

(No Model.)

3 Sheets—Sheet 1.

M. PARKS.  
Excavating and Grading Machine.  
No. 230,046.  
Patented July 13, 1880.

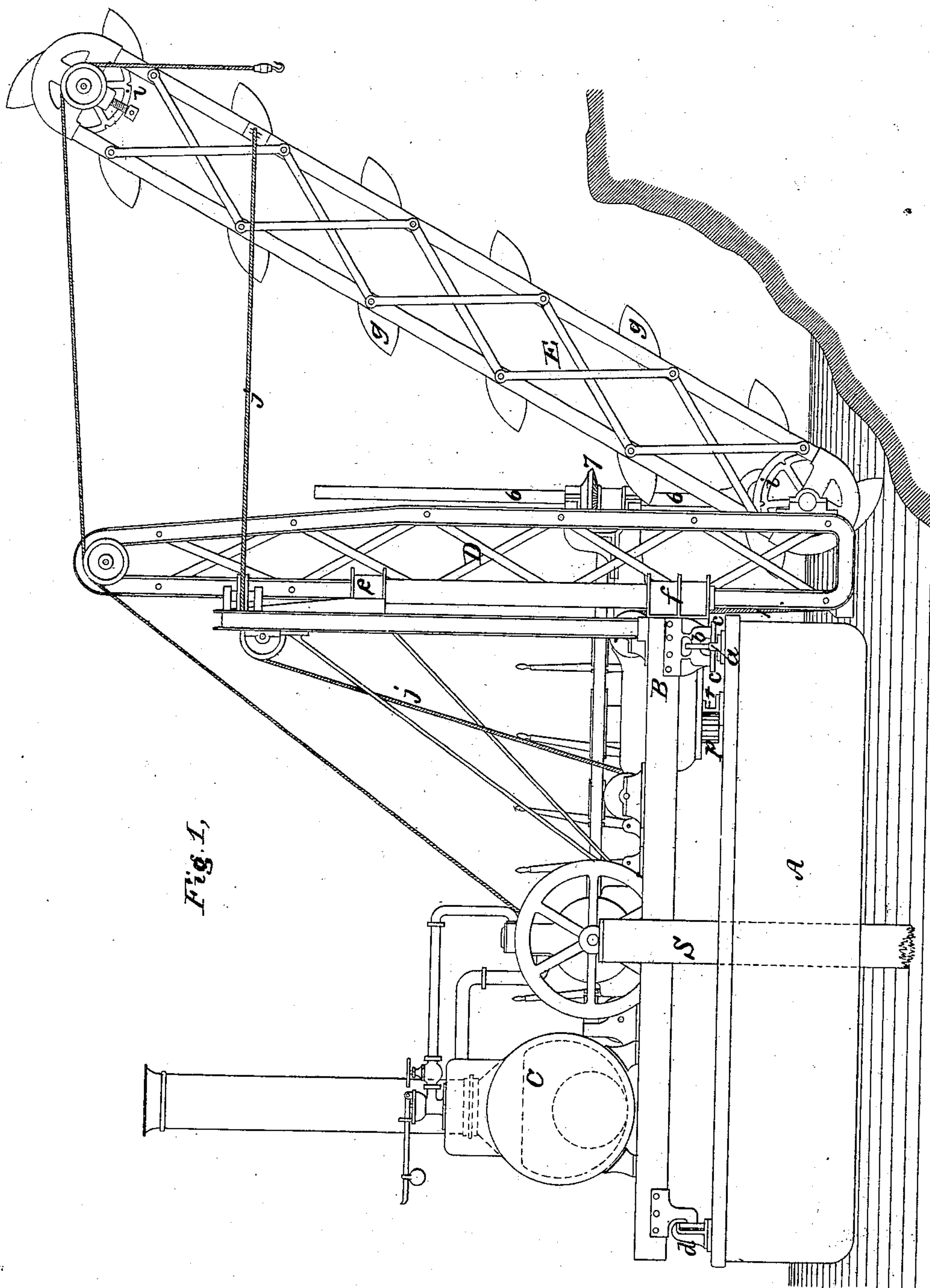


Fig. 1.

