

(No Model.)

2 Sheets—Sheet 1.

C. H. PARKER.
EXCAVATING MACHINE.

No. 525,617.

Patented Sept. 4, 1894.

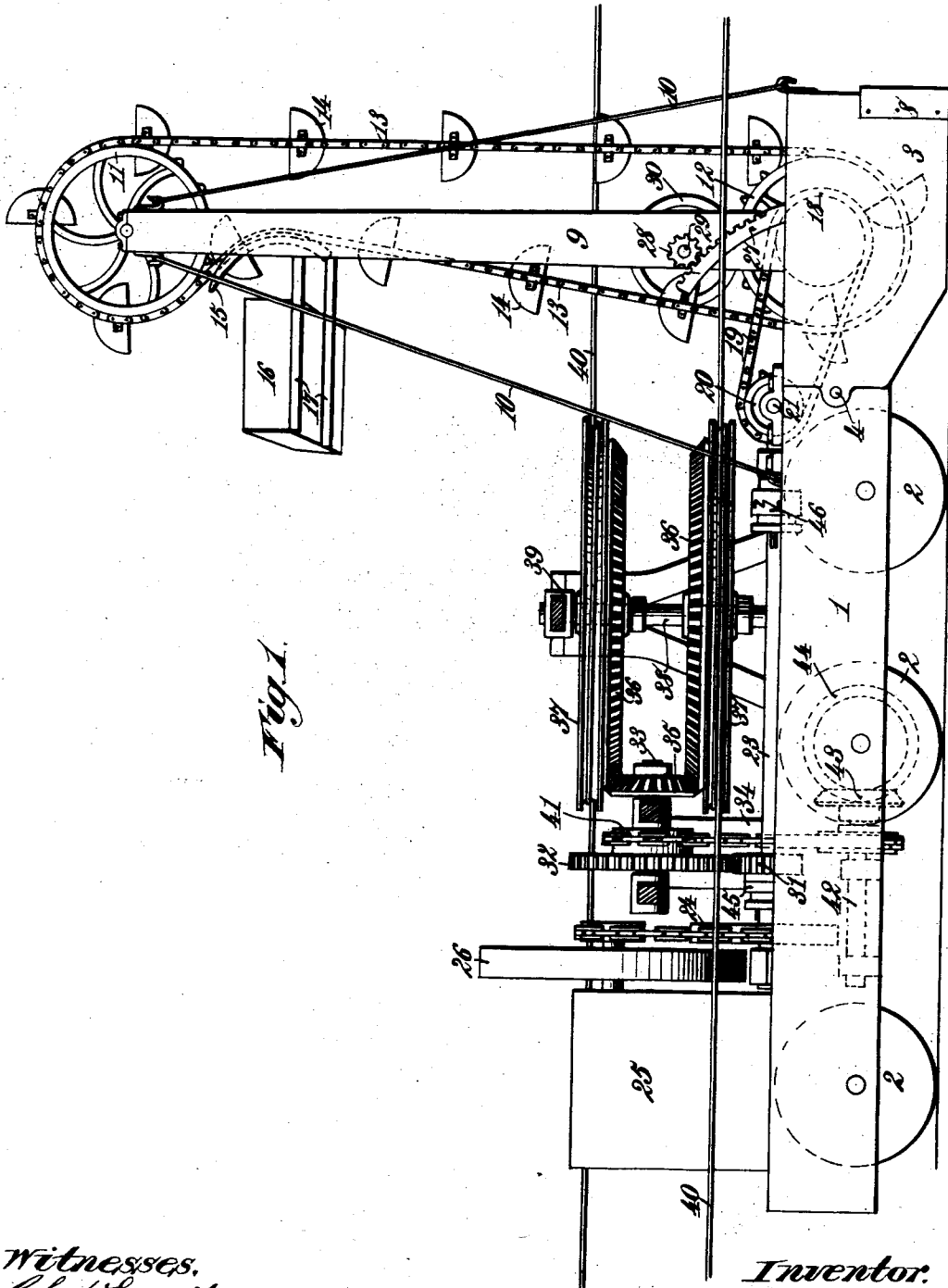


Fig. 1.

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Dennis Sumby.

