

Jan. 22, 1924.

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P. M. ARMSTRONG

BUCKET

Filed Dec. 3, 1920

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Fig. 2.

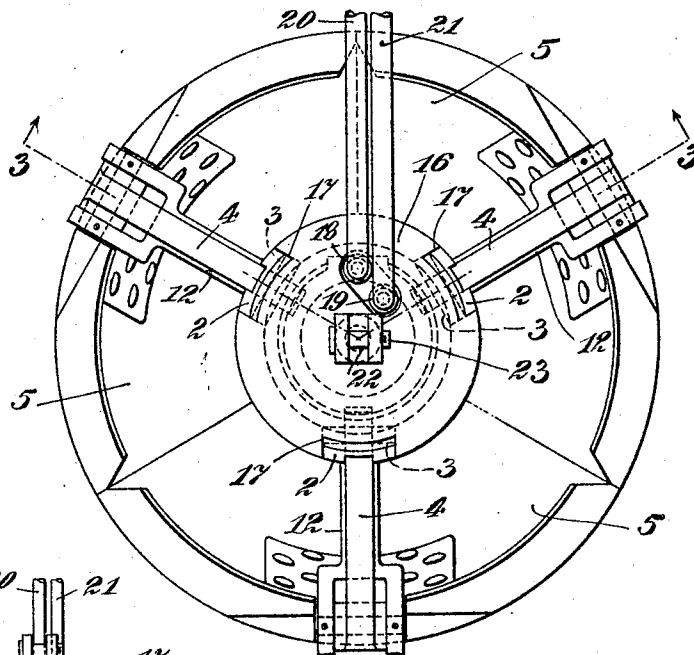
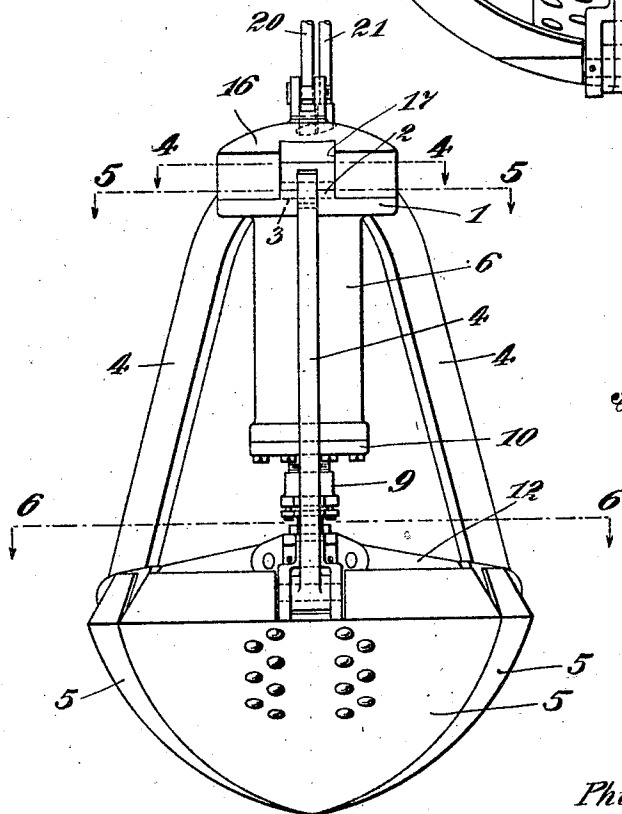


Fig. 1.



