July 18, 1939. W. D. BARTLETT 2,166,854

BUCKET FOR MINIATURE DIGGING AND HOISTING MACHINES

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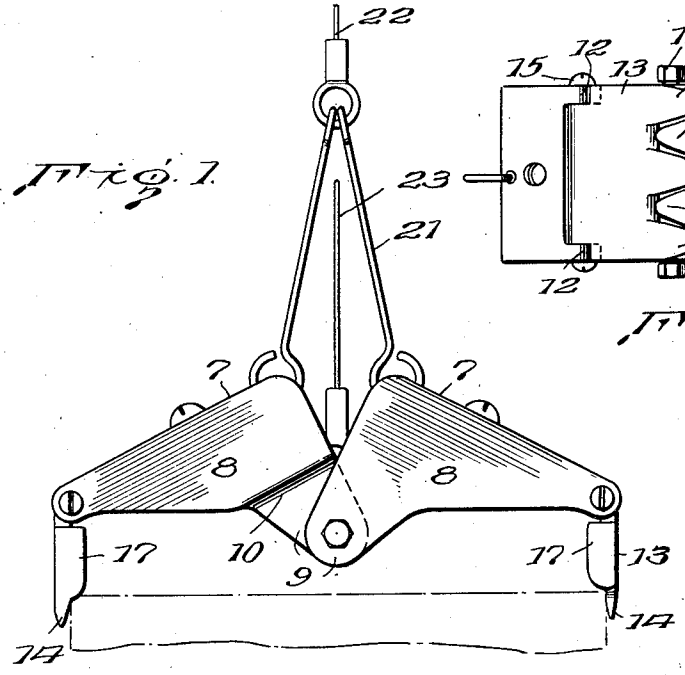


Fig. 1.

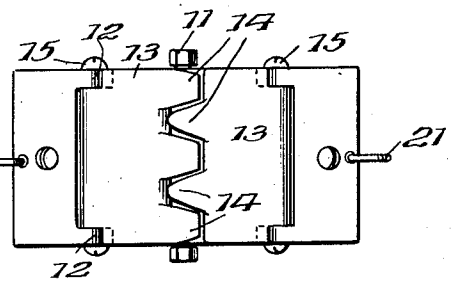


Fig. 4.

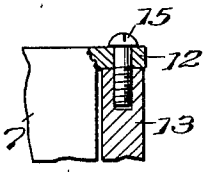


Fig. 5.

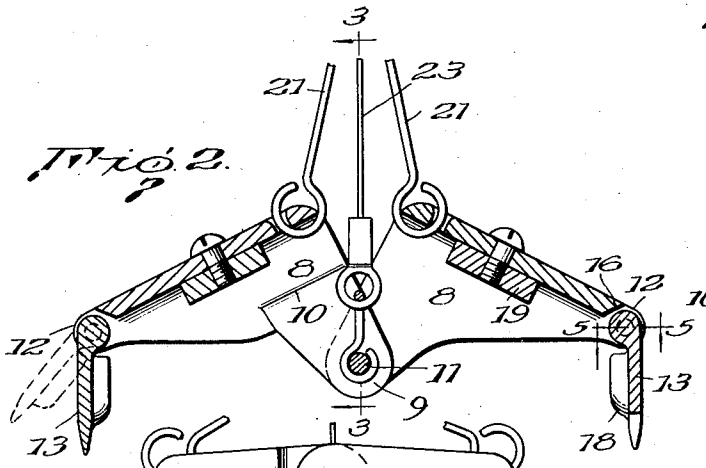


Fig. 2.

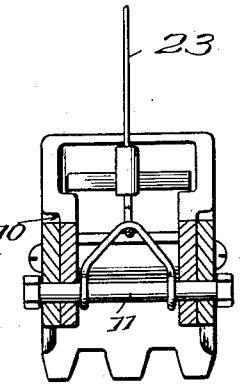


Fig. 3.