Inventor.
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By *James L. Norris,*
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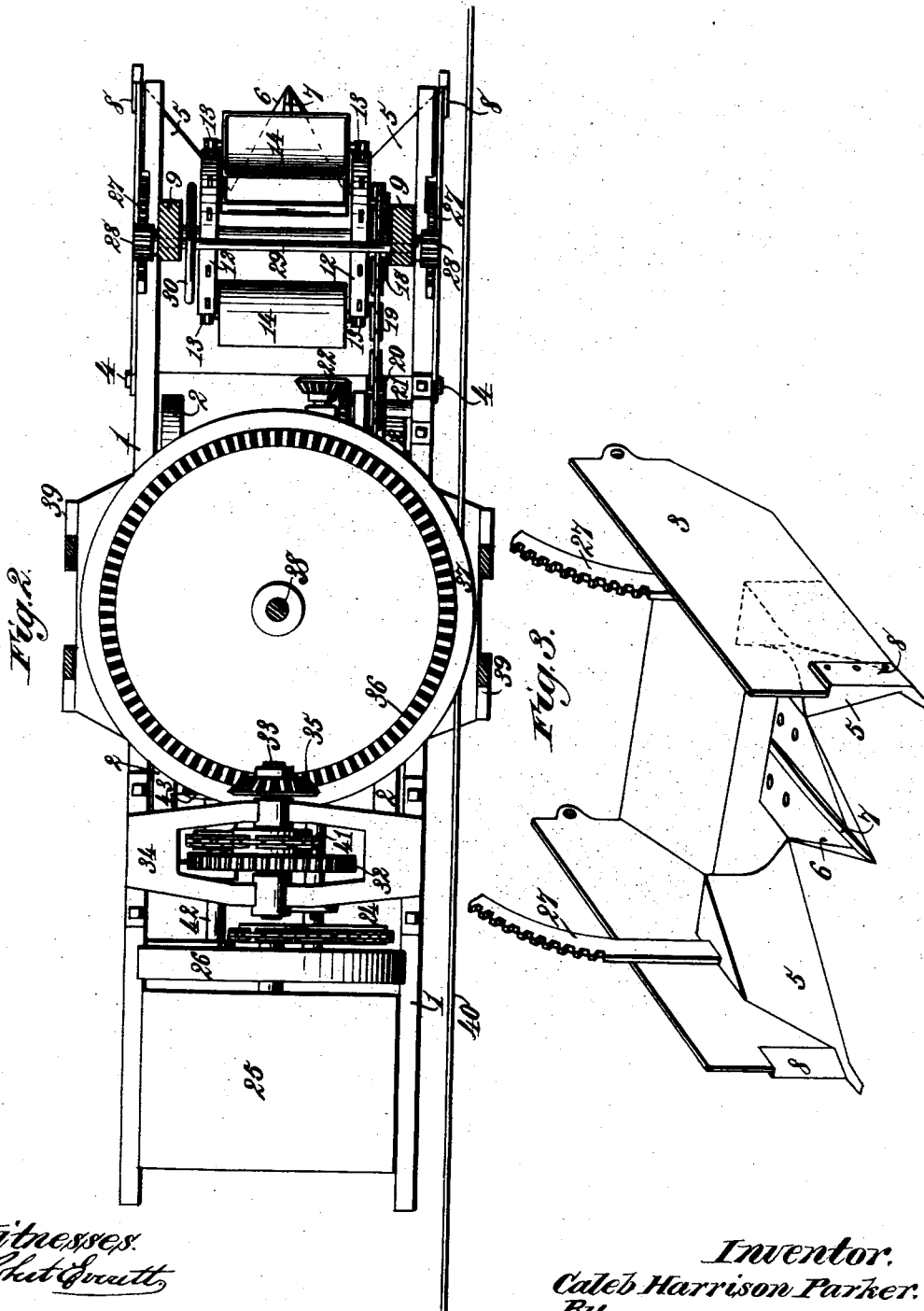
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2 Sheets—Sheet 2.

C. H. PARKER.
EXCAVATING MACHINE.

No. 525,617.

Patented Sept. 4, 1894.



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Dennis Dumbly

Inventor:
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UNITED STATES PATENT OFFICE.

CALEB HARRISON PARKER, OF NEW ORLEANS, LOUISIANA.

EXCAVATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 525,617, dated September 4, 1894.

Application filed March 27, 1894. Serial No. 505,322. (No model.)

To all whom it may concern:

Be it known that I, CALEB HARRISON PARKER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Excavating-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon.

My invention relates to excavating machines designed for digging ditches, for use in building levees or other embankments and for similar purposes.