WITNESSES

*George*  
*Eastwick*

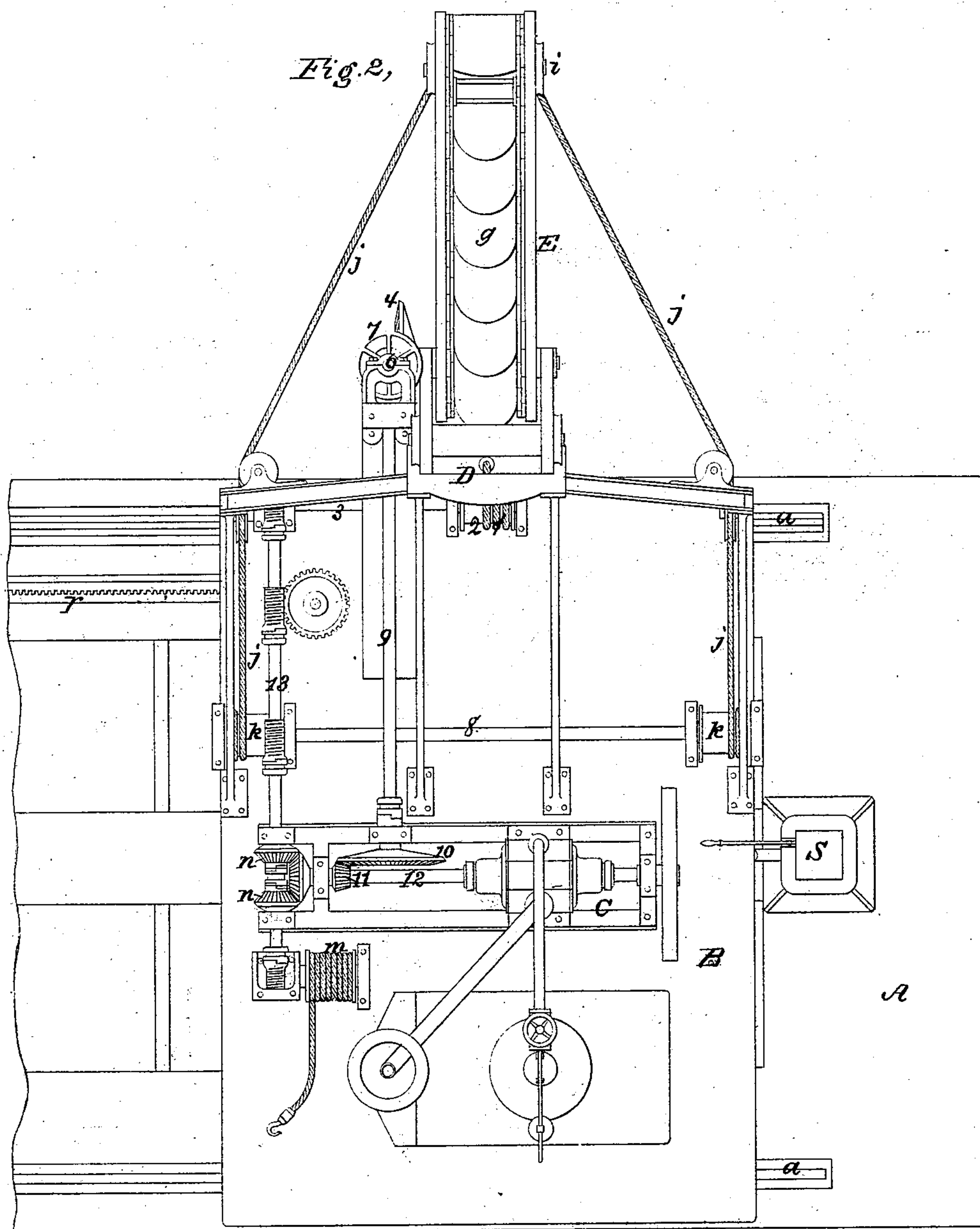
INVENTOR

*Marshall Parks,*  
*by M. Bailey*  
his ATTORNEYS.

(No Model.)

3 Sheets—Sheet 2.

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WITNESSES

*George W. ...*  
*Edw. ...*

INVENTOR

*Marshall Parks,*  
*by W. Bailey*  
his ATTORNEY.

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3 Sheets—Sheet 3.

