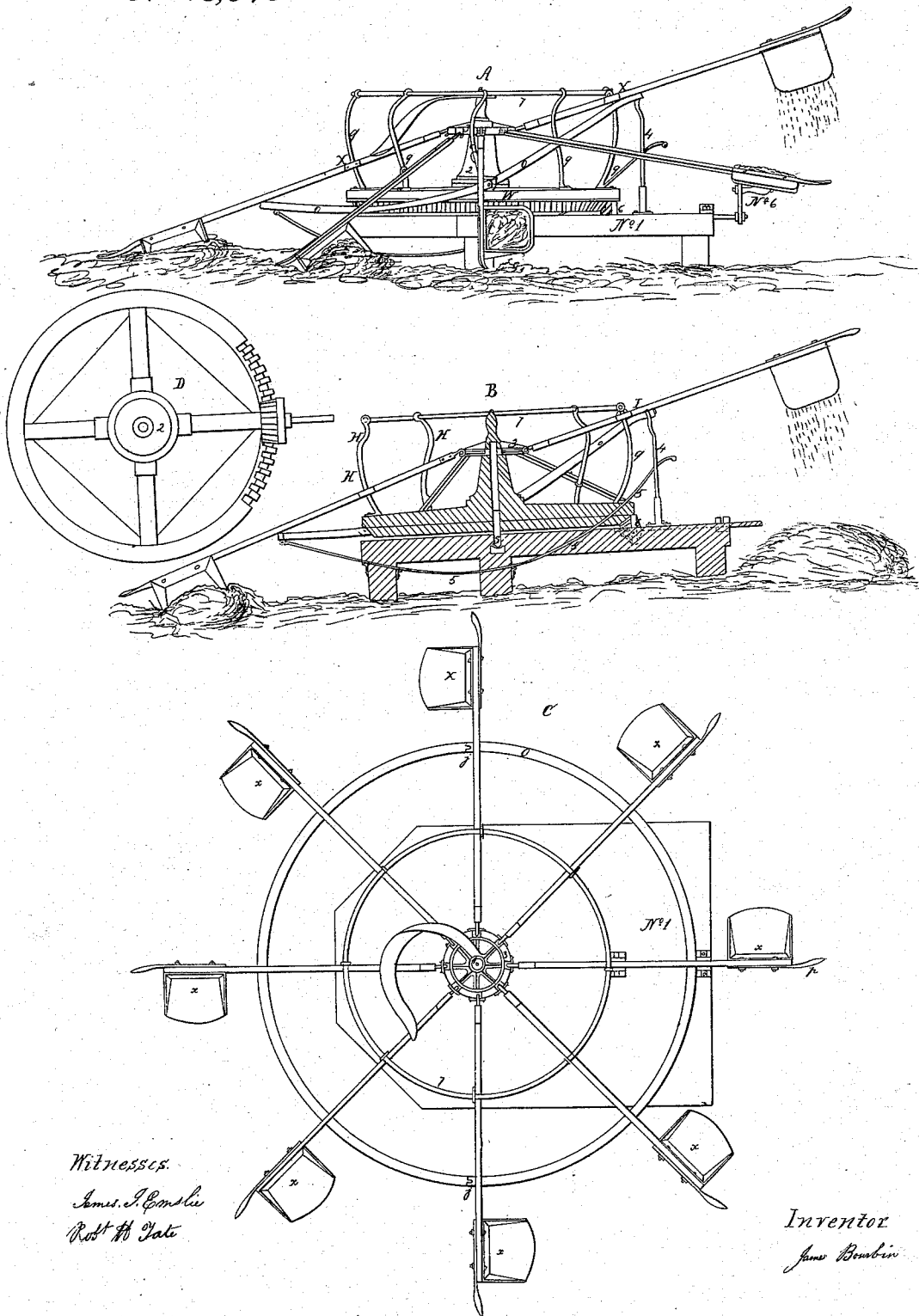


J. Bourvin.

Excavator.

Nº 16,876.

Patented Oct. 14, 1866.



Witnesses.
Amos J. Conkle
Robt H. Tate

Inventor
Jos. Bourvin

UNITED STATES PATENT OFFICE.

JAMES BOURBIN, OF SAN FRANCISCO, CALIFORNIA.

EXCAVATOR.

