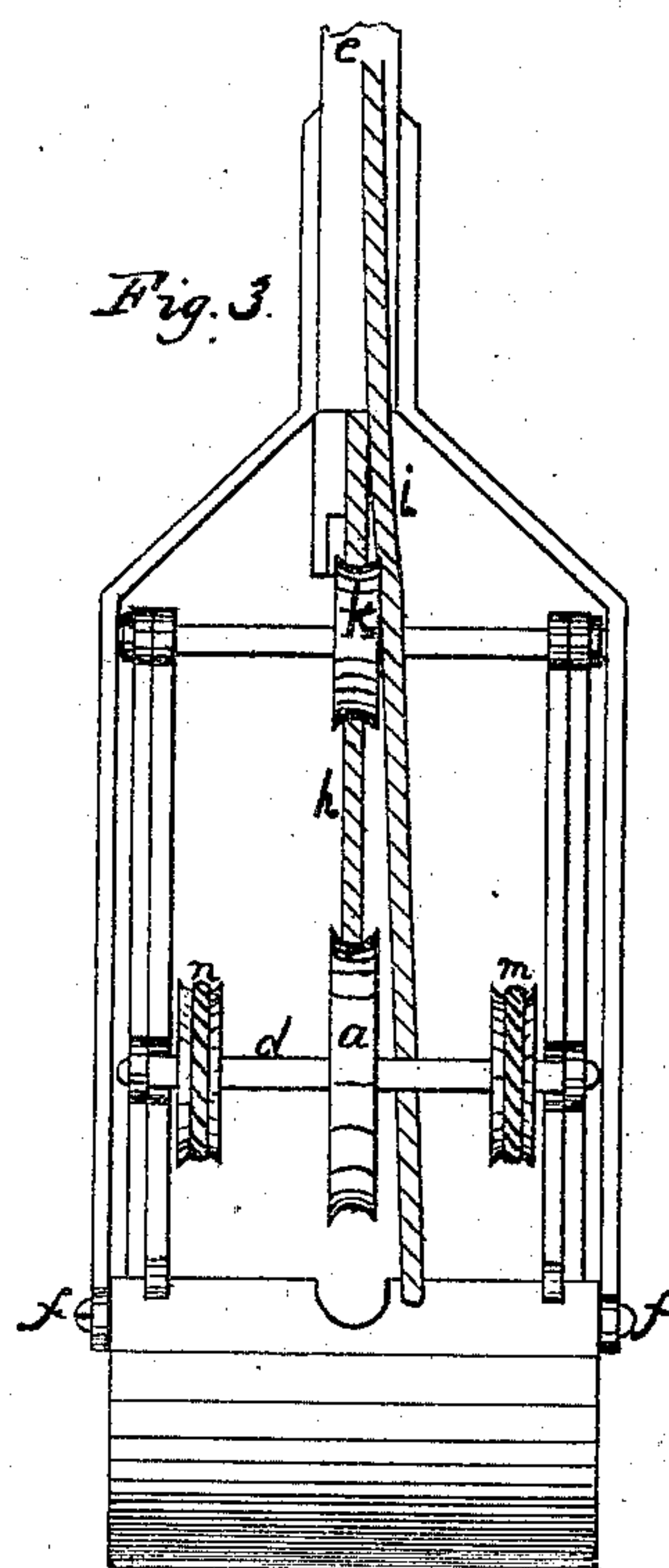
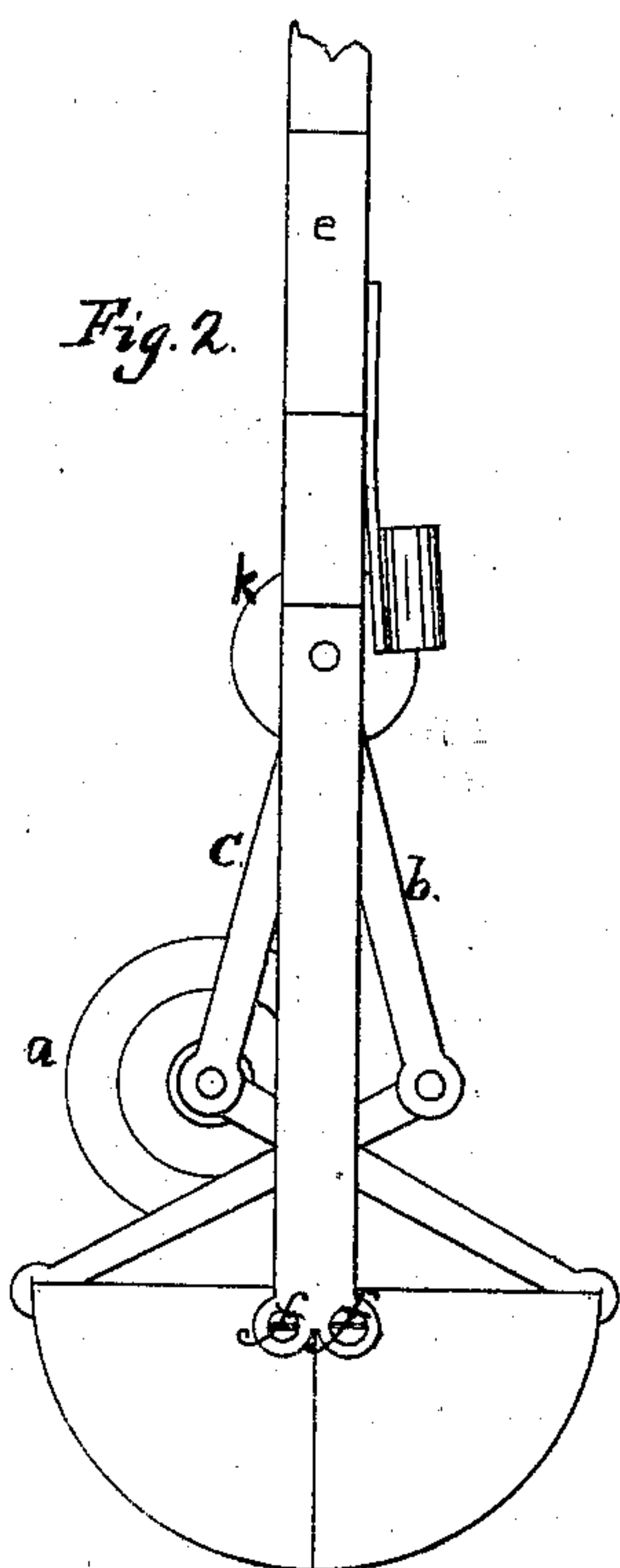
