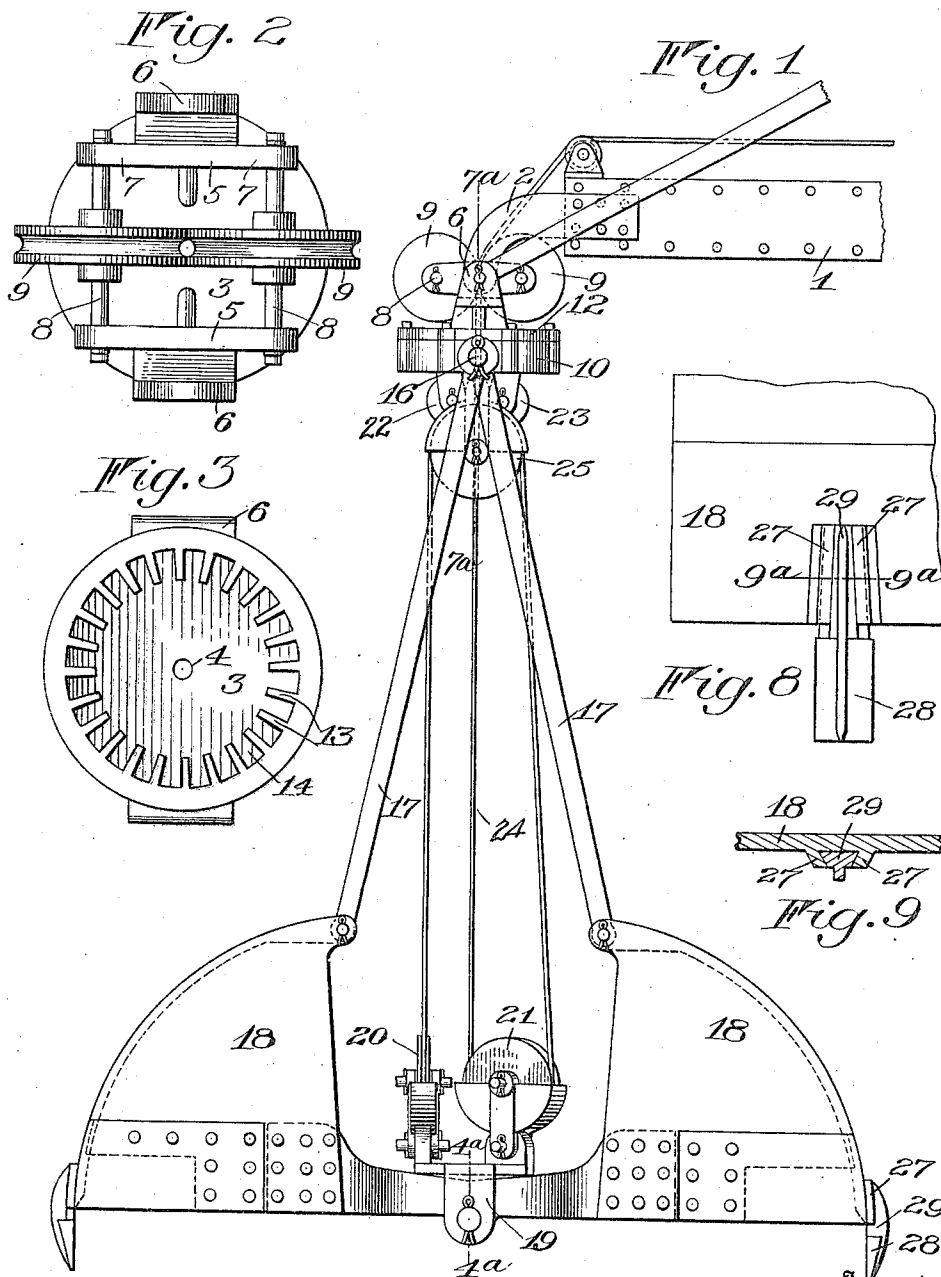


1,236,418.

