

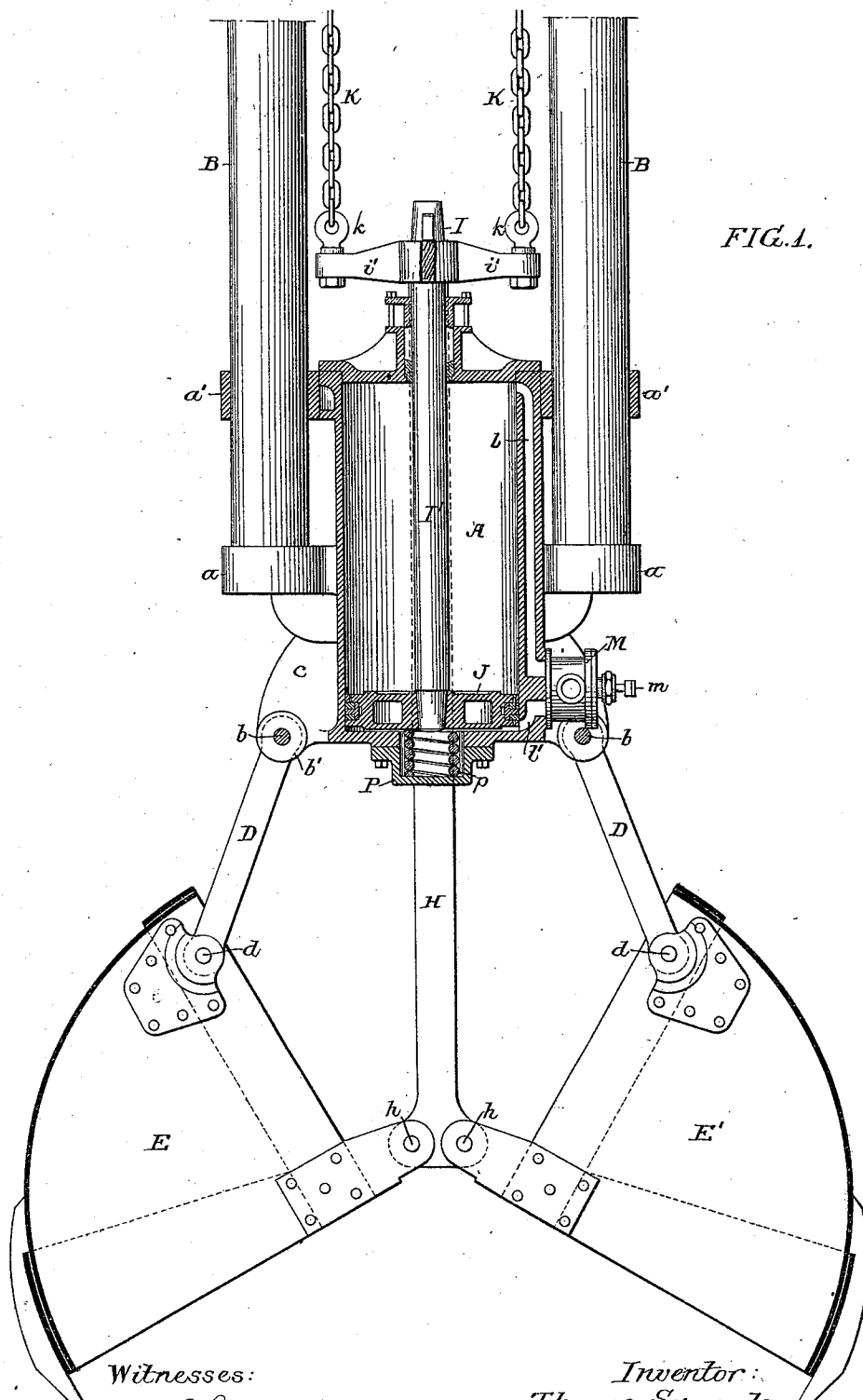
(No Model.)

3 Sheets—Sheet 1.

T. SYMONDS.
DREDGING BUCKET.

No. 514,788.

Patented Feb. 13, 1894.



