(No Model.) 3 Sheets—Sheet 1.

A. BOSCHKE.

EXCAVATING MACHINE.

No. 348,376. Patented Aug. 31, 1886.

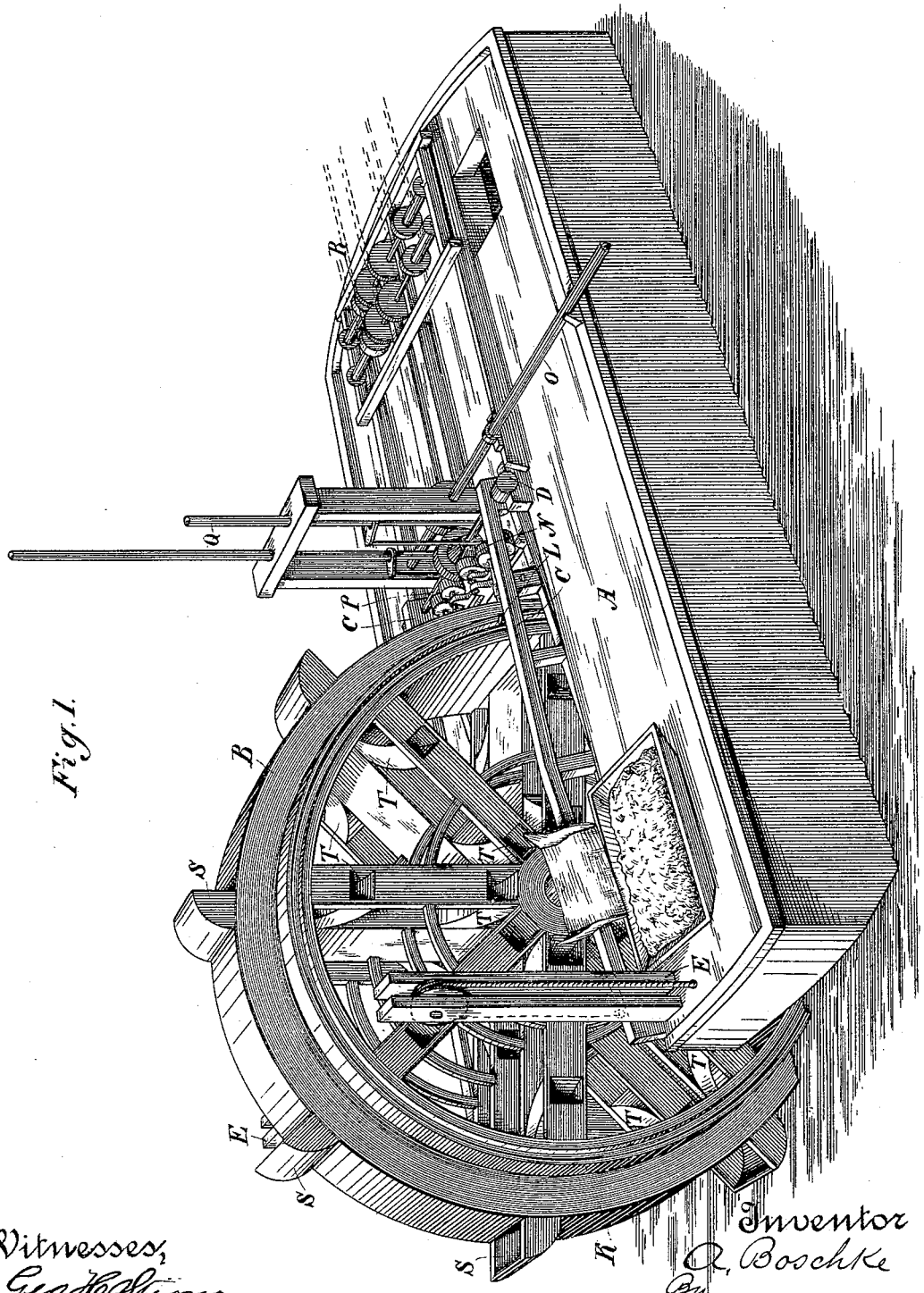

Fig. 1.

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A. BOSCHKE.

EXCAVATING MACHINE.

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Fig. 2.

