2 Sheets—Sheet 1.

# M. H. FORD.

## Excavating Scoop.

No. 25,636. Patented Oct. 4, 1859.

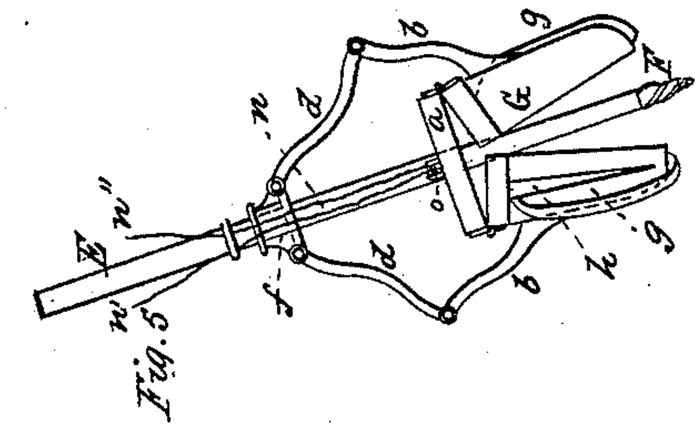


Fig. 5.

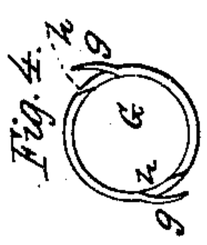


Fig. 4.

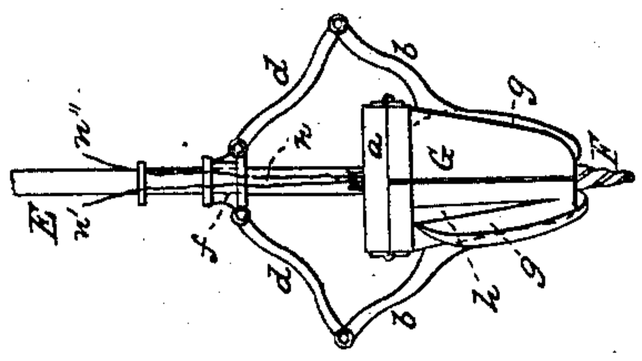


Fig. 3.

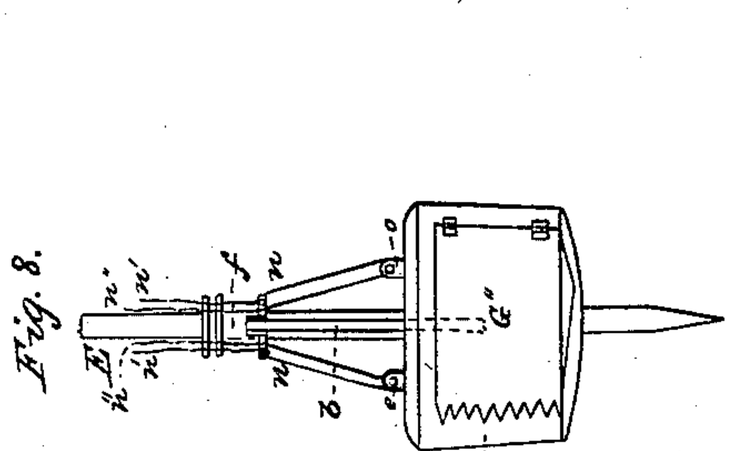


Fig. 8.

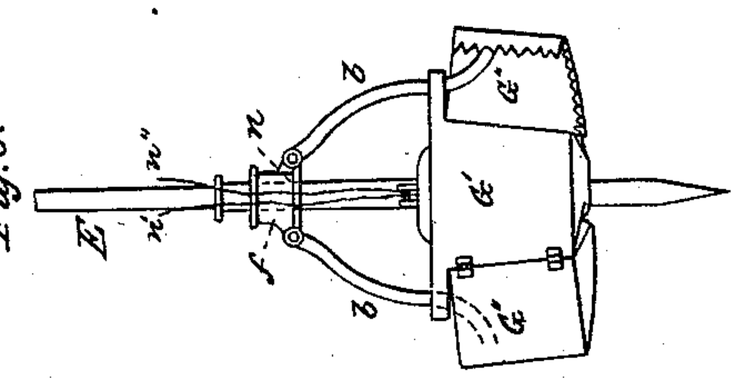


Fig. 6.