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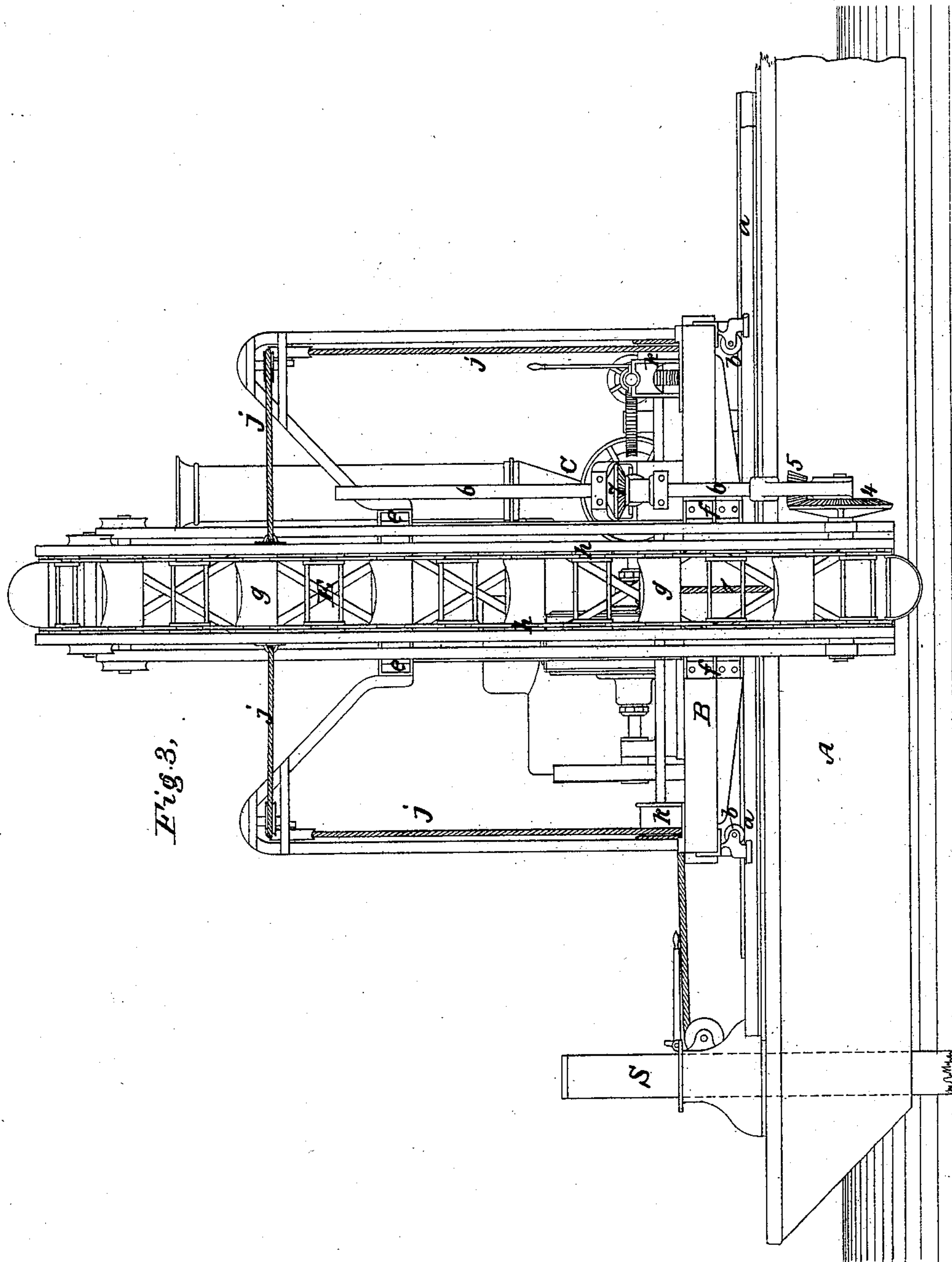


Fig. 3,

WITNESSES

*Georgii.*  
*E. T. Dick*

INVENTOR

*Marshall Parks,*  
*by W. Bailey*  
his ATTORNEYS



# UNITED STATES PATENT OFFICE.

MARSHALL PARKS, OF NORFOLK, VIRGINIA.

## EXCAVATING AND GRADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 230,046, dated July 13, 1880.

Application filed June 10, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, MARSHALL PARKS, of Norfolk, in the State of Virginia, have invented certain new and useful Improvements in Excavating and Grading Machines, of which the following is a specification.

My invention is directed to a machine intended primarily and principally for sloping or grading the banks or sides of canals, rivers, or other water-ways, but which may also be used for excavating new channels or water-ways or for widening or deepening existing water-ways.

I employ a barge, scow, or boat of sufficient capacity to carry the whole of the machinery. Attached to the boat at one of its sides is a vertically-adjustable frame, to the lower end of which is jointed a scoop or bucket carrying boom, which is adjustable as to inclination independently of the vertically-adjustable frame. The latter determines the depth at which the buckets or scoops commence their work, and the inclination of the boom determines the slope or grade to be given to the side or bank of the water-way upon which the machine acts. These parts are mounted on and move with a traveling carriage mounted on rails or ways in the boat, which, by proper mechanism, is caused to move along so as to bring the scoops opposite fresh surfaces of the bank to be sloped.

In the accompanying drawings I have represented a machine embodying my invention in its preferred form.

Figure 1 is a side elevation, Fig. 2 is a plan, and Fig. 3 is a sectional end elevation, of the machine.