Specification of Letters Patent No. 15,875, dated October 14, 1856.

To all whom it may concern:

Be it known that I, JAMES BOURBIN, of the city and county of San Francisco and State of California, have invented a new and useful Machine for Grading and Excavating, to be called an "Excavator;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Letter A is a perspective view, letter B is a longitudinal section, A being the left, and B the right section, the machine revolving horizontally from right to left, or contrary to the course of the sun, letter C is a ground plan, letter D is the driving wheel and pinion.

In letter A, W is the body wheel, 2 the hub or pillar of the wheel W, *g s* are the guides, 3 the ring from which the shovels work, X on the left the slide, fastened to the shovel handle and working on the guides, *o o* the rest-hoop in two parts, 4 the stay that supports the hoop *o o*, 7 the hoop to strengthen the guides, 6 the pinion, N^o the crank, X on the right the shovel turned, N^o the truck.

In letter B *g s* the guides, as at letter A, H, H the bend, or gooseneck of the guides, by means of which the shovels are emptied, *i* the shovel emptying, *s* the pivot on which the machine revolves, 4 the rest hoop stay, 5 the gage rod by which the gage or front half of the rest hoop is raised or lowered, 7 the hoop that strengthens the guides.

In letter C, N^o the floor of the truck, X *s* are the shovels, *o o* the rest hoop in two parts, *j* the joints of the rest hoop, 3 the ring from which the shovels work, 7 the hoop to strengthen the guides.

In letter D, 2 is the hub or pillar of the body wheel, 6 the pinion which drives the cog wheel D, *j* the joints of the rest hoop not in D, but in letter A.

To build one of these machines, I first construct a truck similar to a railroad truck, but having the front end simicircular or three square, as at N^o letter C. I describe a circle on the floor of the truck something less than the width of the truck, its center being the pivot S letter B, inside this circle at equal distances I insert small rollers to steady the body wheel W, letter A when revolving, I then set a socket or thimble in

the truck, at the distance of half the width of the truck, from the front, to receive the pivot S letter B. I then construct the body wheel W, letter A, having for its hub, or center, the pillar 2, letter A, on the underside of the rim or felly of the wheel W, I fasten the cog wheel D, letter D, as at *w* letter A, and on the upper side of the rim of the body wheel, and at equal distances I set on the guides *g s* as at letters A and B, these guides are curved, so as to form a segment of circle from the shoulder of the pillar, as at X on the left, letter A, and bent at the top in a line with the rim of the body wheel, to form what is usually called a gooseneck, these guides have a hoop fastened to the top of them to give strength, as at 7 letters A B and C, I then attach my shovels by means of hooks as at 3 letter A, these the heads of the shovels are fastened to the handles in front, or at right angles to the handles, and have a cutter or pick fastened to, and projecting out from them as at *p*, letter C, these shovels work on the guides up and down, and are confined to the guides, by slides fastened to the handles of the shovels, as at X on the left letter A, to lift and lower the shovels, I provide a hoop with the diameter considerably larger than the width of the truck, so as to set outside and be clear of the machine, this hoop being two parts, and having joints on a line across with the pivot of the machine as at *j* letters A and C, at these joints it is supported by two braces, fastened to the truck, and projecting out and above the floor of the truck, as at *j* letter A, this hoop is inclined to the back of the machine, and supported in that position, by a stay set on the floor of the truck, as at 4 letter A, the front half of this rest hoop, serves also as a gage to direct the shovels in digging, this gage is raised or lowered by a rod fastened to it, and led to behind the machine above the floor of the truck, as at 5 letter B. As the machine revolves, the shovels are filled in front, and are driven up the guides, by the force of the machine against the rest hoop, and are driven around on the rest hoop by the resistance of the guides, the digging and heaving being done by the guides, while the lifting is performed by the rest hoop as at letter A.

The machine is driven by a cog wheel fastened to and forming a part of the body wheel as at *w* letter A, and worked by a

pinion set on a shaft, the shaft having a crank to which the power is applied.

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

- 5 The application of any number of shovels required, and working from one center, on the circular principle, also the different ap-

pliances by which the shovels, are directed in their different movements, as herein described.

JAMES BOURBIN.

Witnesses:

ROBT. H. TATE,
STEPHEN PARET.