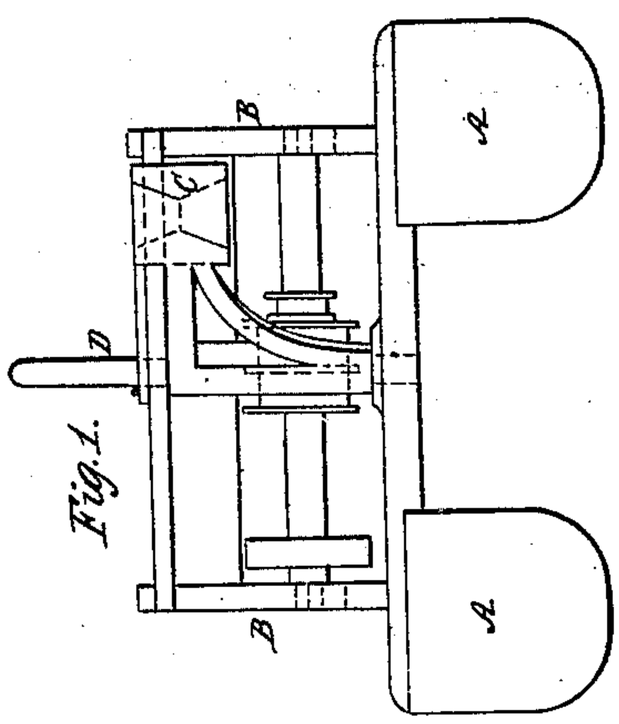


Fig. 1.

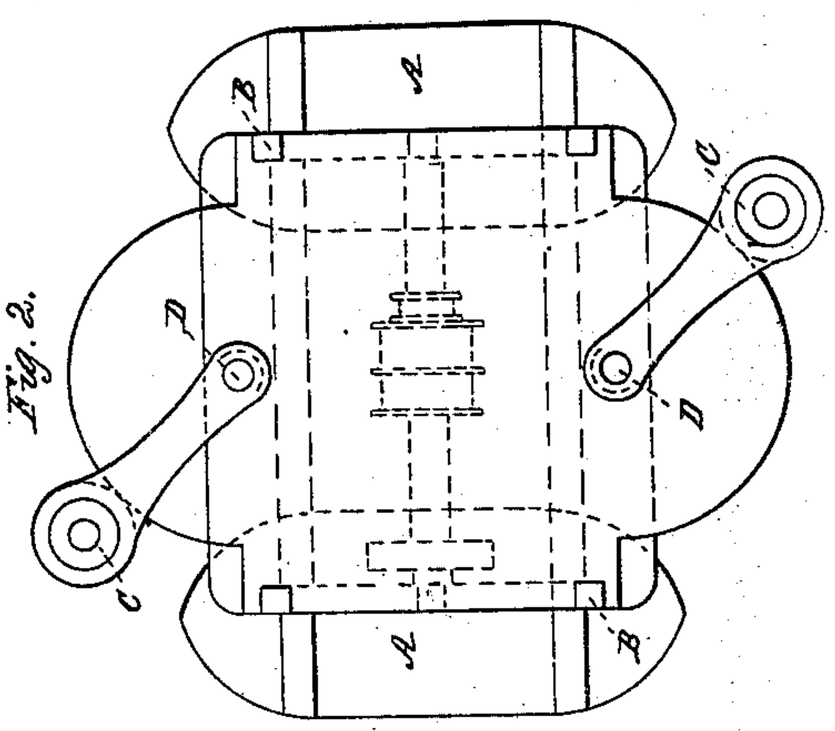


Fig. 2.

Witnesses:
Andersen Reese
George Wood

Inventor:
Mason H. Ford

2 Sheets—Sheet 2.

# M. H. FORD.

## Excavating Scoop.

No. 25,636. Patented Oct. 4, 1859.

Fig. 9.

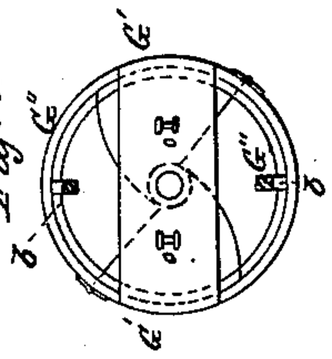



Fig. 7.