The invention consists in the features of construction and novel combinations of parts in an excavating machine as hereinafter more particularly set forth.

In the annexed drawings illustrating my invention, Figure 1, is a side elevation of my improved excavating machine. Fig. 2, is a plan of the same omitting the upper one of the two horizontal drums forming part of the propelling mechanism of the machine, and showing the lower part of the derrick and dredging mechanism in horizontal section. Fig. 3, is a perspective of the excavator box and attached cutters.

Referring to the drawings, the numeral 1, designates a frame mounted on a series of wheels or rollers 2, adapted to afford a firm support for the machine and assist in moving it forward during the work of excavating.

To the forward projecting ends of the side beams of the machine frame is secured a box shaped excavator 3 open at the top and in front and rear and closed at the bottom and on both sides. This excavator box is preferably constructed of steel plates and mounted on pivotal bolts 4 so that it can be slightly raised or lowered to change the depth of cutting.

The work of excavating is performed by the beveled side cutters 5 and a bottom cutter 6 of the form shown in Figs. 2 and 3. These side cutters 5 are made of quarter-inch steel plate in hollow form and have their inner faces so beveled as to constitute inclined planes over which the excavated earth will readily pass to the grasp of the dredge buck-

ets that work in the excavator box. The bottom cutter 6 occupies a position intermediate the two side cutters and has its forward edge pointed, as shown. This cutter is composed of one quarter-inch steel plate and is provided along its longitudinal center with a steel knife 7 of such form and dimensions as to impart additional strength to the cutter and act as a wedge to open the earth and break it up for being more conveniently taken up by the dredge buckets. These cutters 5 and 6 are so attached to the excavator box 3 that they may be readily removed for sharpening. If desired, the sides of the excavator box may be provided with vertical straight edged cutters 8, as shown.

To the forward ends of the frame 1 adjacent to the excavator box are secured the opposite vertical derrick legs 9 that are braced by wire rope guys 10 or other suitable steadying devices. Sprocket wheels 11 and 12 are provided at the top and bottom of each derrick leg for engagement therewith of endless chains 13 between which are suspended dredge buckets 14 that may be of any suitable construction.

On the upper part of the derrick may be mounted guides 15 to properly direct the downward course of the chains 13 from which the dredge buckets 14 are suspended.

The dredge buckets 14 are made of steel and in such form and dimensions that when working in the box shaped excavator 3 in proximity to the cutters they will assist in cutting and will readily fill themselves with the loose earth and convey it upward and backward to a chute 16 through which the excavated material is discharged to one side of the machine. The chute 16 is supported in an inclined position on arms 17 projecting from the derrick and may be arranged to conduct the excavated earth to suitable conveyers or into wagons or cars, if desired.

The lower sprocket wheels 12 are on the same shaft with and are driven through a sprocket gear 18 connected by a driving chain 19, Fig. 2, with a sprocket wheel 20 on a short transverse shaft 21 connected by bevel gearing 22 with a longitudinal shaft 23 which is driven by sprocket gearing 24, or otherwise from an electric motor 25, or other engine mounted on the rear portion of the machine

frame. A fly wheel 26 may be mounted on the shaft of the motor.

The pivotally supported excavator box 3 is provided on opposite sides with upward projecting segmental racks 27 that are preferably made from steel. These segmental racks 27 mesh with spur gears 28 on the opposite ends of a transverse shaft 29 journaled in the derrick legs at a suitable point above the excavator box. By means of a hand wheel 30 on the shaft 29 the spur gears 28 can be rotated in such direction as to raise or lower the excavator at will for the purpose of increasing or decreasing the depth of the cut or to avoid obstructions.

On the longitudinal shaft 23 is mounted a spur pinion 31 adapted to mesh with a spur wheel 32 that is fast on a short shaft 33 journaled in suitable bearings provided in a bracket 34 that is supported on and above the frame 1 of the machine. The shaft 33 carries at one end a bevel pinion 35 that is arranged between and meshes with two horizontally placed bevel gear rings 36, on two horizontal drums 37 loosely mounted on a common vertical shaft 38 and one above another, as shown in Fig. 1. The vertical shaft 38 is journaled in suitable bearings provided in the main frame of the machine and in a frame or bracket 39 supported thereon. Horizontally arranged traction cables 40 are arranged along opposite sides of the machine and each of these is passed once around one of the said drums. At their ends the traction ropes are each firmly secured to some suitable support, such as a stake or post driven firmly into the ground in front of and, also, in rear of the machine.

