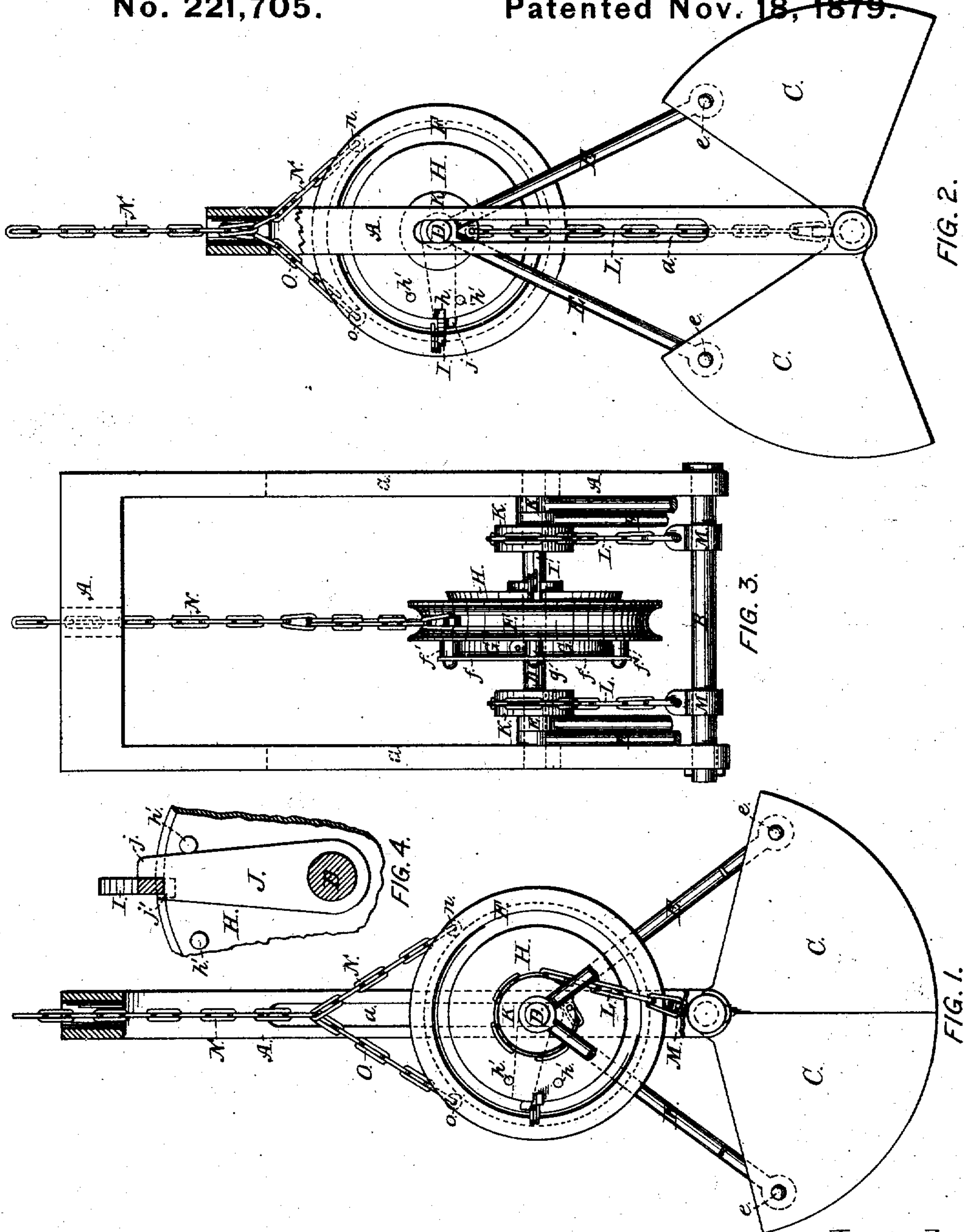


J. M. SEWARD.  
Dredging-Machine Bucket.

No. 221,705.