Witnesses:

A. V. Groupes
Alex. Bartoff

Inventor:
Thomas Symonds
by his Attorneys

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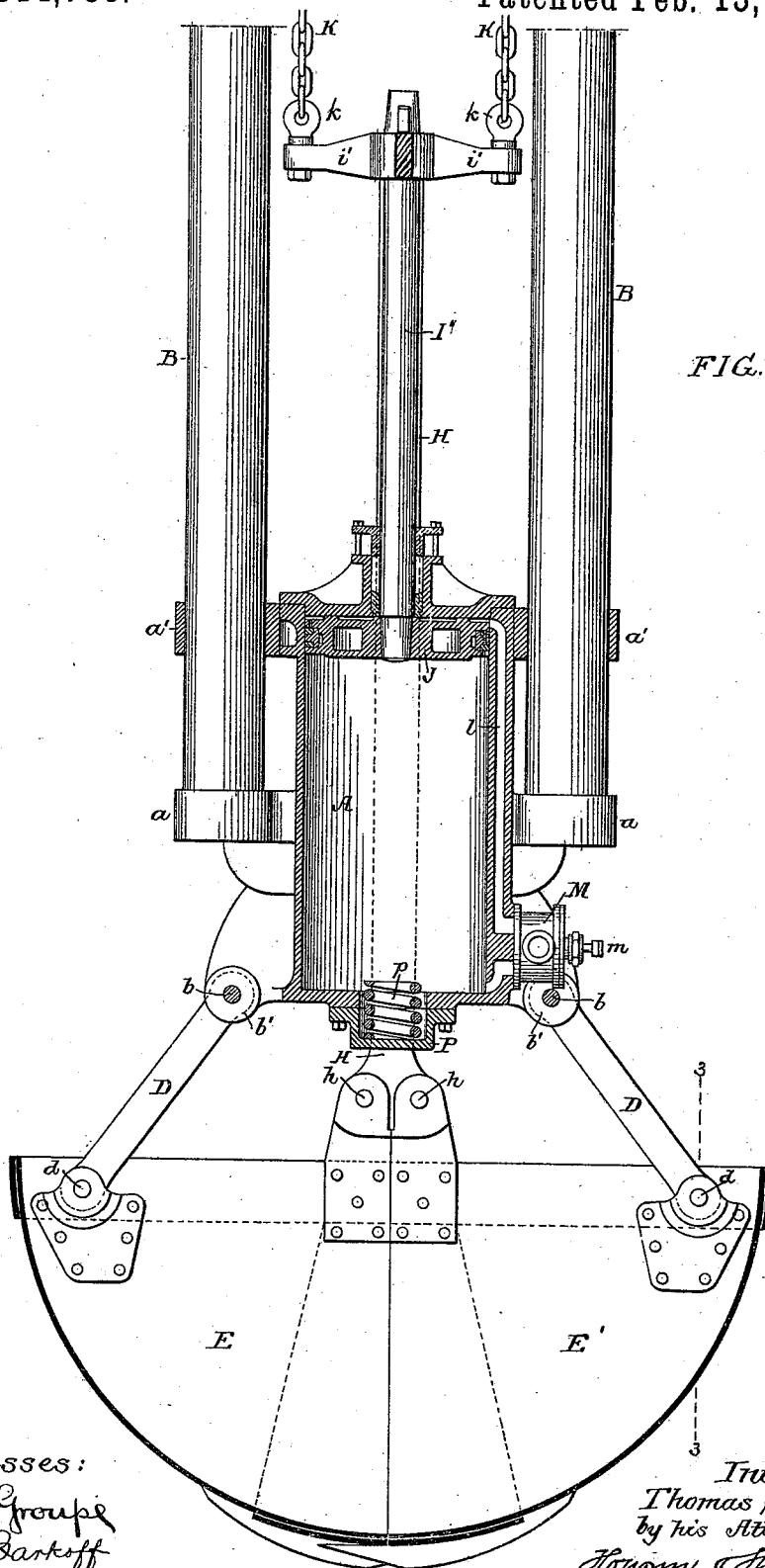
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FIG. 5.

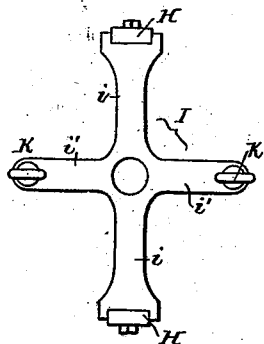


FIG. 4.