The drums 37 are circumferentially grooved to engage the traction cables 40 and they are driven in opposite directions by the bevel gearing 35, 36 so as to cause the machine to move steadily along said cables which, also, serve as guides. The traction cables being securely fastened to posts, or other supports, at some distance in advance and in rear of the machine, are thus kept perfectly taut so that by means of their engagement with the rotating drums 37 the whole machine can be readily moved forward or backward at will. While the dredge buckets 14 are being operated through the sprocket gearing actuated from the motor or engine 25, the entire machine is at the same time moved forward along the traction cables 40 at a rate which will force the excavator to take up earth to supply the dredge buckets with loads as they successively present themselves in proper position.

The machine may be likewise propelled by means of sprocket gearing 41 connecting the shaft 33 with a longitudinally arranged shaft 42 journaled in the lower part of the machine frame and carrying at one end a bevel pinion 43 meshing with a bevel gear 44 on one of the supporting axles of the machine. By this means power can be applied directly to such

axle and the driving wheels or rollers that are fast thereon, and in such a manner as to propel the machine at the same speed as with the traction ropes or cables. This arrangement also permits the machine to be moved from place to place by means of its own power.

On the shaft 23 is a clutch 45, Fig. 1, connected with the pinion 31, and through which the propelling mechanism of the machine may be disconnected from the engine at will, and without stopping the action of the dredge buckets. Another clutch 46, Fig. 1, connected with the shaft 23, will permit disconnection of the dredge gearing, whenever desired, without interfering with the propulsion of the machine.

When the machine has advanced a sufficient distance, excavating a layer of earth, say, six inches deep, more or less, and thirty-eight inches wide it may be run back to take a new cut, operating down to a depth of say, six feet. This is where the digging is merely to obtain earth for levee building. Where ditch digging is the object a run of any required length may be made continuously.

As the machine advances it moves easily on its supporting rollers or wheels 2 and the cutters carried by the box-shaped excavator make a clean cut, affording ample room on each side for the machine to follow without friction and leaving a clean level floor for the rollers to move on. The entire work of digging and removing the earth and propelling the machine in the path it should follow is done with the power supplied by the engine on the machine frame, and only the services of one attendant will be required. It will be observed that the greater part of the bulk and weight of the machine is brought down to the level of the platform or main frame thus avoiding any top heaviness and enabling the excavating devices to be operated with greater ease and more satisfactory results.

What I claim as my invention is—

1. In an excavating machine, the combination of a frame mounted on wheels or rollers, a box shaped excavator supported at the forward end of said frame and having its open front end provided with cutters, a derrick and a motor mounted on the machine frame, a series of dredge buckets carried by endless chains mounted on the derrick, said buckets adapted to work in the box shaped excavator, gearing for driving said bucket carrying chains from the motor, a pair of drums mounted horizontally one above the other on the machine frame or platform, gearing for actuating said drums from the motor and in opposite directions to each other, and traction cables engaged with said drums on opposite sides of the machine and having their ends secured to supports in advance and in rear of the machine, substantially as described.

2. In an excavating machine, the combination of a movable frame mounted on wheels or rollers, an excavator mounted at the forward end of said frame, a derrick supported

by the frame, a series of dredge buckets carried by endless chains mounted on the derrick, traction drums mounted on the machine frame and engaged with fixed traction cables extended along each side of the machine, a motor mounted on the machine frame, and gearing for actuating the traction drums and dredge buckets from said motor, substantially as described.

3. In an excavating machine, the combination of a movable frame mounted on wheels or rollers, an excavator mounted on the forward end of said frame, traction drums mounted on the frame and engaged with fixed traction cables extended along the sides of the machine, a motor mounted on the machine frame, and gearing connecting the motor with the traction drums and with one of the axles of the machine supporting wheels or rollers, substantially as described.

4. In an excavating machine, the combina-

tion of a movable frame mounted on wheels or rollers and provided at its forward end with a derrick, a series of dredge buckets carried by endless chains mounted on the derrick, and an open box-shaped excavator carried at the forward end of the wheeled frame, below the derrick, and provided with side cutters having their inner faces formed with inclined planes to deliver the excavated material to the dredge buckets, and a central or horizontal cutter attached to the bottom of the excavator between the two side cutters, substantially as described.

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

CALEB HARRISON PARKER.

Witnesses:

WALTER H. COOK,
MAURICE RIES.