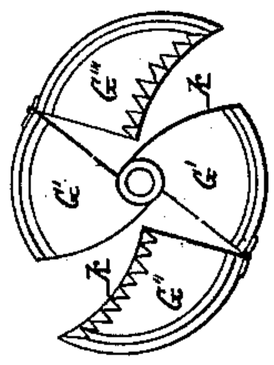



Fig. 10.

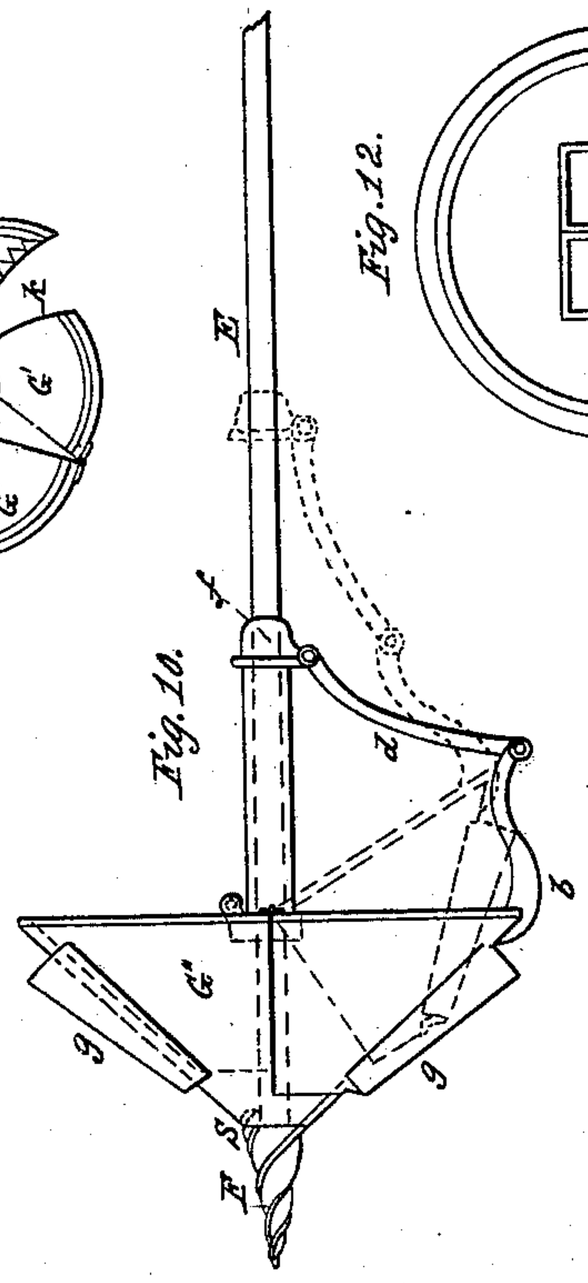



Fig. 12.

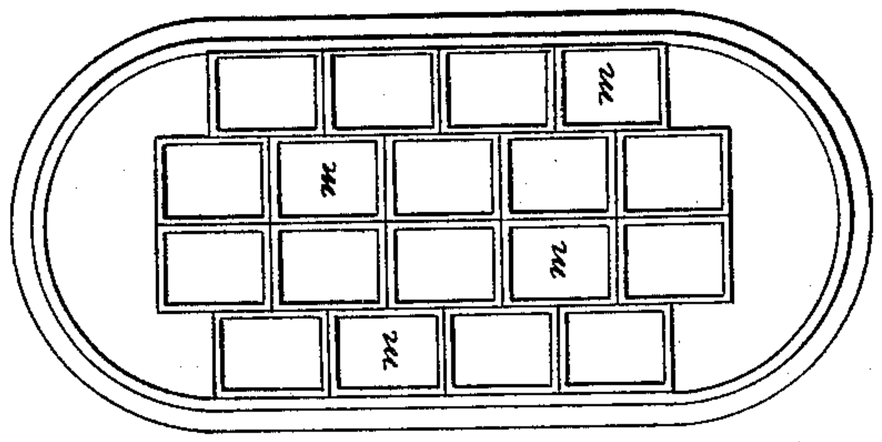



Fig. 13.

