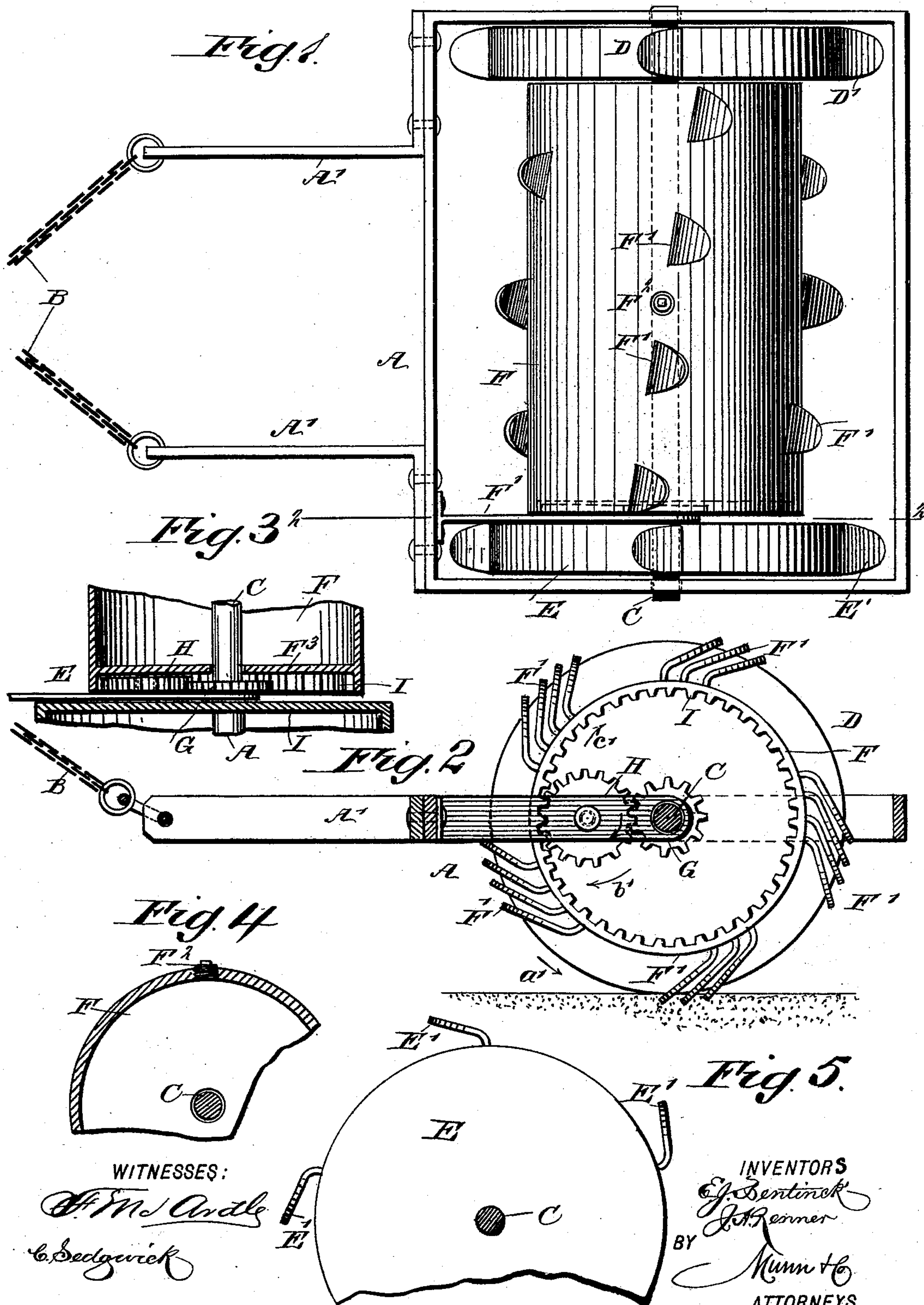


(No Model.)

E. J. BENTINCK & J. A. RENNER.  
DIGGING MACHINE.

No. 509,286.

