A. BURROWS.

GRAPPLING BUCKET FOR CLEANING WELLS.

APPLICATION FILED APR. 20, 1906.

904,680.

Patented Nov. 24, 1908.

Fig. 1.

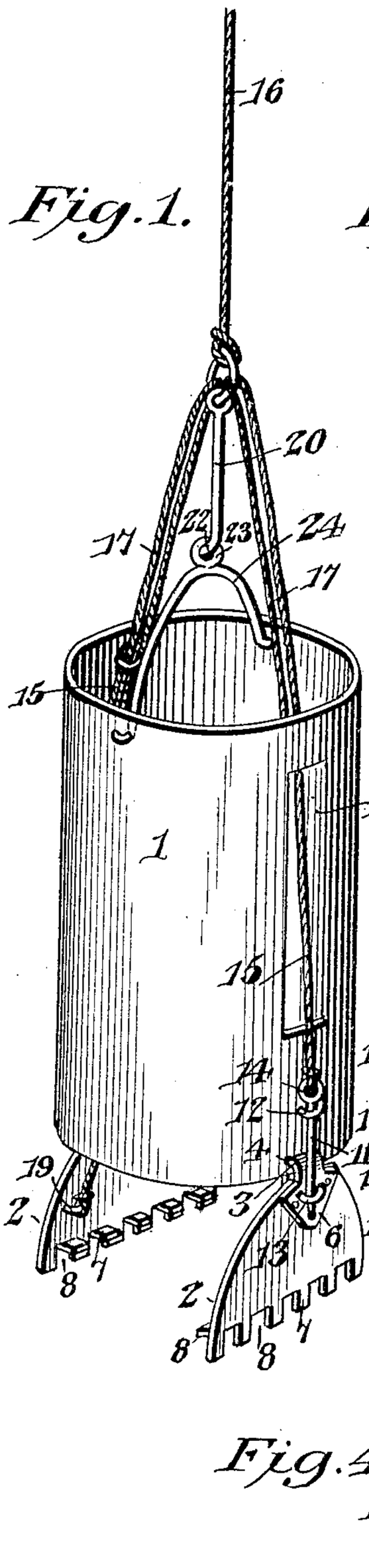

Fig. 2.

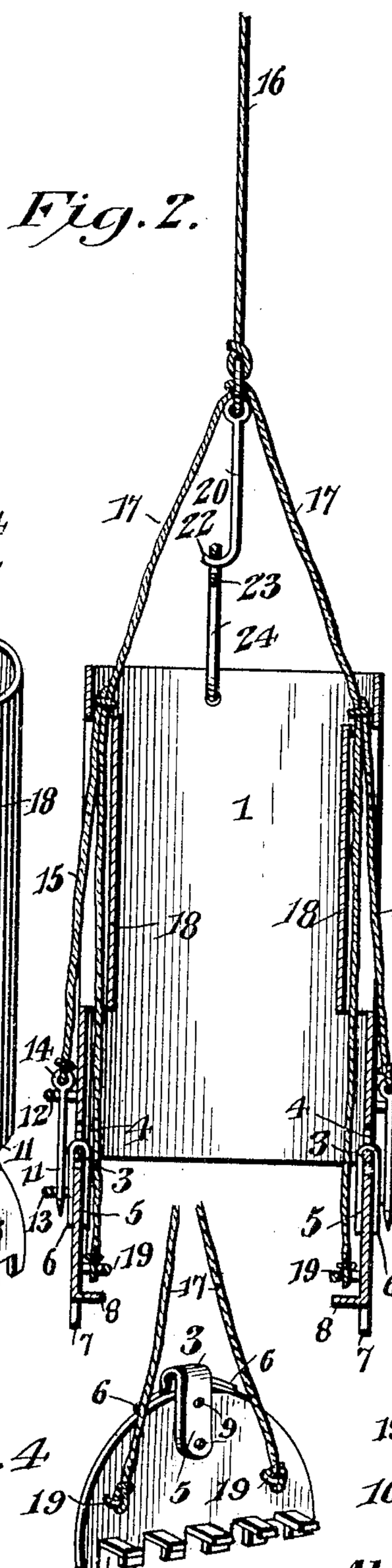

Fig. 3.