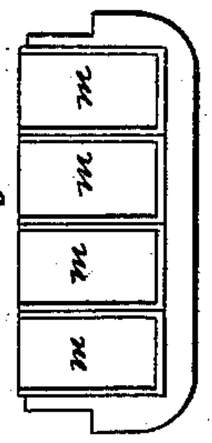
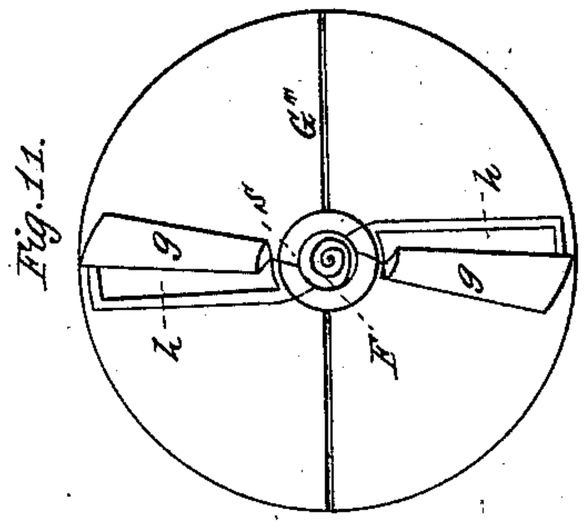



Fig. 11.




Witnesses:
Anderson Reese
George Wood.

Inventor:
Mason H. Ford

# UNITED STATES PATENT OFFICE.

MASON H. FORD, OF NEW YORK, N. Y.

## IMPROVEMENT IN BORERS FOR EXCAVATING MUD, &c.

Specification forming part of Letters Patent No. **25,636**, dated October 4, 1859.

*To all whom it may concern:*

Be it known that I, MASON H. FORD, of New York, in the county and State of New York, have invented a new and Improved Rotary Excavating-Scoop; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the construction of rotary excavating-scoops provided either with wings or flanges placed close to openings in the sides of the scoops, by which the mud or sand, during the rotation of the scoops, is thrown through said openings into the scoop, or constructed in such a manner that the sides of the scoop can be opened and act as wings to take up the sand or mud during the revolution of the scoop and throw the same into the scoop and then be closed again to retain the same while the scoop is hoisted upward. Said scoops are likewise so arranged that either one or both sides can be opened for the purpose of emptying the mud or dirt out of the same or made to slide on its shaft when required and then opened to be emptied.

My invention consists, secondly, in the arrangement and connection with the end of the shaft below the scoop of a sharpened point or screw for the purpose of guiding the lower end of the shaft or of fastening itself into any sunken log or timber which may be lying in the bottom of the water and then raising said timber to the surface when the shaft is raised up.

Figure III represents a side view of a rotating scoop for mud-digging. Fig. IV is a section, and Fig. V an outside view, of the same, representing the same opened to deliver the mud. Fig. VI represents a rotating scoop particularly adapted for sand-digging, and is shown in a position ready for operation. Fig. VII is a horizontal section of the same. Fig. VIII represents an outside view of the same when filled ready for hoisting, and Fig. IX is a top view of Fig. VIII. Fig. X represents a rotating scoop particularly adapted for side diggings as well as for deep excavation and arranged to slide on its shaft. Fig. XI is an end view of the same.

E represents the shafts which carry the scoops and by which said scoops are rotated. These shafts pass through bearings on the floating barge which carries the machinery and are connected with the machinery, so as to be capable of being raised or lowered, as required, and be made to revolve in any desired position by means of any known contrivance. On the lower end of these shafts screws F are fastened, or the thread of a pointed screw may be cut on the end of the shaft itself, or the shaft may only be fastened, as represented in Figs. VI and VIII.

In Figs. III and V the top part *a* of the excavating-scoop G is firmly attached to the shaft E. The scoop G in this case is made in two parts and hinged to said top *a*. Each side is provided with one or more openings *h*, running nearly from top to botton, close to which openings wings or flanges *g* project diagonally from the body of the scoop.

*b b* are arms attached to the sides of the scoop and connect with arms *d d*, jointed to a sliding piece *f*, capable of moving on the shaft E. This sliding piece *f* has ropes or chains *n* attached to it, one end of which *n'* passes directly to the machinery on the barges, while the other end *n''* passes to the fixed top *a* of the scoop, where the same passes over a fixed pin *o* or small pulley and then passes likewise to the machinery on the barges. By means of these cords the sides of the scoop may be opened to let the dirt fall out, or may be closed independent of the position of the scoop and either below or above the water, as may be desired.