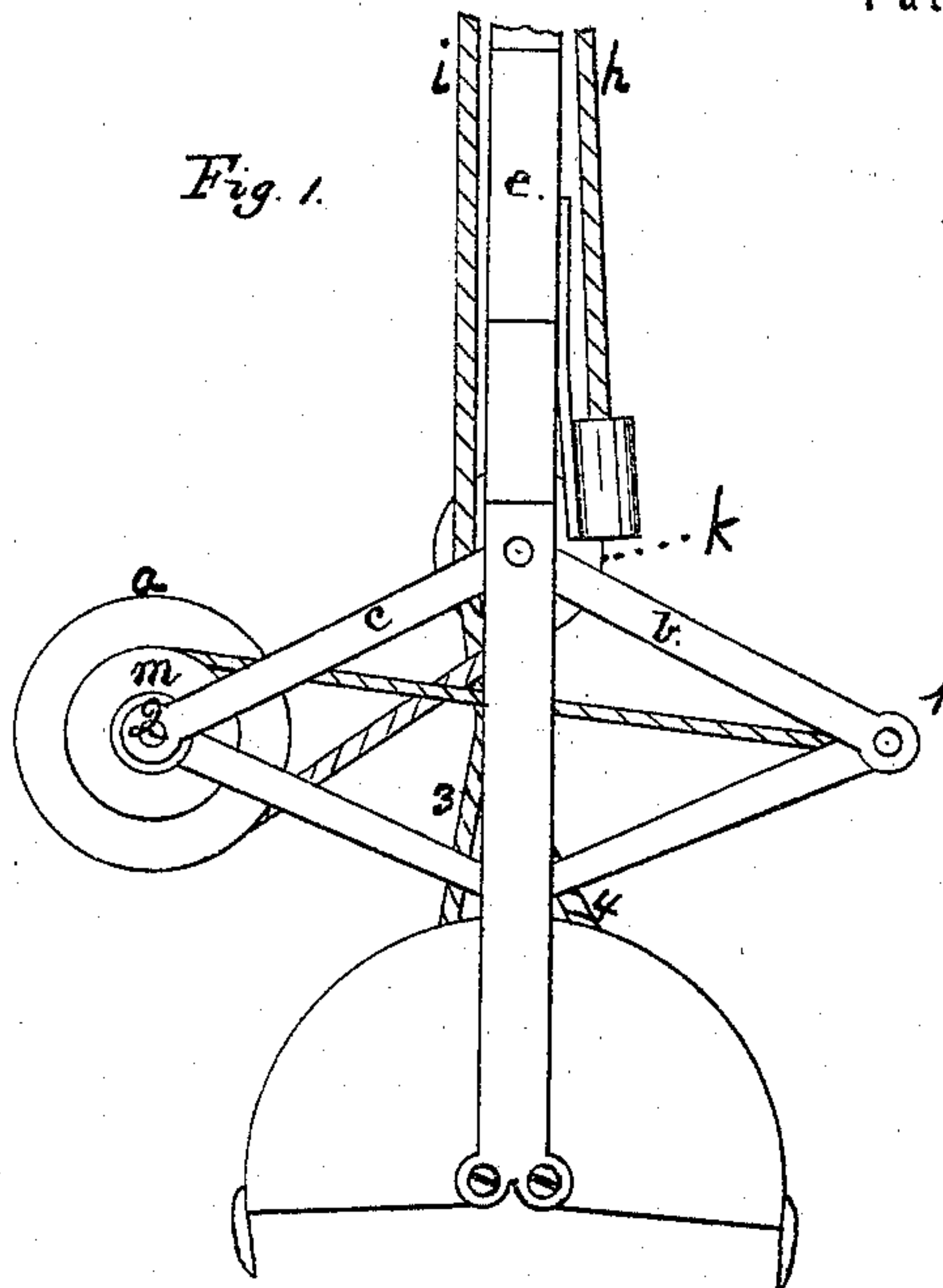