J. G. FOGARTY.
EXCAVATING MACHINE.
APPLICATION FILED JAN. 31, 1914.

Patented Aug. 14, 1917.
2 SHEETS—SHEET 1.



Witnesses

Halter B. Payne
Nelson H. Cope

Inventor
John G. Fogarty

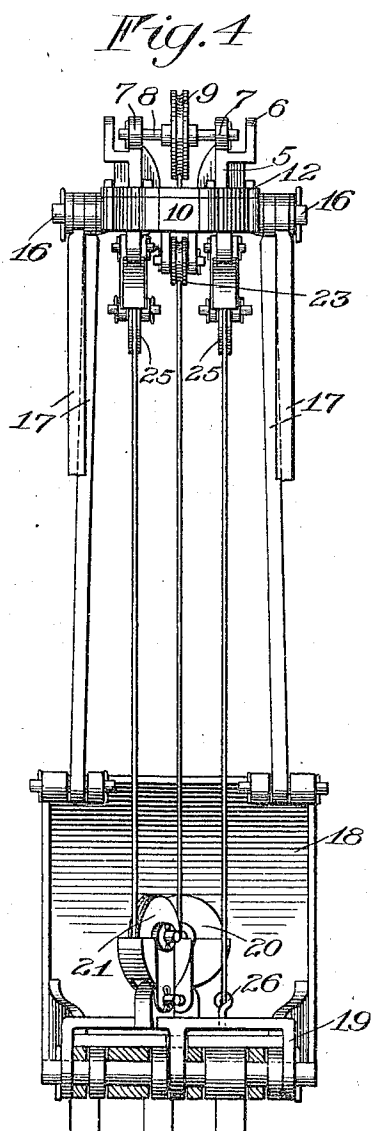
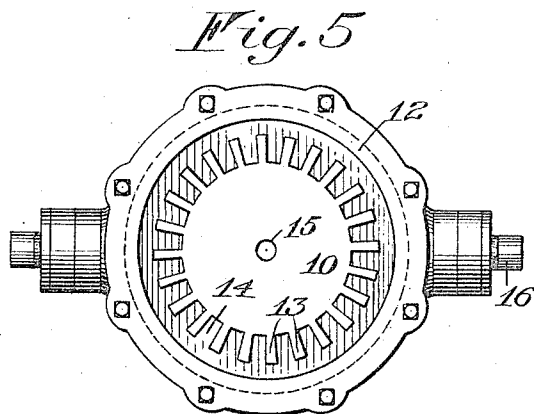
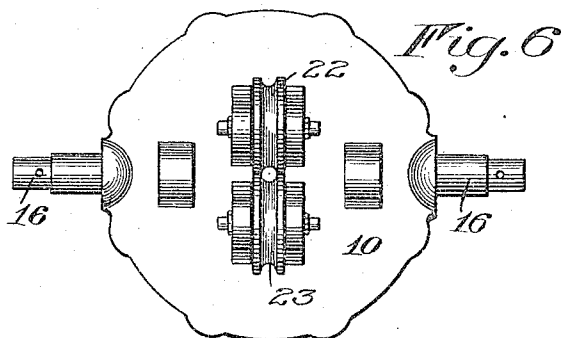
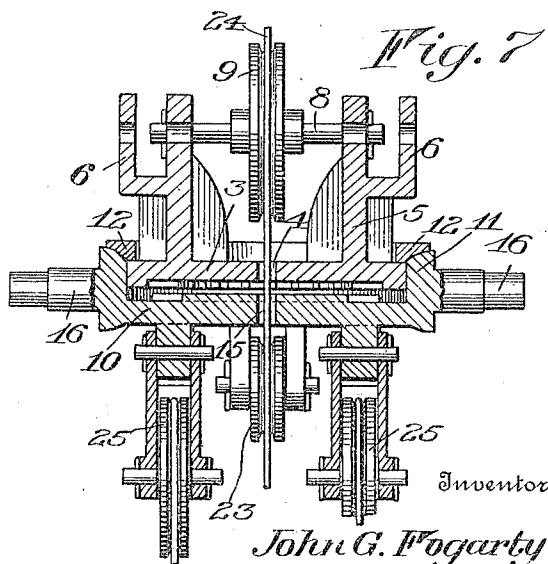
By

Charles Dick
His Attorneys

1,236,418.