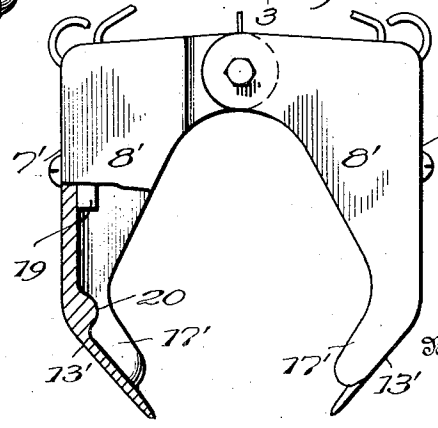


Fig. 6.

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BUCKET FOR MINIATURE DIGGING AND HOISTING MACHINES

William D. Bartlett, Miami, Fla.

Application July 5, 1938, Serial No. 217,618

3 Claims. (Cl. 46—40)

This application is a continuation in part of my application for a coin controlled vending machine, filed June 9, 1934, Serial No. 729,869. An object of the invention is to provide a bucket which is especially adapted for use on miniature digging and hoisting machines and by preference is mechanically operated.

After much experiment with and use of buckets of this type, under different working conditions, especially in ferreting out and hoisting articles, wholly or partly submerged or buried in masses of different densities or forms, I have found it advantageous to provide symmetrical jaws so constructed and connected to afford a maximum leverage, increased gripping action and a minimum resistance when gravitating into a mass or bulk. The bucket of the present invention has been designed to fulfill these requirements and includes freely movable jaws formed to permit uninterrupted movement through a mass and capable of adjustment to increase or diminish the grasping power of the jaws.

This invention also contemplates the use of jaws with adjustable terminal digits to adapt the jaws for use in grasping objects of various sizes and contours, the digits embodying interengaging teeth to permit a better purchase to be obtained on certain types of articles.

Other objects of the invention will be apparent from the following description of the present preferred forms of the invention, wherein

Fig. 1 is a side elevational view of a bucket constructed in accordance with the present invention illustrating its application,

Fig. 2 is a vertical sectional view of the same,

Fig. 3 is a fragmentary sectional view of the bucket taken on the line 3—3 of Fig. 2, looking in the direction of the arrows,

Fig. 4 is a bottom plan view of the bucket showing the jaws in a closed position,

Fig. 5 is a detail fragmentary sectional view taken on the line 5—5 of Fig. 2, looking in the direction of the arrows, and

Fig. 6 is a side elevational view of a modified form of bucket, a part of one of the jaws being broken away to disclose details.

In the preferred form of invention illustrated in Figs. 1 to 5, inclusive, a pair of jaws 7 are provided, each of which has side walls 8. The upper ends of said side walls extend inwardly and terminate in ears 9. The ears on one bucket are offset inwardly, as indicated at 10, and this pair of ears is overlapped by the ears of the other jaw. In this way, the external faces or walls of both jaws are uniplanar. The ears 9 are provided with openings through which a pivotal bolt or pin 11 extends. The jaws are freely movable on the pivotal bolt and by offsetting the ears of one jaw, it is possible to provide jaws having symmetrical outer faces. This also allows for a maximum opening movement of the jaws to permit relatively large articles to be grasped by the latter, in a manner more fully hereinafter set forth.