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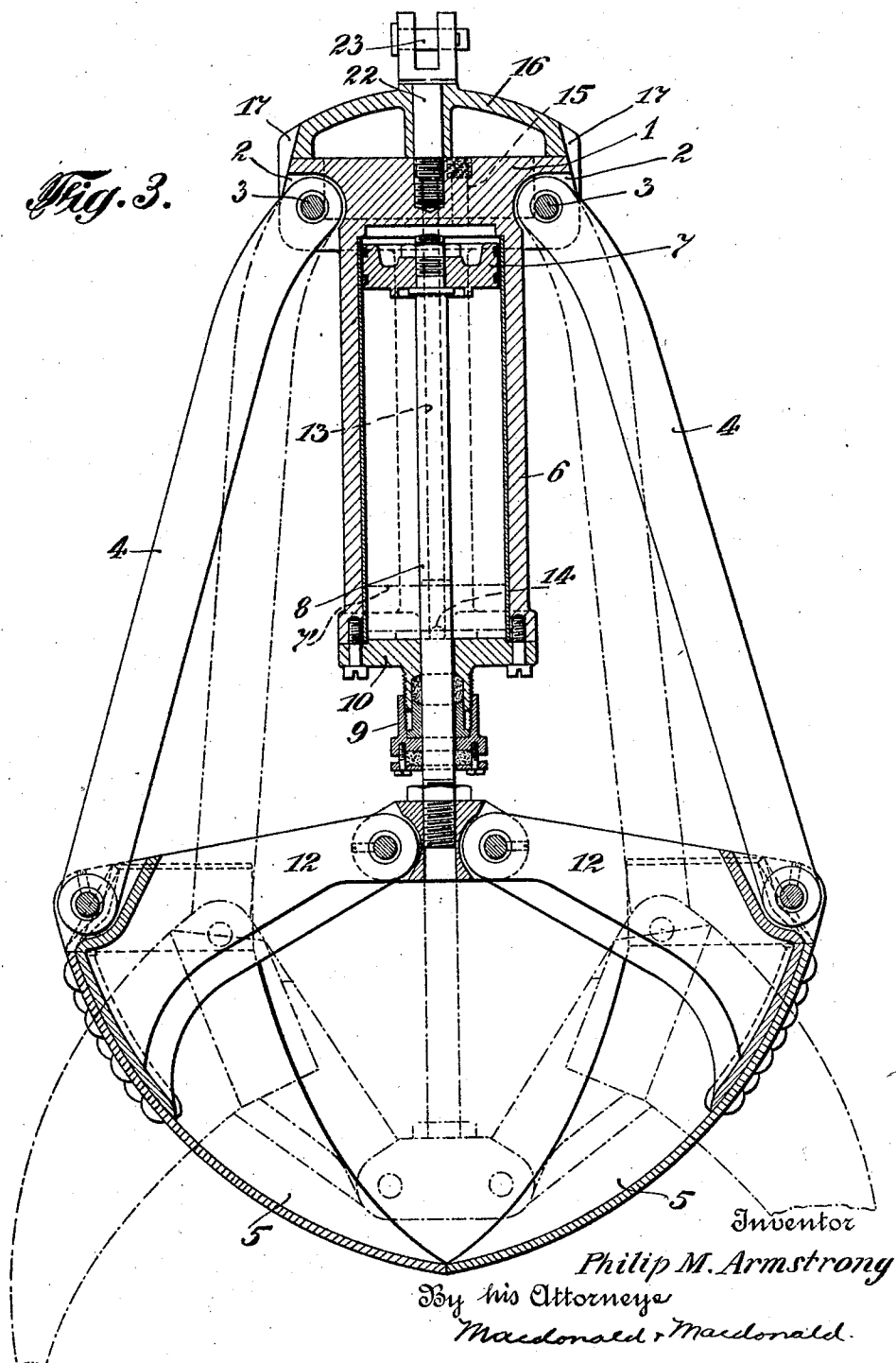
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Fig. 3.



