W. RAWLEY & W. M. VENABLE.

CLAM SHELL BUCKET.

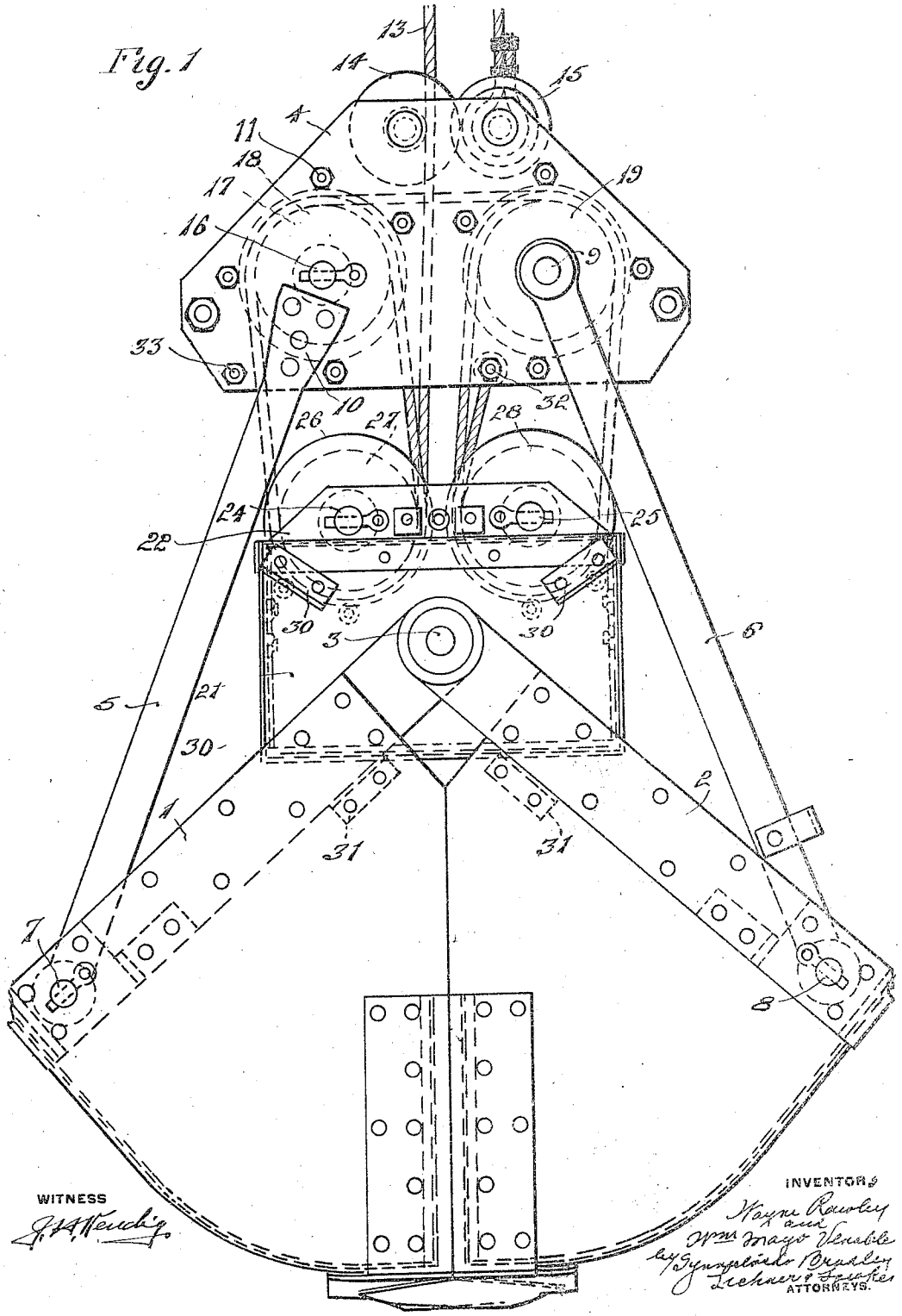
APPLICATION FILED OCT. 3, 1917.

1,259,129.