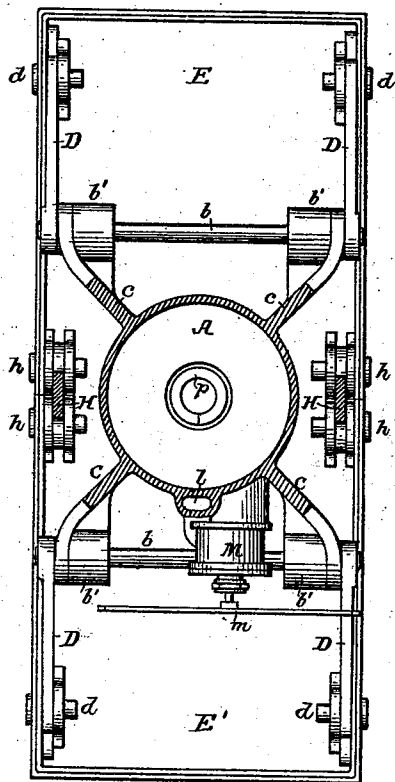
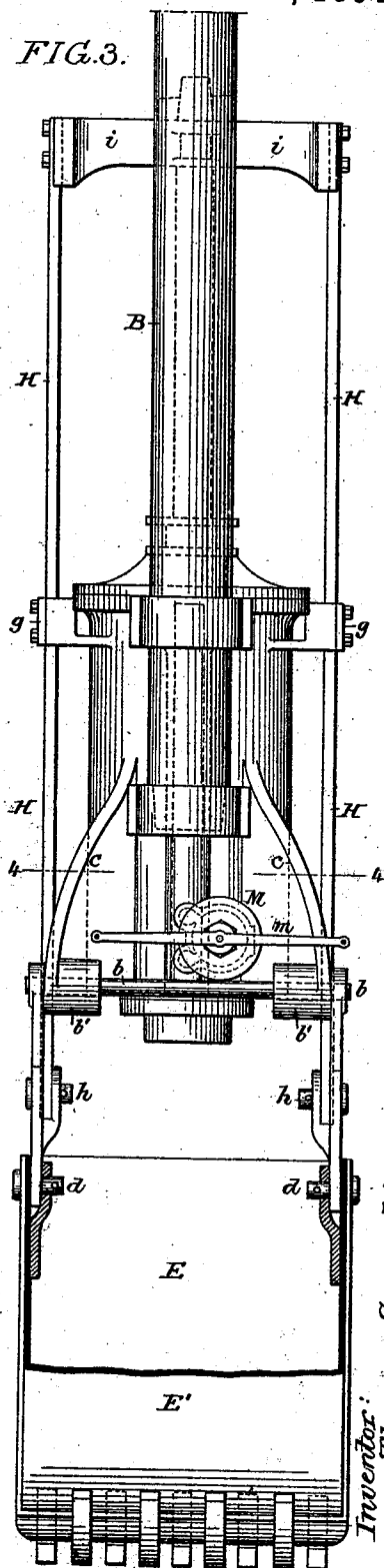


FIG. 3.



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UNITED STATES PATENT OFFICE.

THOMAS SYMONDS, OF LEOMINSTER, MASSACHUSETTS.

DREDGING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 514,788, dated February 13, 1894.

Application filed February 15, 1893. Serial No. 462,359. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SYMONDS, a citizen of the United States, and a resident of Leominster, Massachusetts, have invented certain Improvements in Dredging-Buckets, of which the following is a specification.

My invention relates to certain improvements in power actuated dredging buckets of that class forming the subject of Letters Patent granted to me on the 28th day of April, 1874, No. 150,372, its objects being to further improve and simplify the construction and operation of such buckets, as more fully set forth hereinafter.

In the accompanying drawings:—Figure 1, is a sectional elevation of the bucket, and its operating cylinder, in the open position. Fig. 2, is a similar view showing the bucket closed. Fig. 3, is an end elevation, partly in section on the line 3—3, Fig. 2, illustrating the construction of some of the operating devices. Fig. 4, is a sectional plan view on the line 4—4, Fig. 3; and Fig. 5, is a plan view of the cross head.