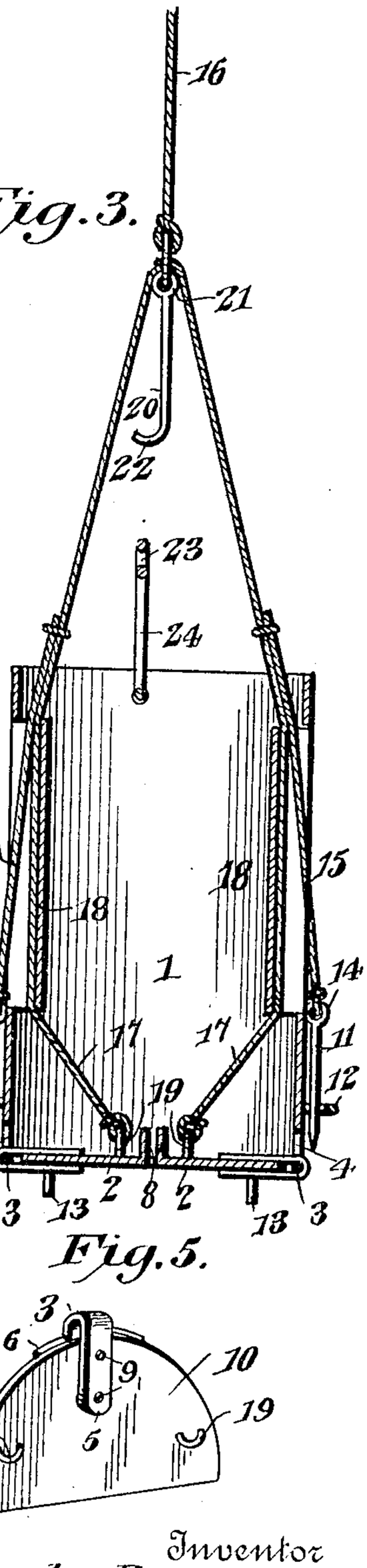

Fig. 5.

Fig. 4.

Witnesses

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GRAPPLING-BUCKET FOR CLEANING WELLS.

No. 904,680. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed April 20, 1906. Serial No. 312,914.

To all whom it may concern:

Be it known that I, ALEXANDER BURROWS, a citizen of the United States, residing at Woodward, in the county of Woodward, Oklahoma, have invented a new and useful Grappling-Bucket for Cleaning Wells, of which the following is a specification.

The invention relates to improvements for devices for cleaning wells.

The object of the present invention is an improved construction of devices for cleaning wells, and to provide a simple, inexpensive and efficient grappling bucket designed for cleaning drilled wells, and adapted for removing foreign matter, such as dead animals, pieces of iron and other objects from the bottom of a well.

A further object of the invention is to provide a device of this character, adapted also for removing sand and mud from the bottom of a well.

With these and other objects in view, the invention consists in the construction and novel combination of parts, hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—Figure 1 is a perspective view of a grappling bucket, constructed in accordance with this invention, the grappling sections of the bottom being locked in their open position. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a similar view, the grappling sections being closed. Fig. 4 is a detail perspective view of one of the grappling sections. Fig. 5 is a detail perspective view showing a section having a smooth engaging edge.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

1 designates a cylindrical body, designed to be constructed of galvanized iron, or other suitable material, and forming the body of the bucket. The grappling bucket is provided at the bottom with hinged grappling sections 2, connected at their outer edges with the lower end of the body at diametrically opposite points by hinge elements 3. The sections 2 are substantially semi-circular, and when closed form a bottom for the bucket, as clearly shown in Fig. 3 of the drawing. Each hinge element is substantially U-shaped and is linked into a slot or opening 4. The inner side 5 of the hinge element is of uniform width, and is of a size to pass readily through the slot 4. The outer side 6 of the hinge element is enlarged and is tapered, as shown, to provide a reinforcing plate or portion. The grappling plates or members 2 are provided at their inner engaging edges with teeth 7 and 8, and they are detachably secured to the hinge elements by means of suitable fastening devices 9 to enable a section 10, having a smooth edge, to be substituted for the toothed section, when it is desired to remove sand or mud from the bottom of a well.

The teeth 7 of each grappling section are arranged in the same plane as the section or member, and they interfit with the corresponding teeth 7 of the other section or member, when the two sections are closed, thereby providing a closed bottom for the bucket. The other set of teeth 8 are arranged at right angles to the section or member and extend vertically from the upper face thereof, when the bottom is closed, as clearly illustrated in Fig. 3 of the drawing. These two sets of teeth are preferably formed by splitting the inner engaging edges of the sections, and bending the alternate split or partially severed portions outwardly or upwardly to form the teeth 8. The intervening portions constitute the teeth 7. The teeth 7 and 8 enable the sections to positively engage an object lying at the bottom of a well, so that foreign matter may be easily and quickly removed. By the teeth 7 and 8 being arranged at an angle to each other, they are adapted to successively engage each other and should one set of teeth fail to hold the object, the second set will firmly clamp the same. These teeth provide for a double gripping action, when it is necessary to exert the same to remove an object from the bottom of a well. The grappling section 10 having a smooth sharpened inner edge is adapted to be embedded in the sand or mud for removing a portion of the same.

The grappling sections, when open, hang in a perpendicular position, and they are locked in such position by means of pins 11, which engage eyes 12 and 13 of the body of the bucket and the hinge elements of the

grappling sections. The eyes are arranged in alinement when the grappling sections are open, as clearly illustrated in Figs. 1 and 2 of the drawing. The upper ends of the pins are provided with eyes 14, forming heads and connected with supplemental branches 15 of a flexible hoisting connection 16, which is also provided with main branches 17. The hoisting connection preferably consists of a rope, but it may be constructed of any other suitable material. The main branches pass through longitudinal guides 18 of the body of the bucket and are disposed in pairs, being secured at their lower ends to suitable eyes 19 of the grappling sections. The supplemental branches are secured at their upper ends to main branches of the hoisting connection.