Patented Mar. 12, 1918.

3 SHEETS—SHEET 1.

Fig. 1



WITNESS

INVENTORS

Wayne Rawley

and

Wm Mayo Venable

by Symmes Dodd Rawley

Lechner & Speaker

ATTORNEYS.

W. RAWLEY & W. M. VENABLE.

CLAM SHELL BUCKET.

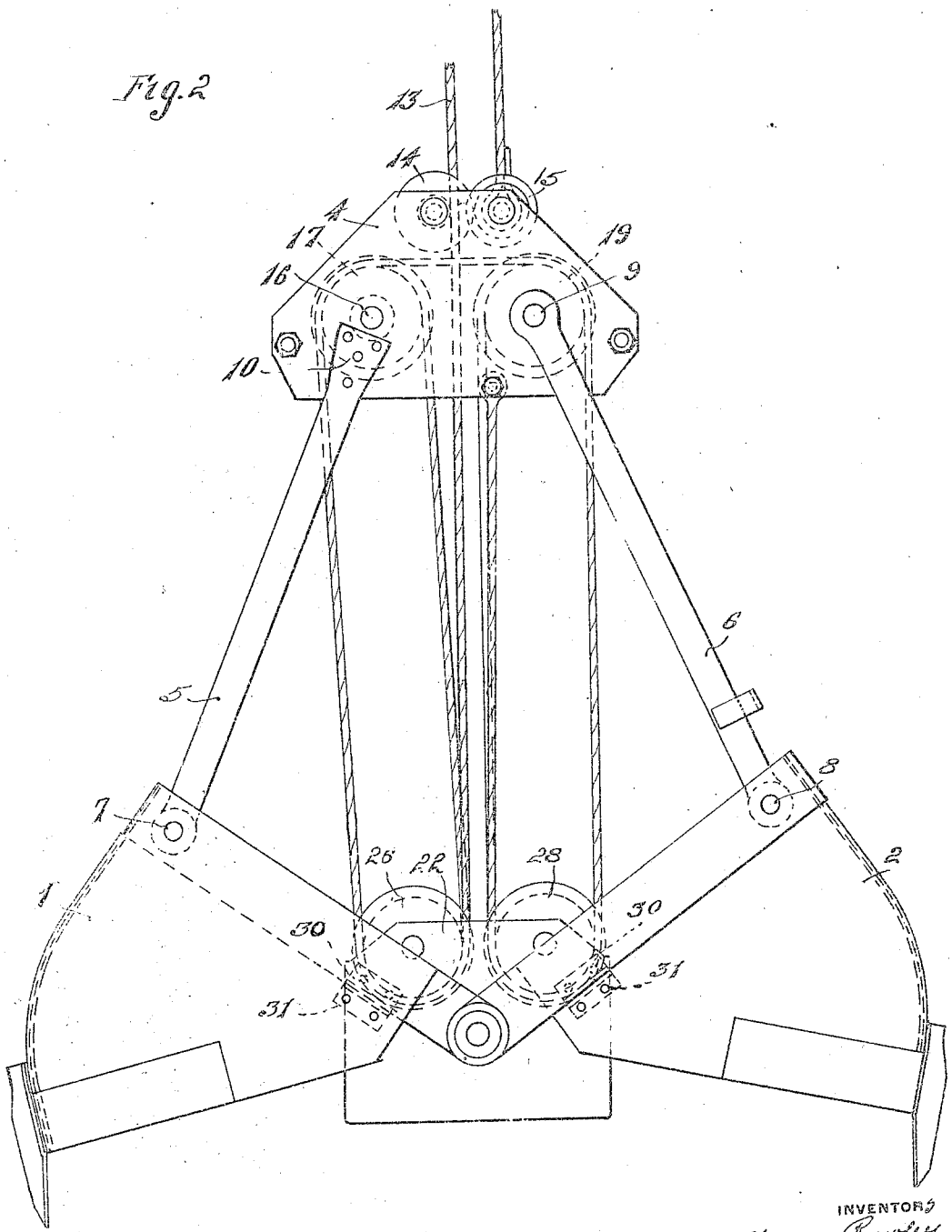
APPLICATION FILED OCT. 3, 1917.