A is the barge, scow, or boat, of sufficient capacity to carry all the machinery. It is provided with longitudinal track-rails *a*, upon which run the truck-wheels *b* of the platform or carriage B, on which are mounted the various parts of the machinery, as well as the boiler and engine C for actuating the same. On the side nearest the frame and boom, hereinafter described, the platform is provided with guide-wheels *c*, bearing against opposite side of the rail, to prevent the platform from leaving the rails. The other rail is provided with a guard, *d*, extending over the top of the truck rollers or wheels, to prevent the lifting

of this end or side of the platform in case excessive weight of the parts on the other side should tend to do this. The platform is moved by means of a pinion, *p*, driven from the shafting, which engages a rack, *r*, fixed to the boat, At one side of the platform, and extending down alongside of the boat, is a vertical frame, D, which is supported in and by suitable guide-standards *e* and guides *f* attached to the platform, said frame being so arranged as to be capable of vertically sliding in said guides. The frame is held and adjusted by means of a wire rope, 1, attached to the base of the frame and extending to and around a windlass, 2, on shaft 3, which is driven from the engine C. To the lower end of the frame D is jointed or hinged the boom E, which carries a series of excavating buckets or scoops, *g*, arranged on an endless chain, *h*, traversing the whole length of the boom, and mounted on chain gear-wheels *i*, the lower one of which is power driven, deriving its movement from the beveled wheel 4 on its axle, which meshes with the bevel-gear 5 on the rotating vertical shaft 6, which is carried by and moves up and down with the frame D. Said shaft is driven by the beveled gear 7, with which it has a spline-and-groove connection, and said gear 7 is driven from the engine-shaft 12 through a pinion on intermediate shaft, 9, and gears 10 11. Suitable clutch mechanism, under control of the operator, permits the bucket-chain to be put in motion or stopped, as desired. The upper and outer end of the boom is sustained by two wire ropes, *j*, attached to windlasses *k* on shaft 8, thus enabling the operator to adjust the boom to any required angle to suit the different requirements of the work to be done.

The windlasses or sets of windlasses hereinbefore referred to are driven by a suitable system of gearing and shafting. As shown in the drawings, they are all driven by one shaft, 13, through the intermediary of worm-gears and clutches, there being one clutch for each windlass or set of windlasses, so that any one of them can be put in movement or be kept stationary at the will of the operator. The shaft 13 also carries another worm-gear and clutch for driving the pinion *p*, and it further carries still another worm-gear and clutch for operating the windlass *m* for raising the spuds S



usually employed for holding the barge in position while at work. Motion is transmitted from the engine-shaft to shaft 13 by means of reversing-gears *n*, controlled by a clutch  
5 working into either gear, according to the direction of rotation desired.

To preserve the level of the boat while the platform is moving, I introduce into the boat a self-acting or automatic ballast, connected  
10 with the platform so as to move in the opposite direction thereto, thus keeping the boat level and allowing the machinery to cut on the same level in all positions of the platform.

To operate the machine, after the boat has  
15 been secured in proper position the scoop or bucket chain is put in motion and the vertical frame is lowered, bringing the scoops in contact with the earth until sufficient depth of cut is obtained, the boom being adjusted as to  
20 inclination so as to obtain the desired slope or grade of the bank upon which the machine is to act. I remark that this boom extends out so as to overhang the bank, and bears against the latter to such an extent as to be supported  
25 to some extent thereby. The carriage or platform is now set in motion, and as it moves along the scoops cut and scrape up along the side of the bank, and then, reaching their highest position, are reversed as they pass over the  
30 upper drum or chain wheel and dump their contents over or beyond the bank. When the platform reaches its limit of travel in one direction a greater depth is obtained by again lowering the frame, the angle of inclination of  
35 the boom being also adjusted, if necessary. The motion of the platform is then reversed and a second cutting is made, this operation being repeated until a sufficient depth and slope or grade is obtained. The spuds are now

hoisted, the barge moved forward and secured 40 in a new position, and the same operation repeated until the whole bank is sloped and finished.

I remark that the same machinery, with or without the movable platform, can be used for 45 cutting a canal or water-way by mounting the vertically-adjustable frame and its inclined boom on the end of the barge, the earth, as it is excavated and elevated, being dumped into a suitable receiver and carried off in any suitable way. 50

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

1. In a machine of the kind described, the 55 combination of the vertically-adjustable frame carried by the boat, scow, or barge, the adjustable inclined boom, jointed at its lower end to said frame, and the power-driven endless bucket or scoop chain mounted in and carried 60 by said boom, substantially as hereinbefore set forth.

2. The combination of the boat or barge, the traveling platform or truck, the vertically-adjustable frame, the adjustable inclined boom, 65 jointed at its lower end to said frame, the power-driven scoop or bucket chain, and mechanism mounted on and carried by the platform for operating said frame, boom, and bucket-chain, the combination being and having the 70 mode of operation substantially as hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 5th day of June, A. D. 1880.

MARSHALL PARKS.

Witnesses:

W. E. SUDLOW,  
E. A. DICK.