Patented Nov. 18, 1879.



Witnesses,

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Inventor,

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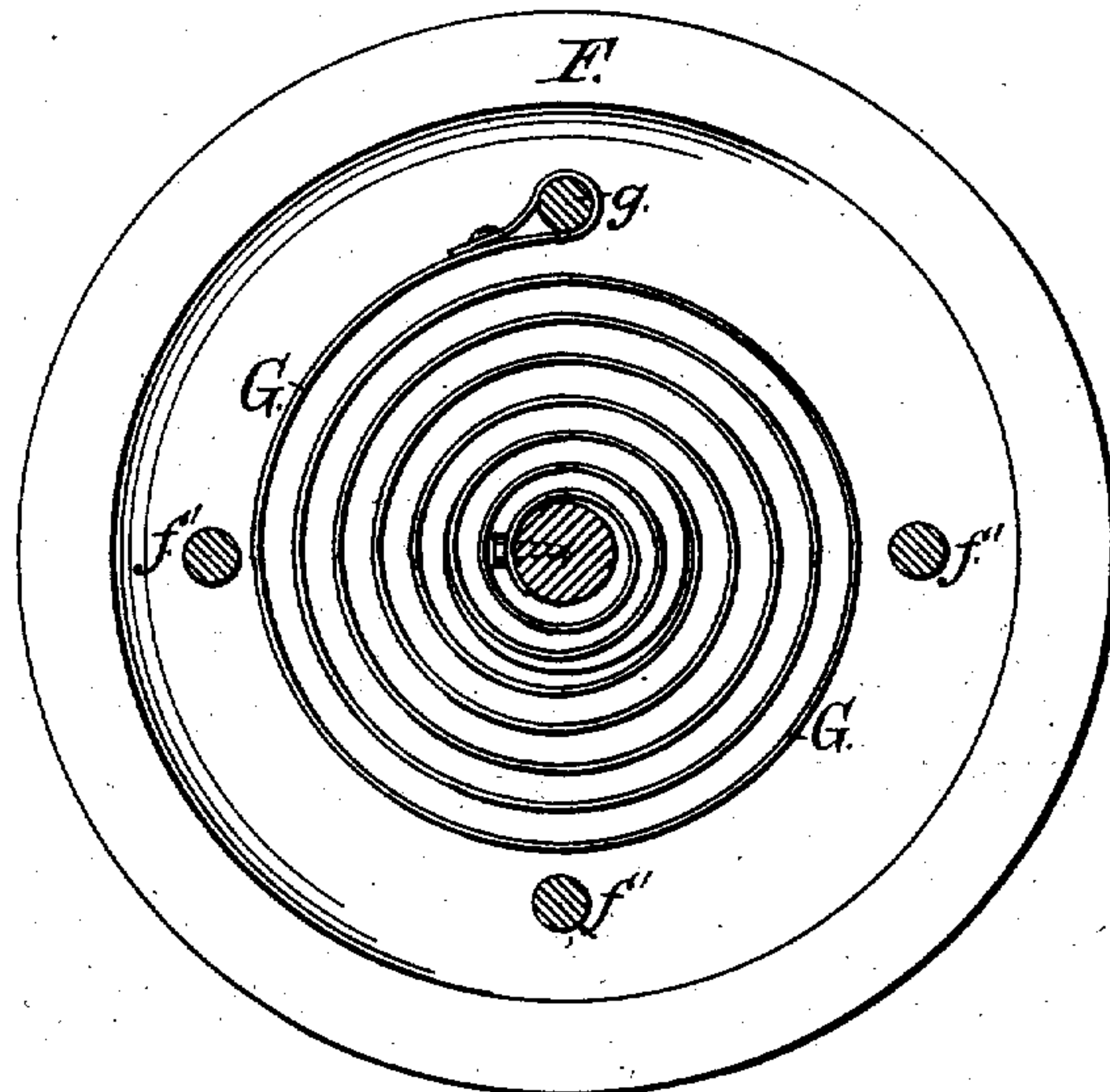


FIG. 5.