Patented Mar. 12, 1918.

1,259,129.

3 SHEETS—SHEET 2.

Fig. 2



WITNESS

INVENTORS

Wayne Rawley and Wm Mayo Venable

by Symmes Oldo Bradley & Lichau Worster

ATTORNEYS.

W. RAWLEY & W. M. VENABLE.

CLAM SHELL BUCKET.

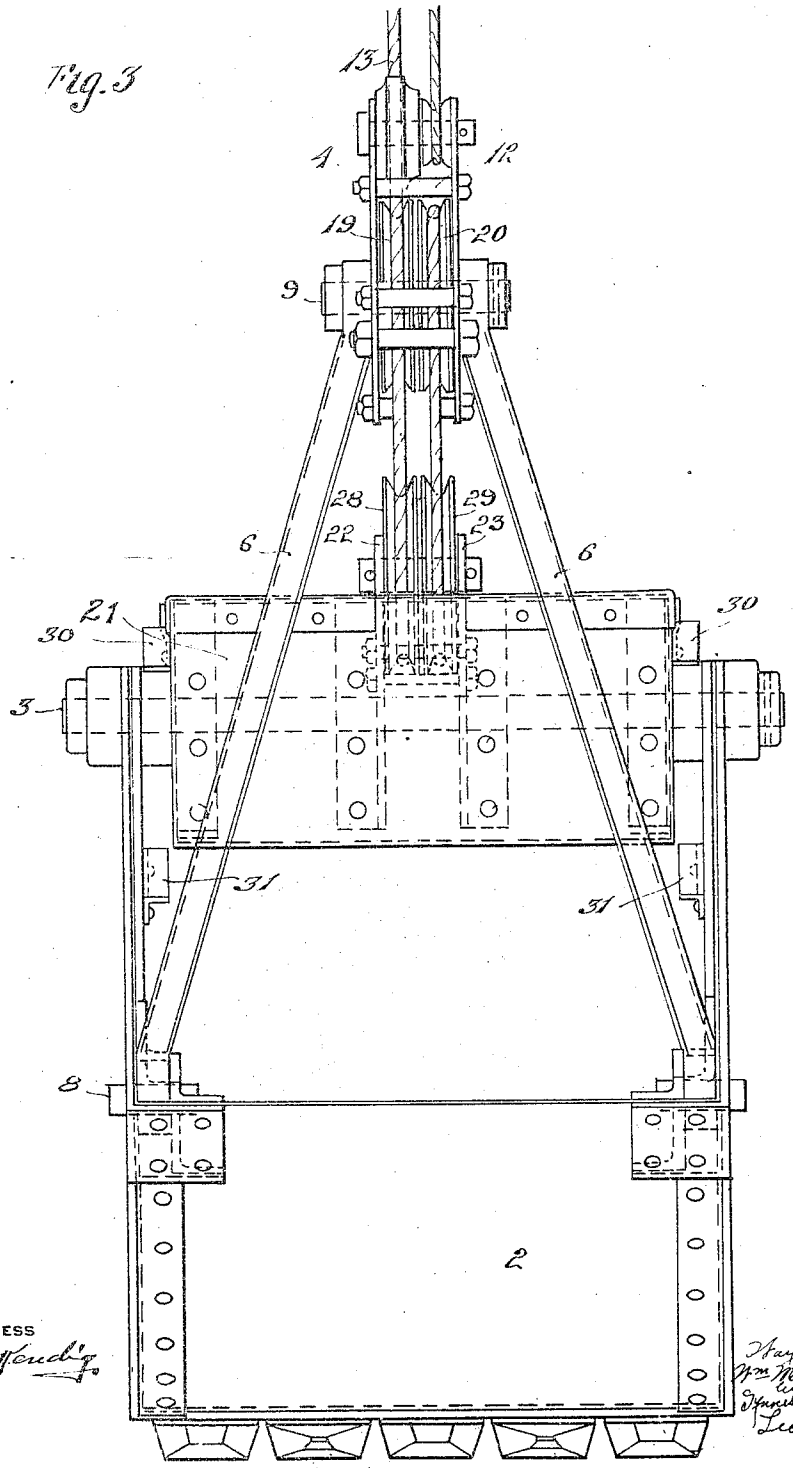
APPLICATION FILED OCT. 3, 1917.