The operation of this scoop is as follows: The shaft E is lowered to the desired place to be excavated with the scoop closed, as shown in Fig. III, when the machinery on the barge sets the shaft, and consequently the scoop, revolving. The screw F on the lower end of the shaft (or the pointed end of the shaft) acts in the mud as a guide for said shaft and scoop and insures a steady motion when the wings or flanges *g* in their revolution take hold of the mud and force the same through the openings *h* into the inside of the scoop, thereby filling the same. The shaft is then raised up, together with the scoop, and carried over the mud barge or scow, when the scoop is opened, as above described, and the mud allowed to fall out. The scoop is then closed again and again lowered with the shaft

and the same operation repeated. If any log or sunken timber should be lying in the bottom of the mud and near the place which is to be excavated, the end of the shaft is lowered over the same, when the screw on the end enters the wood and fastens the same firmly to the shaft, so that by raising the shaft the log or wood will be pulled up to the surface of the water.

In Figs. VI and VIII the scoop G′ is made with a solid bottom and attached to the shaft. Large openings *k* are made in the sides of this scoop, into which pieces G″ are fitted, which when closed form with the body of the scoop nearly a tight box. These pieces G″ are hinged to the body of the scoop G′ and are connected by arms *b b* with the piece *f*, sliding on the shaft, which latter is through chains or ropes connected with the upper end of the scoop and with the machinery on the barges, and by which the hinged pieces G″ can be opened or shut when desired in the manner above described.

The operation of this scoop is as follows: The scoop is lowered with the shaft to the desired place with the side pieces G″ opened, as represented in Fig. VI. The end of the shaft, which is here shown as pointed, but may likewise be provided with a screw-thread, acts as a guide for the scoop, and the opened sides act in the same manner as the wings or flanges *g* in the scoop above described and take hold of the sand during the revolving of the shaft and scoop, throwing the same into the inside of said scoop. When filled full, the hinged sides G″ are closed by means of the chains or ropes and the connection of arms or levers, as described, when said sides G″, together with the other part of the scoop G′, form nearly a tight box capable of confining the finest sand. The shaft, together with the scoop, is then raised to the surface and carried over the mud-scow, when the sides of the scoop are again opened and the sand allowed to fall out. The shaft and scoop are then lowered again and the same operation repeated.

The scoop G‴ represented in Fig. X is constructed similar to the one represented in Fig. III, with openings *h* and wings *g*, but having the sides made very slanting and open on the mouth, so that if used for side digging the sand or dirt as soon as thrown into the scoop by the wings or flanges can fall directly out of the scoop into a channel, which leads the same into the cart which is to carry the dirt away, or a chamber may be placed on the shaft, into which the dirt falls. *b* and *d* are the arms which connect one-half of the scoop with the piece *f*, capable of sliding on the shaft and connected with chains or ropes similar as above described to open the scoop when desired, as represented in dotted lines in Fig. X.

Instead of firmly attaching the scoops to the shaft, as above described, the same may be made loose and capable of sliding on the shaft, as shown in Figs. X and XI, fitting on a pin or key *s*, fast in the shaft, by which said scoops are attached to the shaft in such a manner as to be made to revolve with the same when the shaft is turned by the machinery, or the shaft may be made square and the scoop fitted loosely over the square part. If used for deep digging, the scoop can in that case be hoisted to the surface of the water when filled without having necessarily to hoist the shaft out of the water when the scoop is emptied and then slid down again into its place. The shaft requires in that case to be hoisted only so much as is necessary to pull its end out of the mud and move the same from one place to the other, saving thereby considerable power.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The construction of revolving excavating scoops provided either with openings and wings or flanges on their sides capable of opening and shutting, or so constructed that part of the sides may be opened and act in that position as wings or flanges, by which the dirt, mud, or sand is during the revolving of the scoop thrown into the inside of the scoop, as described.

2. The manner of attaching scoops to the shafts so that the same will be made to turn with the shaft when the same is revolving and at the same time capable of being raised above the surface of the water when filled for the purpose of being emptied without requiring to raise the shaft, substantially as described.

MASON H. FORD.

Witnesses:
ANDERSON KEESE,
GEORGE WOOD.