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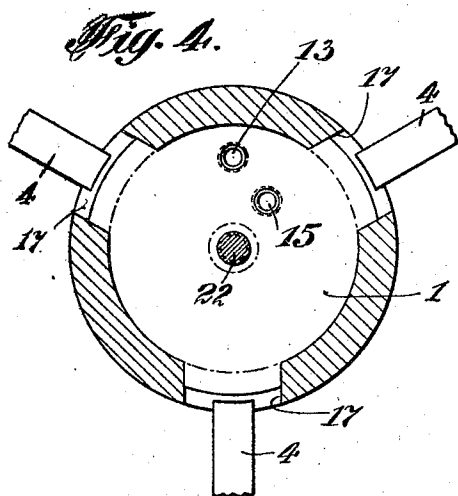
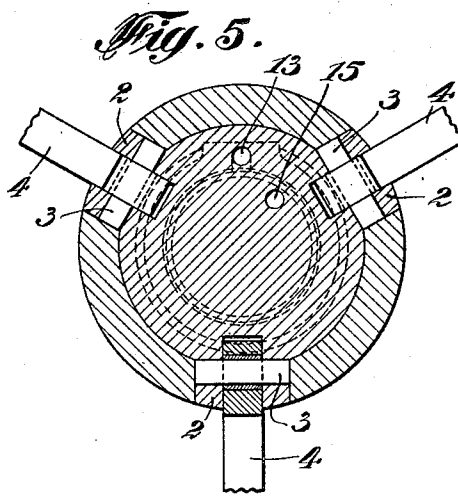
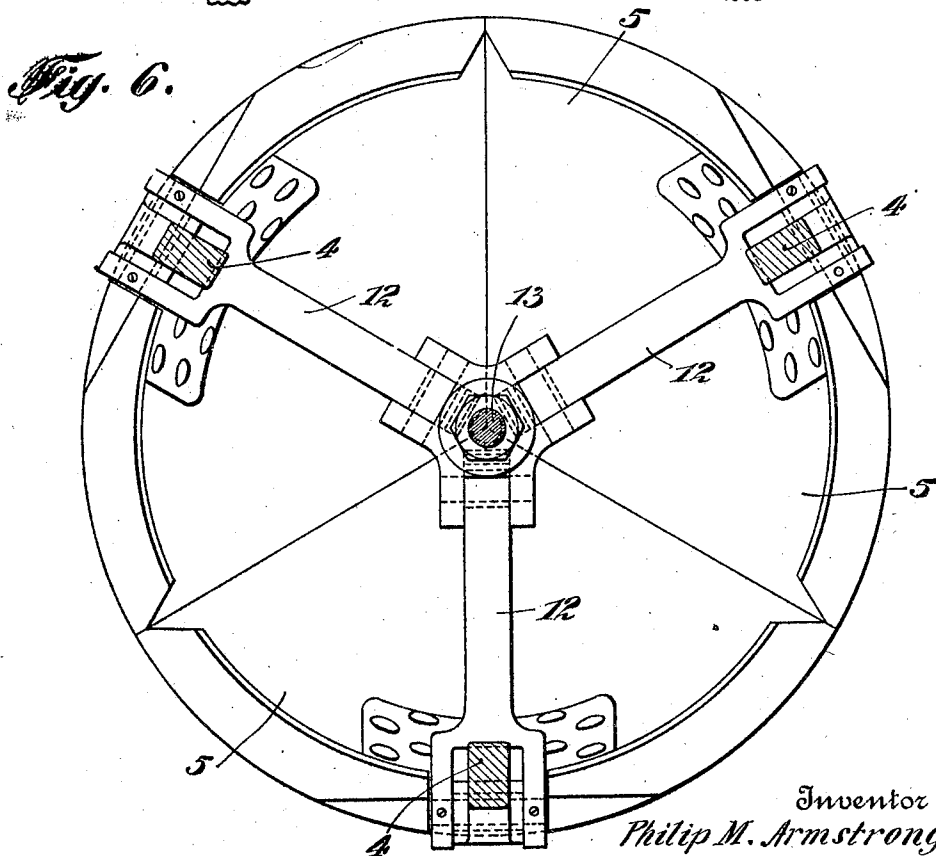
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

PHILIP M. ARMSTRONG, OF HACKENSACK, NEW JERSEY, ASSIGNOR TO THE HAYWARD COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BUCKET.

Application filed December 3, 1920. Serial No. 428,109.

To all whom it may concern:

Be it known that I, PHILIP M. ARMSTRONG, a citizen of the United States, residing at Hackensack, in the county of Bergen, State of New Jersey, have invented certain new and useful Improvements in Buckets, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to excavating buckets, and while I have shown, and will more particularly describe it, as applied to an orange-peel bucket, it is to be understood that it may be applied to other types of buckets as well as the orange-peel.

Heretofore these buckets have commonly been operated by two lines, one line being used for opening and closing in conjunction with a power-wheel, the other line being used for holding the bucket while discharging its load.

The object of this invention is to eliminate the opening and closing line, the power-wheel and the accompanying sheave, as well as one drum of the hoisting-engine, by substituting therefor and attaching to the bucket a cylinder having a piston operated by a suitable fluid passing therethrough to open and close the bucket-sections. More particularly, my invention consists in making this substitution in such a manner as to simplify the parts and their operation, to strengthen the bucket as a whole, and to reduce the cost of construction and maintainance to a minimum.