1,259,129.

Patented Mar. 12, 1918.

3 SHEETS—SHEET 3.

Fig. 3



WITNESS

J. H. Kendig

INVENTOR.

Wayne Rawley and Wm. Mayo Venable

by their attorneys Dressler Lackey & Fooks

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WAYNE RAWLEY AND WILLIAM M. VENABLE, OF PITTSBURGH, PENNSYLVANIA, ASSIGNORS TO BLAW-KNOX COMPANY, A CORPORATION OF NEW JERSEY.

CLAM-SHELL BUCKET.

1,259,129. Specification of Letters Patent. Patented Mar. 12, 1918.

Application filed October 3, 1917. Serial No. 194,474.

To all whom it may concern:

Be it known that we, WAYNE RAWLEY and WILLIAM M. VENABLE, both citizens of the United States, and both residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Clam-Shell Buckets, of which the following is a specification.

The invention relates to clam shell buckets. It has for its principal objects: the provision of an improved bucket construction, (1) of simple serviceable construction, in which the machine and forge work is reduced to a minimum, (2) wherein the reeving of the operating lines may be easily and conveniently changed to vary the closing power, (3) wherein central leads for the operating lines are secured and the multiplicity of sheaves or pulleys required are provided for without the use of wide sheave blocks, (4) wherein cheap and effective means are provided for applying weight for overhauling the pulley blocks and increasing the dead weight of the bucket to give the desired penetration thereof while digging, and (5) wherein the counterweight employed is brought to rest when the bucket is open in such position as to facilitate the commencement of the digging operation. One embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the apparatus containing the invention with the jaws of the bucket in closed position; Fig. 2 is a side elevation similar to that of Fig. 1 but with the jaws in open position; and Fig. 3 is an end elevation looking at the apparatus from the right-hand side of Fig. 1.

The jaws 1 and 2 may be of any approved type, such jaws being hinged or pivoted together upon the pin or axle 3. They are supported from the head block 4 by means of two pairs of corner bars 5, 5 and 6, 6. Both pairs of corner bars are pivoted at their lower ends to the jaws, as indicated at 7 and 8, and the corner bars 6 are also pivoted upon the pin 9 extending transversely of the head. The corner bars 5 are riveted to the head block 4 at their upper ends, as indicated at 10. The use of the riveted construction at this point gives a rigid head block construction and reduces the number of bearings necessary in the construction which would otherwise be required if the upper ends of these bars 5 were connected to the head block in the same manner as the bars 6.

The head block 4 consists of two sheet metal plates held in position by the bolts 11 with pipe spreaders 12 (Fig. 3) interposed between the plates. The upper portion of the block carries the lead device or guide for the closing line 13, such device consisting of the usual grooved member 14 and roller 15 fitting into the groove. The head also carries the transverse pins or axles 9 and 16 upon each of which are mounted two sheaves or pulleys, the pin 16 carrying the sheaves 17 and 18 (18 being behind 17 and not shown), and the pin 9 carrying the sheaves 19 and 20.

Mounted upon the pin or axle 3 is a counterweight box 21, such box being free to oscillate upon the pin. The upper portion of the box has secured rigidly thereto a pair of plates 22 and 23 constituting a sheave block and carrying the pins or axles 24 and 25. The pin 24 carries two sheaves 26 and 27 (27 being behind 26 and not shown), while the pin 25 carries two other sheaves 28 and 29.

The counterweight box 21 is designed to overhaul the closing line when the bucket moves to the position shown in Fig. 2, and also gives additional dead weight to the bucket to increase its penetration while digging. This box may be filled with any desired material for giving the required weight, the preferred material being punchings from steel plates, although dirt, sand or other material may be employed. The box is preferably provided with a cover or opening, not shown, to enable the material to be removed and replaced when desired. This arrangement not only provides for adjusting the weight to suit conditions, but permits the additional weight to be given to the bucket without any substantial increase in the cost of the apparatus.