J. G. FOGARTY.
EXCAVATING MACHINE.
APPLICATION FILED JAN. 31, 1914.

Patented Aug. 14, 1917.
2 SHEETS—SHEET 2.



Witnesses

Halter B. Payne
Nelson H. Copp

By

Charles Rich
his Attorneys

UNITED STATES PATENT OFFICE.

JOHN G. FOGARTY, OF ROCHESTER, NEW YORK, ASSIGNOR TO JOHN FOGARTY CO., INC.,
OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

EXCAVATING-MACHINE.

1,236,418.

Specification of Letters Patent.

Patented Aug. 14, 1917.

Application filed January 31, 1914. Serial No. 815,631.

To all whom it may concern:

Be it known that I, JOHN G. FOGARTY, of Rochester, in the county of Monroe and State of New York, have invented certain
5 new and useful Improvements in Excavating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a
10 part of this specification, and to the reference-numerals marked thereon.

My invention relates to excavating machinery, and it has for its object to improve the construction of this class of devices so as
15 to produce a strong and rigid arrangement, capable of exerting a correspondingly great amount of power. Another object of the device is to afford, in connection with an excavating bucket, an arrangement for balancing the parts, and particularly the means
20 for guiding the bucket rope or cable from the boom to the bucket whereby the latter is properly centered at all times, and an equal strain is exerted in all directions about the
25 axial point of the bucket support. Another purpose of my invention is to provide a bucket that is rotatable upon its support, so as to make it possible to have it engage the ground at any angle, and further in providing for automatically locking the bucket
30 against rotative movement the instant that it comes in contact with the ground, and for releasing it to permit relative rotation as soon as the bucket leaves the ground. To
35 these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.
40

In the drawings:

Figure 1 is a side elevation showing the outer end of the boom of an excavating machine, and a bucket supported thereon, embodying a preferred arrangement according
45 to my invention;

Fig. 2 is a plan view of the support;

Fig. 3 is a bottom plan view of the same;

Fig. 4 is a sectional view on the line
50 4^a—4^a of Fig. 1, with parts in elevation;

Fig. 5 is a plan view of the carrier for the bucket;

Fig. 6 is a bottom plan view of the carrier;

Fig. 7 is a sectional view on the line 7^a—7^a 55 of Fig. 1;

Fig. 8 is a side elevation of a portion of the bucket, showing the form of the bucket teeth, and

Fig. 9 is a sectional view on the line 9^a—9^a 60 of Fig. 8.

Similar reference numerals throughout the several views indicate the same parts.

In the present construction, 1 designates the boom of a machine which may be of the
65 usual type of construction in excavating machinery, provided at its outer end with the arms 2, pivotally mounted upon which is the support for the bucket. The bucket support is adapted to hold the latter in such a
70 manner as to permit a relative rotating movement, to enable the bucket to be placed at any desired angle with relation to the work. To this end, the support comprises a
75 base 3 having a central opening 4 for a purpose that will presently appear, and provided with vertical standards 5 having extensions 6 which are pivoted to the aforementioned arms 2, while 7 are lateral portions provided on the standards 5 and forming
80 bearings for the spindles 8 upon which are fixed the sheaves or pulleys 9 for a purpose that will presently be mentioned.