A represents a cylinder provided with pockets, *a*, and guides or holding eyes, *a'*, in which are secured the opposite guiding poles, B, usually employed on dredging buckets and which extend as usual through guiding eyes at or near the extreme end of the boom. At the lower end of the cylinder are rocker shafts *b*, which extend across the opposite sides of the cylinder and are adapted to suitable bearings *b'* thereon, the bearings being further supported by strengthening ribs *c* forming part of the cylinder.

Near each end of the shafts *b*, are secured links D, which extend down to the opposite sections E, E', of the bucket and are pivoted at *d* to the bucket sections; the pivot point being strengthened by plates *e* secured to the inner surface of the bucket and adapted to receive the pivot pin, as shown clearly in Fig. 3. The cylinder is provided with guides *g*, through which pass vertical connecting bars H, pivoted at their lower ends to ears *h*, on the inner or adjoining edges of the bucket sections and at their upper ends being rigidly secured to the arms *i* of a cross head I carried by a piston rod I'; the cross head being provided also with arms *i'* extending at right

angles to the arms *i*, and being provided with eyes *k* to which are connected the chains K extending to the winding drum. The piston rod I' is connected to a piston J, of any suitable construction and the cylinder is provided with the usual ports *l*, *l'* and a valve M controlled by cords extending from a lever *m* secured to the valve, to any suitable operating device on the dredge. The lower end of the cylinder is provided with a pocket P in which is a spring *p* adapted to cushion the piston when the bucket is opened.

In operation the parts are lowered by the chains K with the bucket open, as shown in Fig. 1, and when the bottom is reached, the operation of the valve M causes the parts to gradually assume the position shown in Fig. 2; the weight of the bucket and the cylinder casing and the poles all tending to keep the bucket close to the bottom, while the pressure of fluid between the piston and the end of the cylinder causes the gradual closing of the jaws of the bucket and the latter is completely filled without any undue strain on the operating parts, as distinguished from the ordinary construction of buckets, where the operation of the hydraulic or other cylinder usually acts to raise the bucket during the closing movement and prevents the weight of the parts acting to keep the bucket at the bottom. During the descent of the bucket the piston J being at the bottom of the cylinder and resting against the spring *p*, the contact with the bottom is not detrimental to the machine and any sudden shocks or breakage are avoided.

One of the principal objections to buckets of the power actuated type is, that in the event of the failure of the steam pressure or in using a pressure of steam lower than is necessary to close the bucket, the working will not be effective, an objection which is overcome in the present construction owing to the fact that the cross head of the piston is connected directly to the chains leading to the winding drum so that even if the steam pressure be insufficient to close the bucket the action of the hoisting chains will complete the operation and may also be used even with high pressure steam to prevent any waste.

A further advantage is gained by the fact that the up stroke of the piston acts to close the bucket so that the full area of the piston can be utilized for the steam to act against.

5 Having thus described my invention, I claim and desire to secure by Letters Patent—

10 1. The combination with the dredging bucket, of a cylinder, a piston contained therein, a piston rod, a cross head connected to the bucket and hoisting chains extending from the cross head to the winding drum of the dredge, the piston moving upward during the closing of the bucket, substantially as specified.

15 2. The combination of the cylinder, shafts, as *b*, at the lower ends of said cylinder, a two-part dredging bucket, links connecting the bucket to the shafts, a piston, a cross head carried thereby and connected to the bucket and operating chains extending from said cross head to the winding drum of the dredge, substantially as specified.

20 3. The combination in a hydraulic dredging bucket, of a cylinder, a piston contained therein, a piston rod, a cross head, above said cylinder as *I*, a two-part bucket linked to the lower end of the cylinder, and vertical bars

connecting the cross head to the inner edges of the bucket, substantially as specified. 30

4. A dredging bucket, comprising in combination, the two-part bucket, a cylinder to which the two parts of the bucket are connected by links, a piston, and operating devices connecting the piston to the bucket, 35 and hoisting means connected to said piston whereby during the closing movement of the bucket the weight of the cylinder and all of its parts will operate to keep the bucket at the bottom, substantially as specified. 40

5. The combination of the bucket, an operating cylinder for closing the same, a piston contained in said cylinder and located at the lower portion of the same during the descent of the bucket, and a compression spring between the end of the cylinder and said piston, substantially as and for the purpose set forth. 45

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 50

THOMAS SYMONDS.

Witnesses:

JNO. E. PARKER,
JOSEPH H. KLEIN.