The lower ends of the jaw sides 8 terminate in perforate extensions 12 between each pair of which a digit 13 is adjustably mounted. Each of the digits 13 consists of a toothed bar, one margin of which is formed to provide teeth 14, the opposite margin being reduced in length so as to interfit between said extensions 12, being secured to the latter by screw bolts 15 or the like. The screw bolts slide through the extensions 12 and are adapted for detachable engagement with screw threaded recesses formed in the inner ends of the digits or toothed bars 13. Each of the digits is susceptible of adjustment at any degree of angularity permitting grasping of articles therebetween upon the relative closing movement of the jaws 7. It will be noted, especially upon reference to Fig. 2 of the drawing, that the body of the wall of the jaw is beveled to an edge 16 and the inner end of each digit 13 is preferably rounded thereby permitting free movement of the digit between the terminals 12. It is also of importance in the present invention that each of the digits 13 be equipped with flanges or wings 17 on the opposite ends thereof, which wings terminate at the base of the teeth 14 and have the lower and outer terminals thereof rounded, the inner faces of the rounded terminals being beveled and reduced, as indicated at 18. By this construction resistance is reduced to a minimum when the digits gravitate through a bulk or mass. It will also be noted that the teeth 14 are tapered and rounded for the same purpose. Additionally, by this construction the interception and hoisting of articles deposited in the bulk or mass is rendered more difficult. Consequently greater skill is required in the positioning of the buckets before the digits of the latter are permitted to gravitate into an article carrying bulk or mass.

To increase the gravitational action of the free ends of the bucket and to correspondingly increase the grasping potential of the latter, I equip each bucket with suitable means 19 which is detachably mounted in the bucket. The means 19 may consist of a block of metal or the like, the size and weight of which may be increased or

diminished depending upon the grasping action desired.

In Fig. 6 a modified form of invention is shown consisting of bucket 7' which are similar in construction to the bucket 7, except that the digits, indicated at 13', are formed as an integral part of the jaws, rather than separate. In the present form of invention, the lower free ends of the jaws 7' are extended to provide the digits or toothed bars 13' and correspondingly the sides 8' of the jaws are extended to provide the wings or flanges 17'. At the jointure of the part of each jaw with its digit, a reinforcing rib 20 is provided. The jaws of the present form of invention operate the same as the jaws 7. The digits or toothed bars of the jaws are rounded or stream-lined to cut down frictional resistance when the digits or toothed bars are entering and passing through a bulk or mass.

In use of both forms of invention, I employ links 21, one of which is engaged with the free end of each jaw. The links are adapted for connection with a suitable hoisting means, such as a cable 22. When pressure is exerted on the cable 22, the jaws will be opened into the position shown in Fig. 1. Closing of the jaws is effected by releasing pressure on the cable 22 at the same time holding the pivotal bolt 11 in a fixed plane. This may be accomplished by suitable means 23 which is connected with the bolt 11, in any suitable manner, such as illustrated in Figs. 2 and 3.

It is of course to be understood that in operation of devices of this character, the jaws operate through a mass or bulk by gravitation and without the exertion of pressure thereon. For instance, the device is susceptible of use on a toy truck for the ferreting out and hoisting of articles mounted in sand carried by the truck. Under these conditions, the bucket is positioned to a point over the article and then permitted to pass by gravitation around the latter to grasp and elevate the article. I have found that in use of the present invention by the exercise of proper skill it is possible to grasp an article between the jaws when the latter are opened to approximately their maximum extent, this being especially true of a bucket including adjustable digits, where the digit is positioned at approximately right angles to the jaw body, as shown in Fig. 1.

It is also to be understood that various changes may be made in the details of construction, proportion and arrangement of parts within the scope of the claims hereto appended.

What is claimed is:

1. A bucket for digging and hoisting machines including complemental parts pivotally connected at one end, an article engaging digit adjustably mounted on the opposite end of each part, said digits being relatively movable when pressure is exerted on said parts at a point remote from the digits.

2. A bucket for digging and hoisting machines including pivotally connected jaws, a toothed bar pivotally mounted on one end of each jaw, said bars being adjustable to vary the angularity of the teeth with respect to the jaws.

3. A bucket for digging and hoisting machines including pivotally connected jaws, a toothed bar pivotally mounted on one end of each jaw, said bars being adjustable to vary the angularity of the teeth with respect to the jaws, and a weight mounted in each jaw, the weights being adjustable to vary the grip of the jaws.

WILLIAM D. BARTLETT.