Patented Nov. 21, 1893.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ELIZA J. BENTINCK AND JULIA A. RENNER, OF GALVESTON, TEXAS.

## DIGGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 509,286, dated November 21, 1893.

Application filed July 28, 1893. Serial No. 481,729. (No model.)

*To all whom it may concern:*

Be it known that we, ELIZA J. BENTINCK and JULIA A. RENNER, both of Galveston, in the county of Galveston and State of Texas, have invented a new and Improved Digging-Machine, of which the following is a full, clear, and exact description.

The invention relates to excavators, and its object is to provide a new and improved digging machine, which is simple and durable in construction, very effective in operation, and more especially designed for deepening or removing sand-bars at the mouths of channels, rivers, or other water-ways.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a sectional side elevation of the same on the line 2—2 of Fig. 1. Fig. 3 is a sectional plan view of the gearing for driving the drum from the main drive wheel. Fig. 4 is a sectional side elevation of part of the drum; and Fig. 5 is a face view of part of one of the drive wheels.

The improved digging machine is provided with a suitably constructed frame A, carrying at its front the brackets A', connected with chains B, extending to a boat or other device for pulling the machine through the water over the bar to be deepened or removed.

In the frame A is journaled in suitable bearings, the transversely extending shaft C, carrying at its ends the drive wheels D and E, secured to the said shaft, and provided with shovels D' and E' respectively, adapted to engage the sand so as to cause the shaft C to rotate as the machine is dragged along.

Between the drive wheels D and E, is arranged the drum F, mounted to rotate loosely on the shaft C and provided on its periphery with spirally arranged shovels F', standing in an opposite direction to the shovels E' of the drive wheel E. The drum F is entirely closed and is provided with a plug F<sup>2</sup>, which, when removed, permits the drum to fill with water

so as to sink the machine into the water. When the plug is screwed into the empty drum then the latter will readily float, so that the machine can be readily dragged over the water to the desired place for making the excavation. Upon arriving at the point or place of excavating the plug F<sup>2</sup> is removed to permit the drum to fill, so as to sink the machine. The drum F is driven in an opposite direction to that in which the drive wheels D and E travel, and for this purpose the shaft C carries a pinion G, in mesh with an idler H, journaled in a suitable bracket extending from the frame A. This idler H meshes into an internal gear I, formed on the rim of the drum F next to the head F<sup>3</sup> of the drum, as will be readily understood by reference to Fig. 3. Now, when the machine is dragged forward, the drive wheels D and E rotate in the direction of the arrow a', so that the shaft C imparts a like motion to the pinion G, which latter rotates the idler H in the direction of the arrow b', and the said idler transmits its rotary motion to the drum F to cause the latter to revolve in the direction of the arrow c', which is in an inverse direction to the motion of the drive wheels D and E.

It will be seen that when the machine is submerged and dragged along the bottom of the sand bar, the drum F is rotated, whereby its shovels F' dig into the sand, carry the latter upward and cause the sand to float in the current of water, which latter carries the sand away to distant places.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A digging machine, comprising a hollow drum provided with shovels and a removable plug for filling the said drum with water, and driving wheels adapted to drive the said drum in an opposite direction to their motion, substantially as described.

2. A digging machine, comprising a frame, a main shaft journaled in the frame and carrying drive wheels, a drum journaled loosely on the said shaft between the drive wheels and provided with shovels, and mechanism, substantially as described, for rotating said drum in an opposite direction to the drive wheels, substantially as described.

3. A digging machine, provided with a closed drum having shovels and a removable plug, substantially as shown and described.

4. A digging machine, comprising a frame,  
5 a shaft journaled in the said frame, drive wheels secured on the said frame and provided with shovels, a drum mounted to rotate loosely on the said shaft and provided with shovels standing in an opposite direction to  
10 the shovels on the drive wheel, and a gear

for connecting the shaft with the said drum to rotate the latter in an opposite direction to the drive wheels, substantially as shown and described.

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Witnesses:

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