The base portion 3 of the support coöperates with the carrier upon which the
85 bucket is mounted, the latter being arranged for both a rotating and vertical movement relatively to the support. To this end, the carrier embraces a bottom 10 and an annular flange 11 (see Fig. 7), to the upper edge
90 of which is secured an inwardly projecting ring 12 adapted to engage the upper side of the base 3, and thus to prevent separation of the carrier and the support. By this
95 means, the carrier is permitted to rotate on the base 3, and to also move vertically relatively to the support until the bottom 10 contacts with the base of the support. This enables the bucket to be swung around to any
100 desired position, so as to enter the ground at whatever angle required, and it is also desirable that as soon as the bucket comes in contact with the ground, further rotation relatively to the support be prevented. To
105 this end, I provide automatic means for locking the support and carrier against relative turning as the bucket strikes the ground, or when the upper surface of the bottom 10 of

the carrier engages the lower surface of the base 3 of the support. This is preferably accomplished by locking means provided on the carrier and the support, such means in the present embodiment consisting of teeth 13, between which are arranged recesses 14, a similar series of teeth and recesses being formed on the base of the support and on the carrier as shown in Fig. 7. From this figure, it will be seen that when the carrier moves vertically with relation to the support, this action taking place as the bucket engages the ground, the teeth on the carrier will interlock with the recesses on the support, and further relative rotation is prevented until the bucket is again moved clear of the ground.

The carrier is provided with a central opening 15 disposed in vertical alinement with the beforementioned opening 4, and carries trunnions 16 forming bearings that receive the arms 17 connected with the bucket members 18. Preferably, the bucket is constructed as shown in Fig. 1, consisting of bucket members 18 already referred to, which are pivoted together by means of the hinge block 19, the latter being provided with a pair of pulleys 20 and 21 arranged as shown. The carrier is provided with a pair of guide pulleys 22 and 23 disposed on opposite sides of the opening 15 to guide the bucket rope or cable 24, whereby the latter passes from the boom 1 to the upper pulleys 9, extending thence downwardly in a vertical line, through the pulleys 22 and 23, and is thereafter connected to the bucket. The carrier is further provided with sheaves or pulleys 25 which are arranged at opposite points on the under side of the carrier, and receive the bucket cable in the manner shown in Fig. 4, the latter being attached to the bucket finally at 26. The arrangement of the pulley 21 relatively to the carrier is such as to permit the bucket cable to extend in a direct vertical line upwardly through the carrier and support, and this affords a completely balanced construction which can be operated more readily and more efficiently. The balance of the parts is further aided by the arrangement of the pulleys 25, the disposal of which causes an equal tension to be exerted around the axial point of the carrier, thus permitting the bucket to be turned easily to any desired point on the support without detracting in any degree from the proper coöperation between the bucket and the bucket cable, the position of the latter being the same for all adjustments of the bucket.

Quite frequently, it is desirable to change the angular position of the bucket as it comes into engagement with the material to be excavated and it is for this reason that the carrier is rotatively mounted on the support as already described. Some means however

must be provided to hold the carrier and the support in fixed relation, after such adjustment is once made, so that the position of the bucket will not change during the operation, and this is accomplished by locking the parts together automatically at the moment that the bucket engages the material to be lifted. The instant the bucket is lifted clear of the ground, it is again free to be turned on the support, but during the digging operation it is securely locked in fixed position, in the manner already described.

In Figs. 8 and 9 I have shown a preferred form of bucket tooth, of detachable character. The bucket is preferably provided with a series of tapered ways 27, while 28 designates a tooth provided with a tapered or wedge-shaped shank 29 adapted to engage the tapered ways 27. The ways 27 overhang the shank 29 as shown in Fig. 9, and with this construction, the tooth is held more rigidly in proportion to the pressure brought against it so that in the actual working operation, the tendency is constantly to force the shank of the tooth more tightly into its socket. At the same time, the teeth can be removed when necessary by a slight blow from a hammer or in some other convenient manner.

I claim as my invention:

1. In an excavating machine, the combination with a boom, of a support pivoted to the boom, a carrier rotatively mounted on the support and movable also in the direction of its axis of rotation relatively to the support, and means brought into operation by the relative axial movement for locking the support and carrier against relative turning.

2. In an excavating machine, the combination with a boom, of a support pivoted to the boom, a carrier rotatively mounted on the support and movable also in the direction of its axis of rotation relatively to the support, and interlocking means on the support and carrier adapted to hold said parts against relative turning at the limit of their relative axial movement.