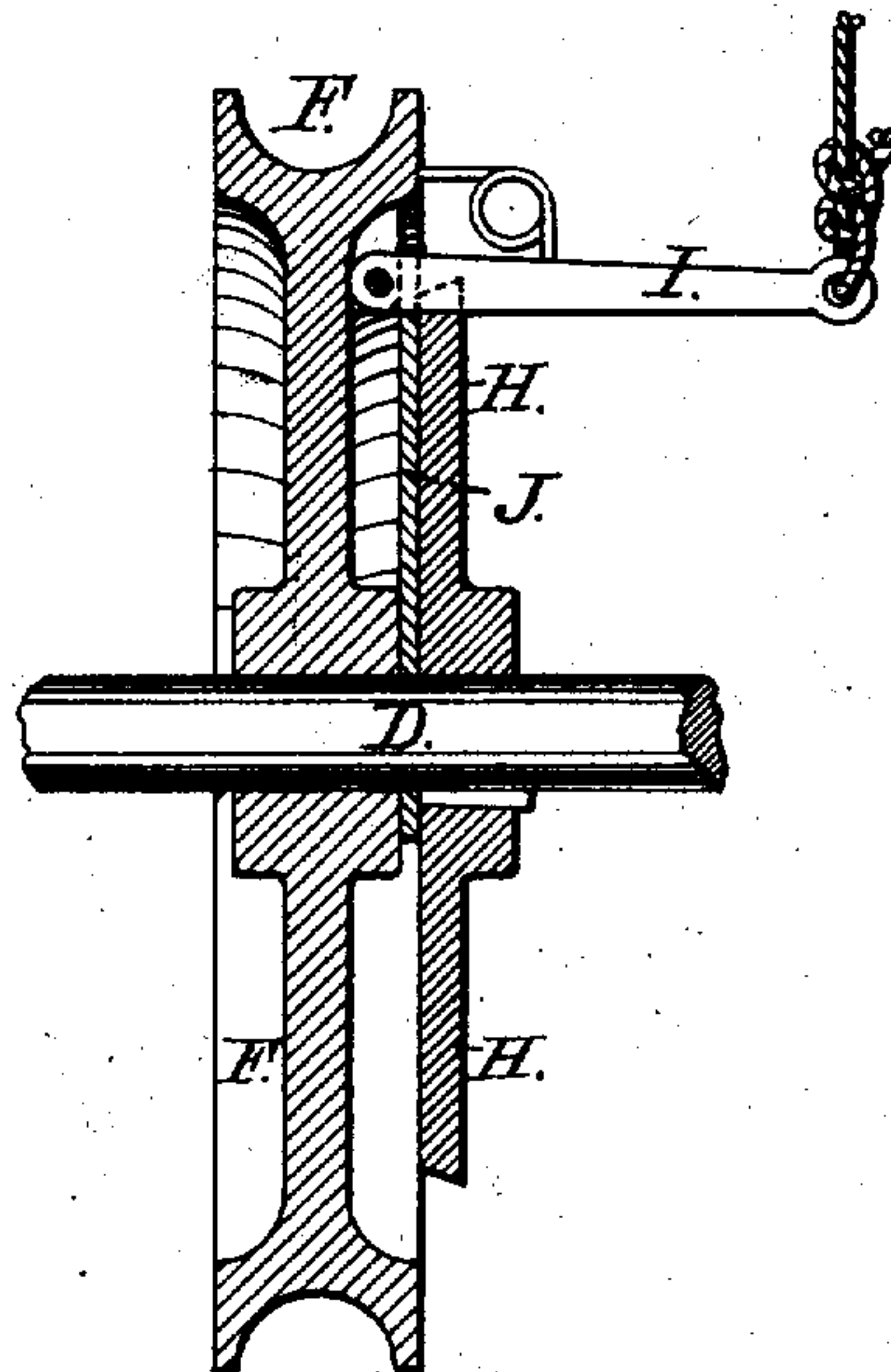


FIG. 6.