T. SYMONDS.
Dredgers.

No. 138,295.

Patented April 29, 1873.



Witnesses.
George C. Bird.
G. A. White

Inventor.
Thomas Symonds
Per W. H. Clifford atty.

UNITED STATES PATENT OFFICE.

THOMAS SYMONDS, OF PORTLAND, MAINE.

IMPROVEMENT IN DREDGERS.

Specification forming part of Letters Patent No. **138,295**, dated April 29, 1873; application filed March 24, 1873.

To all whom it may concern:

Be it known that I, THOMAS SYMONDS, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Excavators; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 shows a side elevation with the scoops open; Fig. 2, same with scoops closed; Fig. 3, an end view.

Same letters show like parts.

The purpose of this improvement is to provide an improved power for opening and shutting the scoops or cups of a mud-digger, and for operating the said scoops with more celerity. In Letters Patent issued to me February 14, 1871, No. 111,787, I have shown arms forming toggle-joints, with a certain arrangement of chains or ropes, to operate the scoops. The said combination, as there claimed, I, of course, do not now intend to embrace; but my invention consists in a combination, with the said toggle-joints, of a new device and a new arrangement of ropes or chains.

a shows a windlass, attached at the junction of two arms, *c*, of the toggles, and on a shaft, *d*, which extends across from the toggle on one side of the scoops to that connected with the other side, as seen in Fig. 3. This shaft *d*, as will appear from an inspection of the drawing, moves outwardly or inwardly as the joint of the two arms *b* and *c* move by the opening or closing of the toggle. *e* is the beam or stock to which the scoops and arms are attached, as seen in Fig. 3. This beam is bifurcated a little above the scoops, and, passing down on each side of the same, carries the pivots *f f'*, upon which the scoops or buckets turn. Down on each side of the said beam are the ropes or chains *h i*, which ropes operate the buckets. One of the ropes, in connection with the moving windlass, closes the scoops or buckets—that is, when they are in contact with the mud or soil, forces them to take up a load. The other rope operates the buckets—that is, when they are filled and hoisted, aids to deposit the load wherever desired. Both operate by simply pulling up. They may, of

course, be passed over pulleys, so that the operator or the power will then pull down on the same. The rope *h* passes around a fixed sheave, *k*, set on a shaft in the stock *e*, and is then secured or attached to the periphery of the windlass *a*. By pulling up—as the device is herein represented—on *h*, the windlass *a* and shaft *d* are set in rotation. Upon this shaft are rigidly set the two winding-wheels or windlasses *m n*, each with a rope or chain attached to its periphery, and also attached at the point of the toggle opposite to it. This is illustrated with the wheel *m* in Fig. 1. Now it will be seen, as the windlass *a* and shaft *d* turn, that they carry these two wheels *n* and *m*, which force or draw together the opposite points of the toggles—for instance, 1 and 2, Fig. 1. This closes the scoops with great power and considerable speed. The method of connecting the arms of the toggle-joints with the scoops is seen in Fig. 2, and is the same as in my former patent, before referred to. The rope *i* is attached to the top edges of the buckets, (see Fig. 3,) and is divided into two cords, 3 and 4, as seen in Fig. 1. Pulling upon this opens the buckets, and so makes them ready for the operation of the windlass and toggles.

With the arrangement of the shaft and windlass at the central pivot or joint of the toggle I always secure a horizontally-exerted power to straighten the toggles and bring the buckets together. This would not be the case either with a shaft sliding in a slot or a fixed shaft placed between the two toggles.

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

1. The combination of the pulley *k*, placed centrally, with windlass *a*, wheels *m n*, shaft *d*, the ropes extending from the small wheels *m n* on the shaft *d* to the opposite joints of the toggles, and cord *h*, as herein set forth.

2. The shaft *d* having the windlass *a* and wheels *m n*, when said shaft is located at the joint or angle of the toggle-joint, as herein set forth.

Portland, April 7, 1871.

THOMAS SYMONDS.

Witnesses:

WM. HENRY CLIFFORD,
GEORGE E. BIRD.