3. In an excavating machine, the combination with a boom, of a support pivoted to the boom, a carrier rotatively mounted on the support and movable also in the direction of its axis of rotation relatively to the support, a series of coöperating teeth on the adjacent faces of the support and carrier for locking said parts against relative turning, said adjacent faces being normally in spaced relation to each other and adapted to move into engagement with one another.

4. In an excavating machine, the combination with a boom, of a support pivoted on said boom and having a centrally disposed opening in its base, a carrier rotatively mounted on the support and provided with an opening in alinement with said opening

in the support, a bucket comprising a pair of bucket members pivoted together, connecting rods secured to said bucket members and pivoted to the aforesaid carrier, a pair of pulleys disposed on the carrier on opposite sides of said opening, pulleys on the bucket, and a bucket cable passing from the boom through said openings, around the aforementioned pulleys, and attached to the bucket, the arrangement of pulleys being such as to permit said cable to pass through the support on the boom and to the bucket in a vertical line.

5. In an excavating machine, the combination with a boom, of a support pivoted on said boom and having a centrally disposed opening in its base, a carrier rotatively mounted on the support and movable also in the direction of its axis of rotation relatively to the support, interlocking means on the support and carrier adapted to hold said parts against relative turning when the adjacent faces are in engagement, the carrier having an opening in alinement with said opening in the support, a bucket mounted on the carrier, and a bucket cable passing from the boom through said openings in the support and carrier, and extending downwardly toward the bucket in a vertical line.

6. In an excavating machine, the combination with a boom, of a support pivoted on said boom and having a centrally disposed opening in its base, a carrier rotatively mounted on the support and movable also in the direction of its axis of rotation relatively to the support, coöperating teeth on the adjacent faces of the support and carrier for locking said parts against relative turning when in engagement with each other, the carrier having an opening in alinement with said opening in the support, a bucket comprising a pair of bucket members pivoted together, connecting rods secured to said bucket members and pivoted to the aforesaid carrier, a pair of pulleys disposed on the carrier on opposite sides of said opening, pulleys on the bucket, and a bucket cable passing from the boom through said openings, around the aforementioned pulleys, and attached to the bucket, the arrangement being such as to permit said cable to pass through the support on the boom and to the bucket in a vertical line.

7. In an excavating machine, the combination with a boom, of a support mounted on said boom and having a centrally disposed opening in its base, a carrier mounted on the support having an opening in alinement with the opening in the support, pulleys arranged on the underside of the carrier on opposite sides of said opening, and a bucket cable passing from the bottom through the openings in the support and carrier extending downwardly toward the bucket in a vertical line and coöperating with said pulleys on the carrier.

8. In an excavating machine, the combination with a support, of a carrier suspended from and rotatively mounted on the support, the carrier being movable in the direction of its axis of rotation relatively to the support and normally spaced therefrom and freely movable about its axis, a bucket mounted upon the carrier, and means brought into operation by engagement of the bucket with the ground for locking the support and carrier against relative turning as they are moved toward each other.

9. In an excavating machine, the combination with a support, of a carrier suspended from and rotatively mounted on the support, the carrier being movable in the direction of its axis relatively to the support and normally freely movable about its axis, a bucket arranged upon the carrier, and interlocking means on the support and carrier operating to hold said parts against relative turning when the bucket engages the ground.

10. In an excavating machine, the combination with a support, of a carrier suspended therefrom and rotatively mounted thereon, the carrier being movable in the direction of its axis of rotation relatively to the support and normally freely movable about said axis, a bucket mounted upon the carrier, a series of coöperating locking devices on the adjacent faces of the support and carrier acting to lock said parts against relative turning, said adjacent faces being normally in spaced relation to each other and moved to engage one another when the bucket comes in contact with the ground.

JOHN G. FOGARTY.

Witnesses:

H. E. STONEBRAKER,
RUSSELL B. GRIFFITH.