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# UNITED STATES PATENT OFFICE.

JOHN M. SEWARD, OF ALBANY, NEW YORK.

## IMPROVEMENT IN DREDGING-MACHINE BUCKETS.

Specification forming part of Letters Patent No. **221,705**, dated November 18, 1879; application filed April 22, 1879.

*To all whom it may concern:*

Be it known that I, JOHN M. SEWARD, of the city and county of Albany, and State of New York, have invented certain new and useful Improvements in Buckets for Dredging-Machines, Coal-Elevators, &c., of which the following is a full and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation, showing the bucket closed, one of the side pieces of the yoke being broken away to show the arrangement of parts beyond it; Fig. 2, the same, showing the bucket opened; Fig. 3, a front elevation of Fig. 1; Fig. 4, an enlarged and detached detail of the guard-piece; Fig. 5, a side elevation of the main sheave and its operating-spring; and Fig. 6, a vertical section of the main sheave through its axial line, showing the relative arrangement of said sheave, disk H, spring-latch I, and guard-piece J.

My invention relates to the class of buckets commonly known as the "clam-shell;" and it consists of the combination and arrangement of parts, substantially as herein described, whereby the bucket is adapted to perform its work by the use of a single hoisting chain or rope.

As shown in the drawings, A is the yoke for carrying the bucket and its operating mechanism. It consists of a cross-head and two pendent side pieces provided with slotted openings *a*, and at its lower end it has a shaft or pin, B, which serves as a pivot for the parts of the bucket.

The two parts of the bucket C are made alike, substantially in the form shown, and are pivoted at their inside upper corners to the yoke by the shaft, so as to form a close joint when shut together, as shown in Fig. 1.

D is a shaft, whose ends enter the slotted openings *a* of the yoke, in which the shaft moves with a combined sliding and revolving motion; E, connecting rods or links. One end of each of said links is pivoted to the outside upper corners of the bucket by the pins *e*, and the other is pivoted on the shaft D.

F is a sheave or wheel placed loosely on the shaft D, but not secured thereto; G, a coiled spring, having its inner end secured to the

shaft D, as shown in Fig. 5, and its outer end to the sheave F by the stud *g*. Said spring is held in place by the disk *f*, secured by the studs *f'* to the sheave F, with which it revolves.

H is a disk secured to the shaft D at the free side of the sheave F. Said disk is provided with a notch, *h*, in its periphery. Into this notch a spring-latch, I, (pivoted to the sheave F, as shown in Fig. 6,) enters, so as to lock the sheave and disk together, so that they will move as one piece.

J is a guard-piece placed between the sheave F and disk H, and pivoted on the shaft D, to move between the studs *h'*, fixed in the disk. Said guard-piece has a projecting lip, *j*, which, when the sheave is revolving in the proper direction, acts as a stop to arrest the spring-latch I, and as a guide to said latch into the notch *h*; but when the sheave is revolved in the contrary direction, the spring-latch strikes the projection *j* and throws the guard-piece over, so that its shoulder *j'* covers the notch *h*, as shown in Figs. 2 and 4, and prevents the spring-latch from entering said notch. By this arrangement the locking together of the sheave F and disk H is prevented, except when all the parts of the mechanism are in their required positions.

K represents sheaves secured to the shaft D and revolving therewith; L, chains secured at one end to the sheaves K, and at their opposite ends to the clips M on the shaft B; N, the hoisting-chain secured to the eye *n* in the sheave F; O, a check-chain secured at one end to the hoisting-chain N, and at the other end to the eye *o* in the sheave F. The positions of the eyes *n* and *o* in the sheave are such that the lower end of the hoisting-chain and the check-chain will form a Y, as shown in the drawings, so that when the eyes are brought to the top part of the sheave the hoisting-chain can exert no power to turn the sheave.