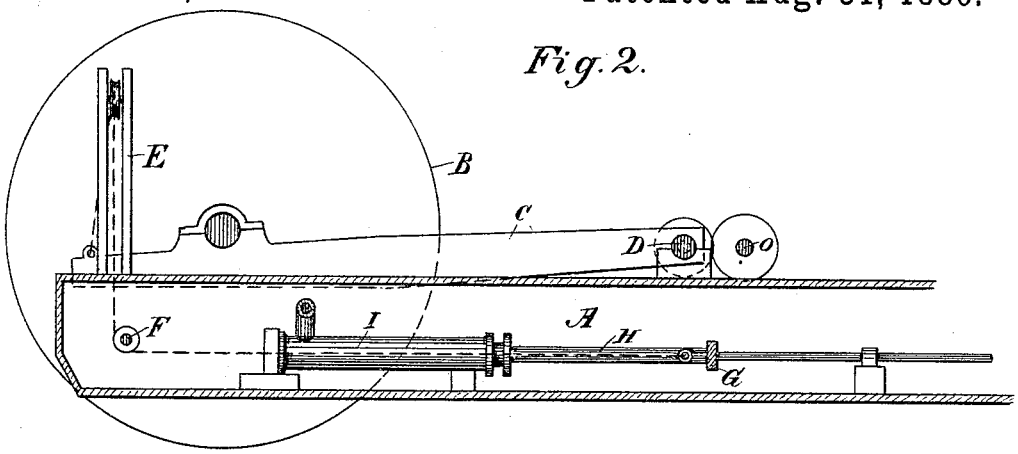


Fig. 3.

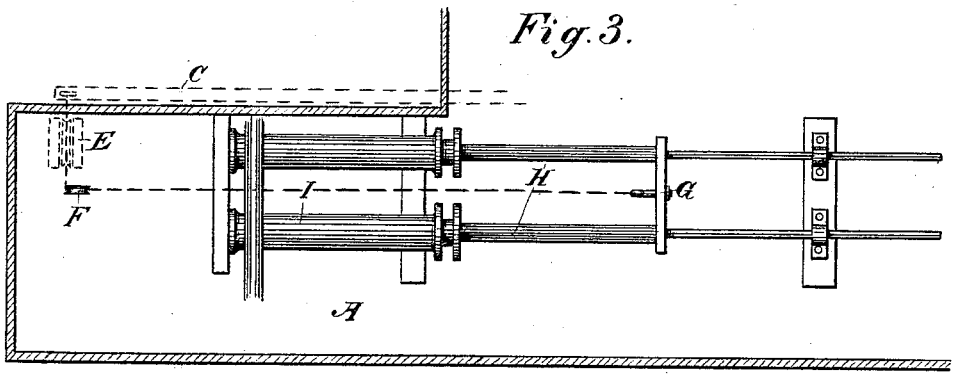
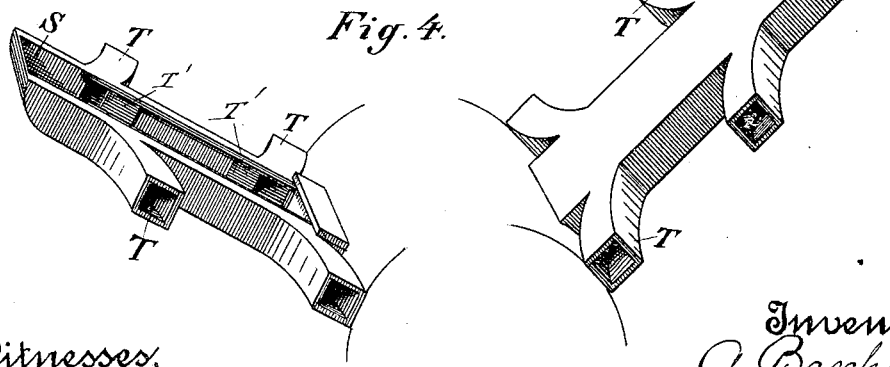


Fig. 4.



Witnesses,
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(No Model.) 3 Sheets—Sheet 3.

A. BOSCHKE.

EXCAVATING MACHINE.

No. 348,376. Patented Aug. 31, 1886.

