

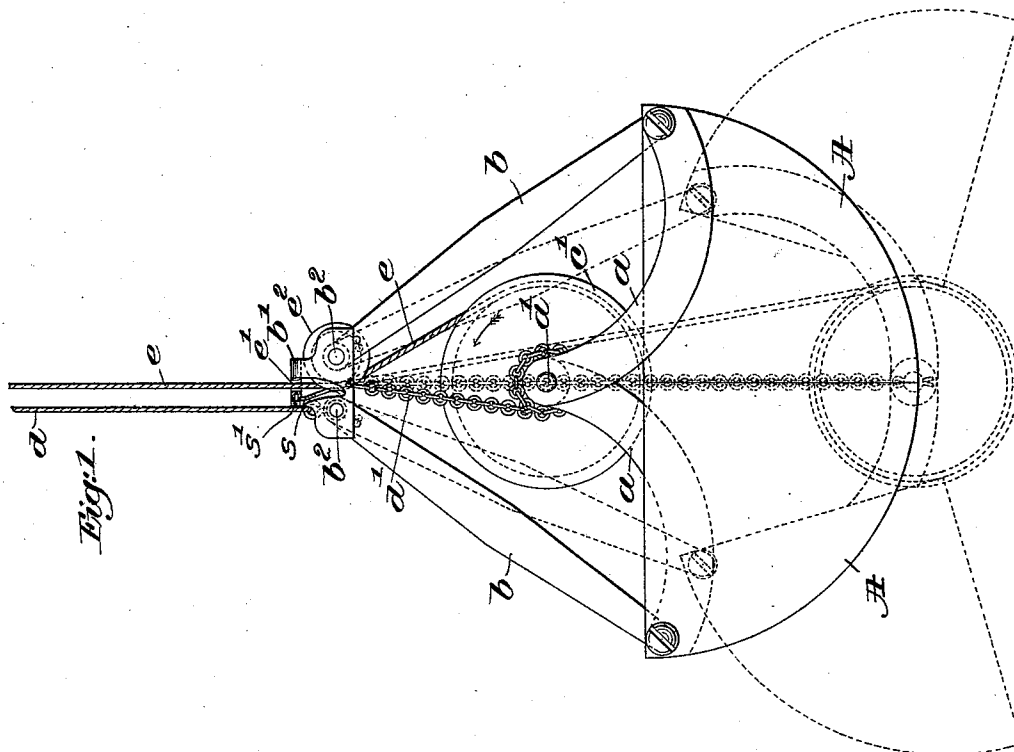
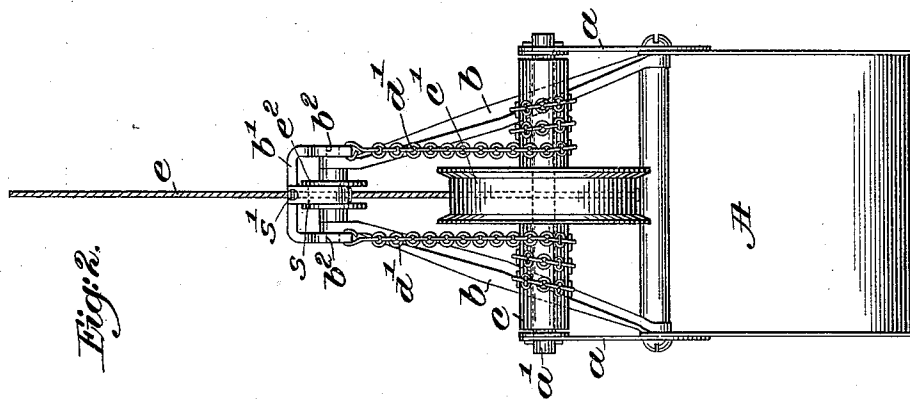
(No Model.)

C. UPTON.

BUCKET OR GRIP FOR DREDGING OR OTHER PURPOSES.

No. 542,905.

Patented July 16, 1895.



Witnesses.

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# UNITED STATES PATENT OFFICE.

COLCORD UPTON, OF SALEM, MASSACHUSETTS.

## BUCKET OR GRIP FOR DREDGING OR OTHER PURPOSES.

SPECIFICATION forming part of Letters Patent No. 542,905, dated July 16, 1895.

Application filed January 25, 1895. Serial No. 536,206. (No model.)

*To all whom it may concern:*

Be it known that I, COLCORD UPTON, of Salem, county of Essex, State of Massachusetts, have invented an Improvement in Buckets or Grips for Dredging or other Purposes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to buckets or grips used for dredging or digging purposes or for removing coal and the like, it having especial reference to that type of bucket known as the "clam-shell" bucket, the same consisting essentially of two like opposing jaws or grips.

15 The object of my invention is to provide suitable means other than a positive lock for preventing the operating rope or cable slipping from the operating-sheave during the movements of the bucket or jaws.

20 The nature and operation of my invention will be more clearly understood after a description of the bucket in which the invention is embodied.

25 In the drawings, Figure 1 is a side elevation of a bucket embodying my invention, and Fig. 2 a left-hand end elevation of the same with one of the link-pivoted sheaves removed to expose the friction device.