The operation of my improvement is as follows: When the buckets are closed, as when loaded, and as shown in Fig. 1, the chains L are wound up on the sheaves K, the shaft D is at its lowest point of motion in the slots *a*, and the sheave F is locked to the disk H, whereby all the parts are securely held, so



that the loaded bucket may be raised and carried into position for dumping. To dump the load, the spring-latch I is drawn out of the notch in the disk H by means of a cord attached to the outer end of said latch, whereupon the weight of the yoke and bucket forces the yoke down, so as to force apart the two parts of the bucket to discharge the contents therefrom. By the falling motion of the yoke the chains L are unwound from the sheaves K, whereby the shaft D is revolved, thereby winding up the spring G to exert its greatest force and carrying the disk H around, so as to bring the spring-latch I over the notch *h* against the back of the projection *j*, but resting on the shoulder *j'* of the guard-piece J, so that it (the spring-latch) cannot enter the notch. The disposition of the several parts at the termination of the operation of dumping is shown in Fig. 2. While the parts are in the positions described the bucket is lowered for reloading, which operation is effected in the following manner: The parts of the bucket being in their opened position, the whole is lowered by the hoisting-chain N. As soon as the parts of the bucket rest upon any substance that will sustain the weight of the bucket and the parts bearing upon them, the slack of the hoisting-chain (produced by the continued lowering of said chain) relieves the spring G of the strain put upon it by the rotations of the shaft D, and by the reaction of said spring the sheave F is revolved until the spring-latch I engages in the notch of the disk H to lock the sheaves and disk together. By this revolution of the sheave F the hoisting-chain N and check-chain O are wound around its grooved perimeter. Then, on reversing the motion of the hoisting-chain, the chains are unwound from the sheave F. The rotation of said sheave, caused by this action, revolves the shaft D, so as to wind the chains L on the sheaves K, thereby bringing the shaft D down to its lowest position in the yoke A and through the links E, closing the parts of the bucket C into the position shown in Fig. 1. As soon as the closing of the bucket is effected the check-chain O prevents the hoisting-chain N from imparting any further

rotary motion to the sheave F, and equally distributes the strain of the hoisting-chain to the eyes *n* and *o*. Then, by the continued hoisting motion of the chain N, the bucket with its load is raised to the required height.

It will readily be seen that by my improvement the backing-chain commonly used with this style of bucket is entirely dispensed with, and the usual additional machinery for operating such backing-chain is not required.

I claim as my invention—

1. The combination, with the bucket C, sliding shaft D, rods E, sheaves K, and chains L, of the loose sheave F, spring G, disk H, latch I, and chains N and O, as and for the purpose herein specified.

2. The combination, with the sliding shaft D and loose sheave F, of the mechanism described for locking said shaft and sheave together, consisting of the disk H secured to the shaft D, and provided with the notch *h*, and the latch I, pivoted to the sheave F, as herein specified.

3. The combination of the sliding shaft D with the loose sheave F, spring G, and chain N, as and for the purpose herein specified.

4. The combination, with a loose sheave, F, of the hoisting-chain N and check-chain O, as and for the purpose herein specified.

5. The combination, with the disk H, provided with the notch *h*, of the sheave F, latch I, and guard-piece J, as and for the purpose herein specified.

6. The mechanism for opening and closing the bucket by a single chain, as herein described, consisting of a sliding shaft having sheaves secured thereto, and chains connecting said sheaves with a stationary shaft, a loose sheave adapted by the locking mechanism described to unite with the sliding shaft, and rods for connecting said sliding shaft with the parts of the bucket, all essentially as herein specified.

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Witnesses:

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