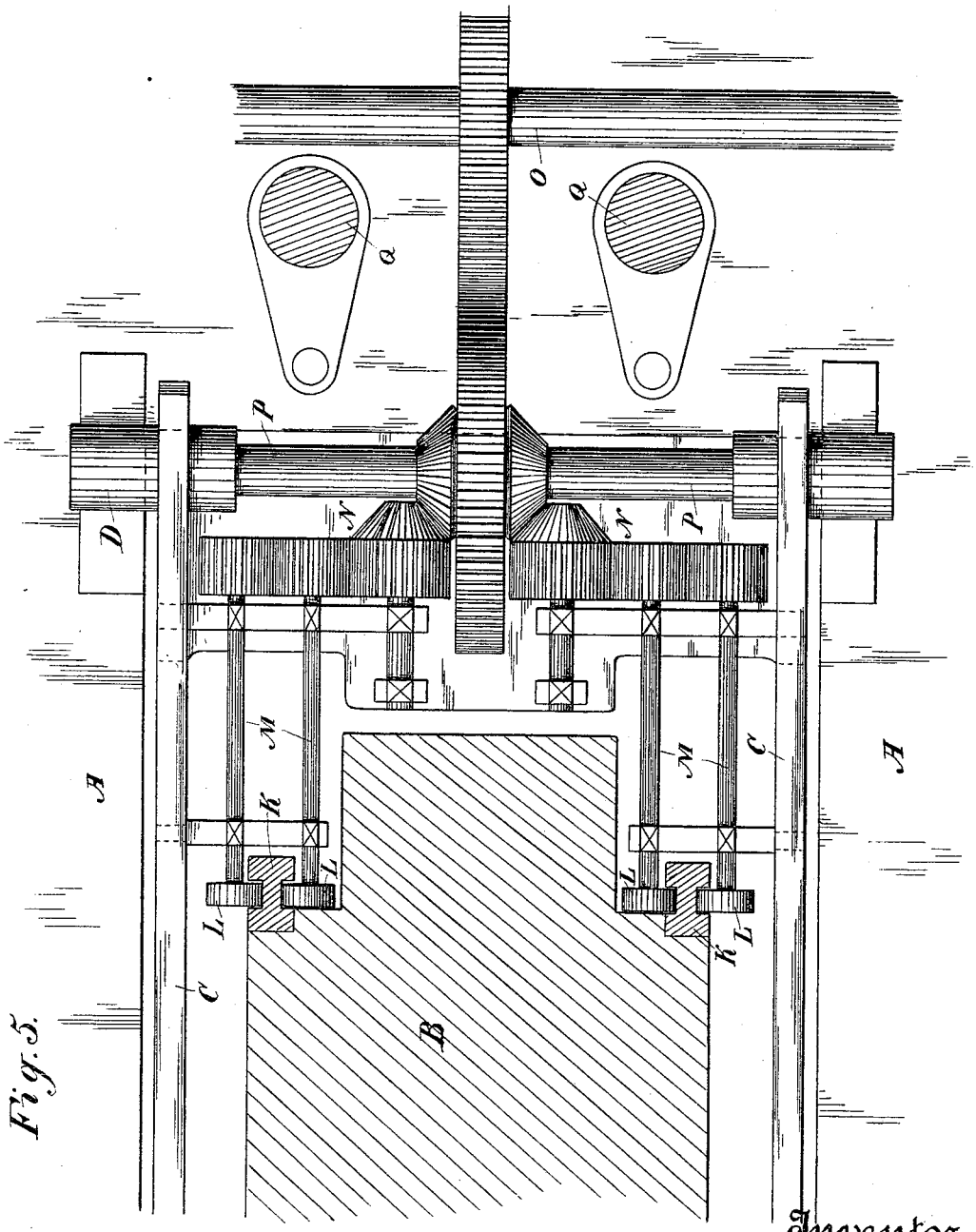

Fig. 5.

Witnesses,
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UNITED STATES PATENT OFFICE.

ALBERT BOSCHKE, OF SAN FRANCISCO, CALIFORNIA.

EXCAVATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 348,376, dated August 31, 1886.