30 Referring to the drawings, in the embodiment of my invention selected and there shown A A are the two like opposing grips or jaws shown as provided with arms *a a* hinged upon the hinge-shaft *a'*. At their outer ends the jaws A A are suspended by links *b b* from a suitable head or yoke *b'*, said links being jointed to the yoke, in the present instance at *b<sup>2</sup>*. Upon the hinge-shaft *a'* is, in the present instance, loosely journaled a long sleeve *c*, fast upon and at the center of which is the operating sheave or pulley *c'*, the diameter of the operating sheave or pulley, in the preferred embodiment of my invention, being relatively much greater than that of the sleeve proper *c*.

45 Two chains *d' d'*, attached at one of their ends to the yoke *b'* and at their opposite ends passed one or more times around the sleeve *c* at opposite sides of the sheave *c'*, serve to open and close the jaws upon rotation of the sleeve by its shaft, as will be described.

The lifting-cable *d*, actuated in suitable

manner, is attached to the yoke in convenient manner herein by attachment to one of the pivot-pins *b<sup>2</sup>*.

55 The operating-cable *e* leading from the usual hoisting engine or device is passed through a hole *e'* in the yoke and then led past an idler-pulley *e<sup>2</sup>* journaled upon the other pin *b<sup>2</sup>* and is carried one or more times about and attached to the sheave *c'*. 60

The operation of the bucket is as follows, viz: Assuming the parts to be in the position Fig. 1, when the cable *e'* is slackened or paid out the weight of the bucket-jaws between their points of suspension by the links *b* will cause the same to drop and open, as indicated in dotted lines, the chains *d'* unwinding from the sleeve *c* as the jaws drop, the rotation of the said sleeve to permit the chains to be unwound, as described, also causing the operating-cable *e*, which is also slackened, to be wound upon the sheave *c'*. To fill the bucket and to close its jaws the cable *e* is drawn upon, thereby positively rotating the sheave *e'* in the direction of the arrow thereon, Fig. 1, rotation of the sheave causing corresponding rotation of the sleeve *c*, causing the latter to wind upon itself the chains *d* and thereby raise the hinge of the bucket-jaws and close the latter into their full-line positions. 75 80

The great trouble with buckets of the clam-shell type as heretofore constructed has been that when the operating-cable *e* is slackened or paid out to permit the jaws to open the movement is so rapid or the momentum acquired by the moving cable or rotating sheave is so great that when the open bucket strikes the mud or coal-pile, or reaches the limit of its opening movement, the impact is such that the operating-cable, by its acquired momentum, springs forward or slackens and slips from the sheave *c'*, this happening so often as to render the buckets extremely difficult and undesirable for use. To obviate this difficulty certain builders have increased the size of the sleeve *c* relatively to and in some cases nearly equal to the diameter of the sheave *c'*, or have provided other equivalent means to reduce the number of turns of the said sheave required to open the bucket, and thereby reduce the speed of rotation and the consequent liability of the rope or cable to jump out from its groove in 85 90 95 100

the sheave. I have found in practice, however, that even this change does not prevent accidental displacement of the cable, for the momentum of the heavy cable on the sudden stopping of the opening movement of the bucket-jaws is, even with the changes noted, sufficient to frequently cause displacement of the cable. To prevent this accidental displacement of the cable during or at the end of the operating movement of the bucket, I have provided a retarding device, preferably a friction device, to act either directly or indirectly upon the operating-cable and retard its movements to such an extent as will prevent it jumping beyond the limit of its movement when the bucket has been fully opened.

In the present instance of my invention the retarding device is shown in the form of a spring *s*, secured at *s'* to the yoke *b'*, and at its free end pressing against the operating-cable at a point where it passes over the idler-pulley *c'*. The tension or pressure of this spring upon the operating-cable is insufficient to interfere with the proper handling of the bucket in usual manner; but I have found in practice that in the operation of the bucket when the jaws have been fully opened the slight pressure of the spring upon the cable is entirely sufficient to prevent the momentum of the operating-cable from a further movement to cause slackness of the cable between the friction device and the sheave *c'*, thereby preventing the cable slipping from the said sheave. The use of this or an equivalent retarding device enables me to reduce the diameter of the sleeve *c* or its equivalent, about which the closing-chains are wound, to thereby compel a greater number of turns, said sleeve in winding the chains and closing the bucket thereby giving to the bucket greater power, for the greater the number of turns which can be given the winding sleeve or sheave in closing the greater will be the power of the

bucket. Increasing the number of turns in this winding-sheave would ordinarily increase the liability of the operating-cable being displaced from its operating-sheave; but by the use of my retarding device the moment the sleeve and its sheave stop by reason of the full closing of the bucket-jaws the movement of the operating-cable is also and almost simultaneously stopped, thereby preventing any slackness of the cable about its sheave, and consequently preventing displacement of the cable from its sheave.

While I prefer to embody my invention in the form herein shown as the most simple in its construction, yet my invention is not limited in this respect, my said invention comprehending any retarding device as distinguished from a positive locking device or detent and operating directly or indirectly upon the operating-cable to prevent the momentum acquired during the opening movement of the bucket from slackening and thereby becoming displaced from its operating-sheave.

Having described one embodiment of my invention, and without limiting myself as to details, what I claim, and desire to secure by Letters Patent, is—

A bucket or grip of the class described, containing the following instrumentalities, viz:—a plurality of jaws adapted to be opened and closed, an operating sheave, and an operating cable passed about the same to effect the opening and closing of the jaws, and a retarding device, to operate, substantially as described.

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

COLCORD UPTON.

Witnesses:

FREDERICK L. EMERY,  
M. J. SHERIDAN.