The box is pivoted so that it may oscillate during the closing of the bucket so as to properly equalize the strain in the various sections of the line. In order that the box may assume a horizontal position, as shown in Fig. 2, and so not interfere with the material to be dug, when the box is in its lowest position, the angles 30 and 31 are employed, secured respectively to the box

and to the bucket jaws (Fig. 2). These stop members also insure that the sheaves carried by the box shall be in proper position to facilitate the closing of the jaws when power is applied to the closing line 13.

The closing line may be reeved around the sheaves on the two blocks so as to secure closing effects of varying power, depending upon conditions. When the bucket is reeved so as to secure the most powerful closing effect the line passes around all of the sheaves. At this time the path of the cable is as follows. Sheaves 26, 17, 27, 18, 20, 29, 19, 28, the cable being secured at its end to the bolt 32. This arrangement gives eight parts to the closing line, or in other words, gives the bucket eight times as much closing power as if the line instead of coming around the sheaves were made fast directly to the counterweight box.

If it is desired to reeve the bucket so as to have six parts to the closing line, the following is the path of the cable. To 26, 18, 20, 29, 19, 28, 26, to the bolt 33.

If only four parts are desired, the following is the path of the cable. To 26, 18, 20, 29, to bolt 32.

It will be seen that the sheave arrangement permits of a multiplicity of sheaves while avoiding wide blocks, and that substantially central leads are provided the closing lines so that the power is applied advantageously with a relatively small amount of side pull. Also that the construction is compact and may be cheaply constructed with a minimum amount of forging and machine work. Other advantages incident to the construction and not heretofore pointed out will be apparent to those skilled in the art, to whom it will also be apparent that the inventions may be embodied in a number of different forms and modifications, the one shown being merely the preferred embodiment.

What we claim is:

1. In combination, a pair of bucket jaws pivoted together, a head block, corner bars extending from the bucket jaws to said head block, sheaves carried by the head block, a receptacle pivotally mounted at the pivotal connection between the bucket jaws and extending below such pivotal connection, sheaves carried by such receptacle above its pivotal support, counterweight means carried on the receptacle and a closing line extending around the sheaves on the head block and counterweight.

2. In combination, a pair of bucket jaws pivoted together, a head block, corner bars extending from the bucket to said head block, a box pivotally mounted at the pivotal connection between the bucket jaws, sheaves supported between the sides of the box, sheaves on the head block, counterweight means carried in the box and a closing line extending around the sheaves of the head block and counterweight.

3. In combination, a pair of jaws pivoted together, a head, corner bars connecting the jaws and head, means for closing the jaws, a receptacle adapted to receive a weight of material and act as a counterweight for opening the jaws, and stop means cooperating between the said receptacle and the jaws for positioning the receptacle when the jaws are opened.

4. In combination, a pair of bucket jaws pivoted together, a head block, corner bars extending from the bucket jaws to said head block, a second block pivotally mounted at the pivotal connection between the bucket jaws, a sheave on the head block on each side of the vertical center line thereof, a sheave on the second block on each side of the vertical center line thereof, stop means for positioning the second block when the jaws are opened, and a closing line extending around the sheaves of the two blocks.

5. In combination, a pair of bucket jaws pivoted together, a head block, corner bars extending from the bucket jaws to said head block, a second block pivotally mounted at the pivotal connection between the bucket jaws, a sheave on the head block on each side of the vertical center line thereof, a sheave on the second block on each side of the vertical center line thereof, stop means for positioning the second block when the jaws are opened, and a closing line extending around the sheaves of the two blocks.

6. In combination, a pair of jaws pivoted together, a head, corner bars connecting the jaws and head, means for closing the jaws, a receptacle adapted to receive a weight of material and act as a counterweight for opening the jaws, and stop means for positioning the receptacle when the jaws are opened.

WAYNE RAWLEY.
WILLIAM M. VENABLE.