Application filed December 11, 1885. Serial No. 185,359. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BOSCHKE, of the city and county of San Francisco, State of California, have invented an Improvement in Excavating-Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an excavating apparatus; and it consists in the construction and combination of devices which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of my apparatus. Fig. 2 is a side elevation of the wheel, showing one of the arms by which it is supported and the means for raising and lowering it. Fig. 3 is a plan view of the hydraulic cylinders upon one side, by which the wheel is raised or lowered. Fig. 4 is a detached view of two of the digging and discharging buckets. Fig. 5 is a plan view of the driving-gear of the digging-wheel.

A is a scow or float upon which my apparatus is mounted. This scow is built with its front end divided or having a channel extending back a sufficient distance to admit the large digging-wheel B, which is supported so as to revolve in a vertical plane in this opening or passage, and is of so large diameter that its lower edge will reach the bottom of the place which is to be dredged or dug out. In order to support this wheel so that it may be raised or lowered to suit inequalities of the bottom without disarraging the gearing by which it is driven, its journal-boxes are supported upon heavy arms C, the inner ends of which turn upon a shaft or trunnions D. Near the outer ends of the float, upon each side of the wheel, are heavy frames or standards E, having pulleys at the top, over which ropes or chains pass and are connected with the outer ends of the beams or frame C, which support the digging-wheel. These ropes pass downward and around other pulleys, F, and thence extend to a cross-head, G, which is operated by pistons H of the hydraulic cylinders I. Water is admitted into these cylinders under a sufficient pressure to move the pistons and the cross-head, and by means of ropes or chains the ends of the arms C are raised or depressed, carrying with them the wheel B. This wheel is caused to rotate in any suitable manner. In the present case I have shown it provided with flanges K upon its periphery, and disks or rollers L are mounted upon shafts M, driven by suitable gearing, as shown at N. These rollers L are forced against the sides of the flanges K so strongly as to drive them by the frictional contact, and thus cause the wheel to rotate. The main driving-shaft O, from which power is transmitted to the driving-gears, acts upon gearing upon the shaft P, which is in line with the trunnions of the arms C, so that as the excavating-wheel is depressed or raised the gear-wheels also remain in proper relation with each other. The scow is advanced by means of spuds Q, which are driven down into the mud through suitable guides, one spud only being in the ground at one time. When the boat or scow is caused to swing about this spud, it will be advanced, because the spud is at one side of the center, and after it has been advanced the other spud may be put down and the first one withdrawn, so that it again advances as it swings to the opposite side.

R represents the windlasses or drums around which the ropes pass, and from which they extend to anchors on the shore, so as to swing the boat or scow from side to side, suitable gearing being connected with them and with engines by which they are driven.

The digging-wheel is provided with buckets or scoops S, which project beyond its periphery, as shown, and when the wheel is caused to revolve each bucket or scoop takes up a portion of the mud or material which forms the bottom and elevates it toward the top of the wheel. These buckets or scoops are continued radially toward the center of the wheel, and have openings made in the sides of the radial extensions which connect with curved directing-chutes T. These chutes open outward at each side of the wheel, and the mud or material which is taken up by the scoop or bucket S will run toward the center when the arm reaches the point nearly vertical, and will be discharged into suitable carriers or conveyers, by which the material is conveyed to any desired point of deposit. These carriers I prefer to make of a form and construction shown in my patent of July 7, 1885.

The chutes or passages T are provided with gates T', (see Fig. 4,) which may be fitted to slide in grooves formed on the inside of the scoop

or bucket, so that the discharge may be made upon either one or both sides at once and from either set of passages, either the one nearest the center or the ones nearest the circumference of the wheel, as may be desired.

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

1. A digging or excavating apparatus consisting of the wheel rotating in a vertical plane, having buckets or scoops, and radial continuations or passages extending from these buckets toward the center of the wheel, in combination with discharge chutes or openings upon the side of these passages, substantially as herein described.

2. The excavating buckets or scoops secured to the periphery of a wheel revolving in a vertical plane, having extensions radially toward the center of the wheel, in combination with curved discharge-chutes upon each side, having passages and gates, whereby one or more may be closed or opened at pleasure, substantially as herein described.

3. The excavating-wheel arranged to be raised or depressed about the journals of the supporting-arms, in combination with driving-gearing, and the compression or friction rollers acting upon the flange or rim of the wheel so as to drive it, substantially as herein described.

In witness whereof I have hereunto set my hand.

ALBERT BOSCHKE.

Witnesses:
C. D. COLE,
J. H. BLOOD.