

No. 879,844.

PATENTED FEB. 18, 1908.

O. SCHALLER.

EXCAVATOR.

APPLICATION FILED AUG. 31, 1907.





# UNITED STATES PATENT OFFICE.

OSCAR SCHALLER, OF MAPLEWOOD, MISSOURI.

## EXCAVATOR.

No. 879,844.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed August 31, 1907. Serial No. 390,904.

*To all whom it may concern:*

Be it known that I, OSCAR SCHALLER, citizen of the United States, residing at Maplewood, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Excavators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in excavating buckets; and consists in the novel details of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is an elevation of a derrick showing my invention applied in connection therewith; Fig. 2 is an elevation of the excavating bucket; Fig. 3 is a horizontal section on the line 3—3 of Fig. 2 with receptacle in plan; Fig. 4 is a sectional detail on the line 4—4 of Fig. 3; Fig. 5 is an enlarged vertical sectional detail of the central shaft, showing mounted thereto the sliding bar which releases the gates at the moment of discharge; and Fig. 6 is a vertical section on the line 6—6 of Fig. 3, the receptacle being broken in the middle.

The object of my invention is to construct an excavating bucket which shall fill from the bottom with the dirt which has been loosened from the surface operated on, this arrangement permitting the use of a bucket or receptacle of any height or cubic capacity, and permitting the excavating or digging operation to be stopped at any moment irrespective of the quantity of dirt previously delivered into the bucket.

A further object is to construct an excavator which shall be under ready control, one which will automatically feed into the ground as fast as the dirt has been loosened and removed, and one possessing further and other advantages better apparent from a detailed description of the invention which is as follows:

Referring to the drawings, D, represents a conventional form of derrick provided with hoisting tackle H of any approved design, the details of which are not herein entered into as they in no wise are concerned with my invention. Suffice it to say however that the hoisting tackle is used to raise and lower the receptacle R to which my invention is applied during the excavating operation.

The invention proper comprises a substantially cylindrical receptacle R having mount-

ed on the top thereof a preferably electric motor M to which the motor current is supplied from any suitable source of electrical energy (not shown). Through suitable gearing rotation is imparted from said motor to a centrally or axially-disposed shaft S passing through the receptacle, the bottom of the shaft terminating in radial arms 1, 1, reaching to points contiguous to the inner surface of the bottom of the receptacle, the latter having a sharp cutting edge so it may readily follow down into the earth as the excavating process progresses. Hinged to the outer ends of the arms 1, 1, and adapted to close the bottom of the receptacle, are gates 2, 2, the gates closing against the base of the terminal cutting bit or tool 3 of the shaft, the contiguous free edges of the gates being suitably cut away to close over the shaft when swung to their closed position.

Disposed diametrically opposite one another, and along lines substantially radial from the axis of the shaft, and secured to the bottoms of the gates 2 and at a forward inclination to the direction of rotation of the shaft and gates carried thereby, are the cutting blades 4, 4, suitable radial passages or openings 5, 5, formed in the gates in line with the blades, permitting the feeding of the dirt cut and loosened and scooped up by the blades to be automatically fed or directed into the receptacle. The outer edges of the blades are inclined and extended sufficiently to cause the blade to reach slightly beyond the peripheral boundary of the receptacle, this arrangement permitting a sufficient clearance to be cut in the dirt to allow for a ready and easy descent of the receptacle as the dirt is removed from under it, (Fig. 1).

Disposed the length of the shaft is a peripheral groove receiving a sliding bar 6 which terminates at the bottom in a head having a shoulder 7, for the support of the free edges of the gates when in their closed position. The upper end of the bar is secured to a grooved ring 8 slidingly mounted on the shaft S, the ring being engaged by the forked end of a shifting lever 9 pivoted to a bracket 10 at the top of the receptacle, the opposite end of the lever being connected to the adjacent end of a tripping cord 11 passing through the eye 12 of a bracket 13. A flexed spring 14 having a lower fixed end normally serves to force the adjacent end of the lever upward whereby the ring 8 and bar 6 are held in their raised position. By pulling on



the cable or cord 11 the lever 9 is rocked in a direction to force the bar 6 downward, depressing the shoulder 7, sufficiently to allow the gates to drop and release the dirt accumulated above them. This done the receptacle with the gates swung open to a slightly inclined position (Fig. 6) is lowered to the ground, whereupon the gates coming in contact with the ground automatically close toward and against the shaft, the tripping cord being given at the proper moment a pull or jerk to momentarily depress the shoulder 7, sufficiently to allow the gates to close their full extent, when, by releasing the cord, the spring 14 raises the ring 8 and bar 6 to its normal elevation to permit the edges of the gates thus fully closed, to rest upon the shoulder 7. Thus the cord 11 is given a pull not only for releasing the gates at the moment of dumping, but while the gates are approaching their closed position, to allow the edges thereof to pass by said shoulder and permit the latter to assume a position under the edges for the support of the gates at the critical moment.

As the shaft S revolves, the dirt is cut by the blades and automatically fed into the receptacle, when by swinging the crane to any position and raising the receptacle by the hoisting tackle, the contents is dumped out in the manner indicated, and the process repeated as often as may be necessary.

Having described my invention what I claim is:

35 1. An excavator comprising a receptacle open at the bottom, gates for closing said bottom, means located at the center axis of the receptacle for locking the gates in their closed position, the gates having openings  
40 formed therein for permitting the passage of the dirt therethrough into the receptacle for the closed position of the gates, blades depending from the bottom faces of the gates adjacent to the openings and means for releasing the gates from the locking means  
45 upon the removal of the receptacle from the

surface operated on, substantially as set forth.

2. An excavator comprising a cylindrical receptacle having an open bottom, a rotating shaft passing axially through the receptacle, radial arms at the bottom of the shaft, gates hinged to the ends of the arms and normally closing against the shaft and temporarily closing the bottom of the receptacle locking means for the gates, blades depending from the bottom faces of the gates, the latter being provided with openings for the passage of the dirt loosened by the blades, into the receptacle, and means for effecting the release of the gates and releasing the dirt upon withdrawal of the receptacle for the surface operated on, substantially as set forth.

3. An excavator comprising a receptacle having an open bottom, a rotating shaft passing axially through the same, radial arms at the bottom of the shaft, gates hinged to the ends of the arms and normally closing against the shaft and temporarily closing the bottom of the receptacle, blades depending from the bottom faces of the gates, the latter being provided with openings for the passage of the dirt into the receptacle, a sliding bar disposed longitudinally of the shaft, a shoulder at the lower end of the bar and normally supporting the free edges of the gates, a ring slidably mounted on the shaft and coupled to the bar, a spring-controlled lever carried by the receptacle for normally supporting the ring and bar in an elevated position, and a cord or cable secured to one arm of the lever for tripping the latter and depressing the bar and releasing the gates, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses.

OSCAR SCHALLER.

Witnesses:

EMIL STAREK,  
JOS. A. MICHEL.