These objects will be readily apparent from the accompanying description, taken in connection with the accompanying drawings, in which—

Fig. 1 is a front elevation of my invention; Fig. 2 is a top view of the same; Fig. 3 is a central vertical section taken on the line 3—3 of Fig. 2; Fig. 4 is a cross-section taken on the line 4—4 of Fig. 1; Fig. 5 is a cross-section on the line 5—5 of Fig. 1; Fig. 6 is a cross-sectional view taken on the line 6—6 of Fig. 1.

Referring to the drawings in detail, 1 represents the bucket-head having raised ears 2 spaced apart and, in the present instance, formed integral with the head-casting. To the ears 2 are pivotally connected, by means of pins 3, the connecting-rods 4, the latter

having, also, pivotal connection with the digging-blades 5.

The elements above referred to are all old and well known. The novelty of my invention resides in the selection of those elements for combining with them a fluid-operating cylinder and in the manner of combining them.

In the drawings the cylinder is indicated at 6. It will be noted that the upper head of the cylinder is common with the head of the bucket 1, and in the drawings is represented as integral with the cylinder-barrel. Within the cylinder is fitted a fluid-tight piston 7, connected to which is a piston-rod 8 extending through a stuffing-box 9 in the lower head 10 to a pivotal connection with the arms 12 of the digging-blades 5.

The operating fluid, under pressure, is conveyed from the source of supply into the bottom of the cylinder by way of the longitudinally extending passage or port 13 through the head 1 and the side of the cylinder and opening into the interior of the latter as at 14. The cylinder-head is also bored as at 15 in order to provide a port for the entrance of the fluid above the piston.

In order to further strengthen the upper centre of the bucket, to protect the raised ears 2 from obstructions, and to keep the pins 3 in place without the use of cotter-pins, there is provided a cap 16, having on its under side recesses 17 of such dimensions as to snugly cover, when fitted to the head 1, the raised ears 2, although permitting free movement of the rods 4. Ow- ing to the oval shape of the cap any obstructions encountered will be more easily passed by the bucket.

The cap 16 is also provided with suitable openings, as at 18, 19, for passing therethrough the flexible pipes 20, 21, to connect with the longitudinal passage 13 in the side of the cylinder and the opening 15 in the head, respectively. These flexible pipes 20, 21 carry the operating fluid from the source of supply, not herein shown, and may be controlled by the use of a three-way valve in the well-known manner.

The cap 16 is securely held in position on the head by the bifurcated pin 22 threaded at its lower end and seated in an interiorly threaded hole in the head 1. The

bifurcated portion of the pin 22 is provided with a transversely extending pin 23 which is adapted to be engaged by the hook of the hoisting device, not herein shown.

5. It is obvious that the cylinder and bucket are so combined that, if the piston-rod be given the proper diameter and strength, it will make the bucket hang central under all working conditions without employing the usual guides, thereby contributing to compactness.

The operation is as follows:

- Assuming that the bucket is on the material to be excavated, and in the open position shown in dot-and-dash lines in Fig. 3, the operating-fluid is forced under the piston 7' (shown in dotted lines in Fig. 3), through the passage 13, thereby raising the piston to the position shown in full lines, the fluid above being allowed to escape, at the same time, through opening 15. To open the bucket, the operating-fluid is allowed to escape through the passage 13 and forced into the upper end of the cylinder through the opening 15. These operations will be effected by manipulating suitable cocks in the lines of flexible pipe, not shown in these drawings.

- Having thus described my invention, what I claim is:

1. The combination with a dredging bucket of an operating cylinder whose up-

per head is common with the head of the bucket, a series of raised ears on said head, connecting-rods pivotally connected to the ears, and a removable cap fitted to the head having recesses adapted to receive the ears on the head.

2. The combination with a dredging bucket having a head casting, a series of ears on said head-casting, and a plurality of digging-blades, of an operating cylinder whose upper head is common with the head-casting of the bucket, a piston in said cylinder, a piston rod connected to said piston and having pivotal connection with the digging-blades, connecting rods pivotally connected to the digging-blades and to the head-casting of the bucket, and a removable cap fitted to the head having recesses adapted to receive the ears on the head, for protecting the raised ears from obstructions and to hold the pins connecting the connecting rods with the head.

3. The combination with a dredging bucket of an operating cylinder, whose upper head is common with the head of the bucket, a series of raised ears on said head, connecting rods pivotally connected to the ears, and a removable cap having a convex top fitted to the head and having recesses adapted to receive the ears on the head.

PHILIP M. ARMSTRONG.