The longitudinal guides 18 are formed by splitting the body 1 horizontally at the upper and lower portions thereof, and then bending or grooving the partially severed metal inwardly from the exterior, as shown. The main branches of the hoisting connection extend through the upper and lower openings, formed by splitting the metal for the guides, and the said branches 17 lie in the grooves of the guides and are spaced apart by the same. The supplemental branches 15 extend through the upper openings of the guides, and their lower portions are arranged exteriorly of the bucket.

The flexible hoisting connection is provided at its juncture with the main branches with a depending hook 20, provided at the upper end of its shank with an eye 21 and having a short curved bill 22, projecting from the lower end of the shank and adapted to engage an eye 23 of an eccentrically arranged bail 24. The bail 24, which is secured at its ends to the body 1 at opposite sides to the upper edge thereof, is arranged a short distance to one side of the center in order to facilitate disengagement of the bill 22 from the hook of the eye 23. The eye of the hook is secured to the hoisting connection, and the bill is engaged with the bail of the bucket for the purpose of producing sufficient slack in the branches to permit the grappling sections to swing downwardly to their open position, and to enable the pins to be arranged in the eyes 12 and 13. The grappling device is lowered into a well in this condition, and when it strikes the bottom or some object lying upon the bottom of the well, the hook is disengaged from the bail by slacking the hoisting connection and then drawing the same upward quickly. The upward movement of the hoisting connection releases and closes the grappling sections on the object, which is firmly gripped by the teeth and which is adapted to be readily removed from the well. When the smooth sections are substituted for the toothed grappling sections, they are locked in an open position to enable them to be readily embedded in the sand or mud at the bottom of a well. The smooth sections are closed in the same manner as the grappling sections, and they are adapted to remove a portion of the sand or mud from the bottom of a well, as will be readily understood.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A device of the class described comprising a bucket provided with bottom sections hinged at their outer edges to the bucket at diametrically opposite points, and arranged to swing inwardly and upwardly to form a bottom for the bucket, a flexible hoisting connection provided with branches connected with the sections, and means carried by the flexible connection and by the body and constituting a detachable connection between the said parts for relieving the branches of the weight of the bucket to maintain the sections in their open position.

2. A device of the class described comprising a bucket provided with bottom sections hinged at their outer edges to the bucket at opposite sides, and arranged to swing upwardly and inwardly to form a bottom for the bucket and to engage the object, locking mechanism for holding the sections in their open position, a hoisting connection provided with branches connected with the bottom sections and with the locking mechanism, and means carried by the connection for holding the branches in a slack condition while the bucket is being lowered into a well.

3. A device of the class described comprising a bucket having hinged bottom sections, locking mechanism for holding the bottom sections in their open position, a flexible hoisting connection having branches connected with the sections and with the locking mechanism, a hook carried by the hoisting connection, and means mounted on the bucket for engagement with the hook, whereby the branches are maintained in a slack condition when the bucket is being lowered into a well.

4. A device of the class described comprising a bucket having hinged grappling sections, each provided with two sets of teeth disposed at an angle to each other and arranged to successively engage an object, and hoisting mechanism provided with means for operating the said sections.

5. A device of the class described comprising a body, provided with longitudinal guides formed by splitting the body at the ends of the guides and grooving or bending the partially severed portions inwardly, bottom sections hinged to the body, and a hoisting connection having branches passing through the guides and connected with the sections.

6. A device of the class described provided

with hinged grappling sections or members, each having a plurality of separate sets of teeth arranged at an angle, one set being arranged horizontally and the other vertically when the sections are closed, and means for operating the sections or members.

7. A device of the class described provided with hinged grappling sections or members having two sets of teeth arranged at an angle to each other, one of the sets of teeth of each section or member being located in the same plane as such section or member and interfitting with the corresponding teeth of the other section or member when the sections or members are closed, and means for operating the sections or members.

8. A device of the class described provided with hinged grappling sections or members, each provided with two sets of teeth arranged at an angle to each other and formed by splitting the sections or members at intervals and bending the alternate split portions outwardly or upwardly, one of the sets of teeth of each section or member extending vertically from the same when such section or member is in a horizontal position, and means for operating the grappling sections or members.

9. A device of the class described provided with hinged grappling sections or members, each provided with two sets of teeth arranged at an angle to each other, one of the sets of teeth of each section or member extending vertically from the same when such section or member is in a horizontal position, and the other set of teeth being arranged in the same plane as the section or member and interfitting with the corresponding teeth of the other section or member when the sections or members are closed, and means for operating the grappling sections or members.

10. A device of the class described comprising a bucket provided with bottom sections hinged at their outer edges to the bucket at diametrically opposite points, and arranged to swing inwardly and upwardly to form a bottom for the bucket, a hoisting connection provided with branches connected with the sections, and means carried by the connection and by the body and constituting a detachable connection between the said parts for relieving the branches of the weight of the bucket to maintain the sections in their open position.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ALEXANDER BURROWS.

Witnesses:

J. EVERETT SMITH,

H. L. HOAG.