Goodale & Marsh.

Excavator.

No. 26,490. Patented Dec. 20, 1859.

Fig. 2.

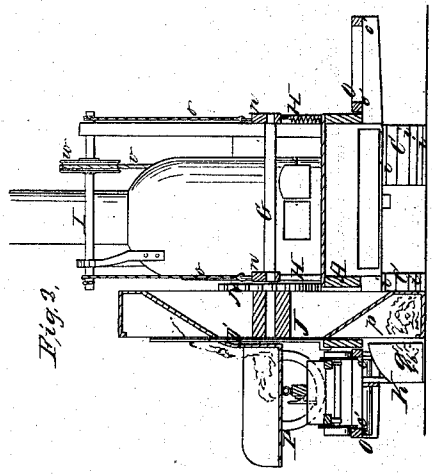


Fig. 4.

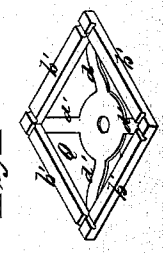


Fig. 1.

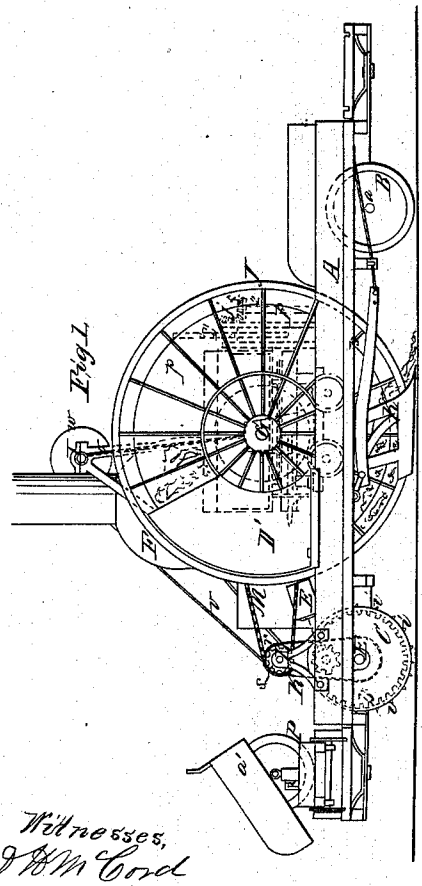
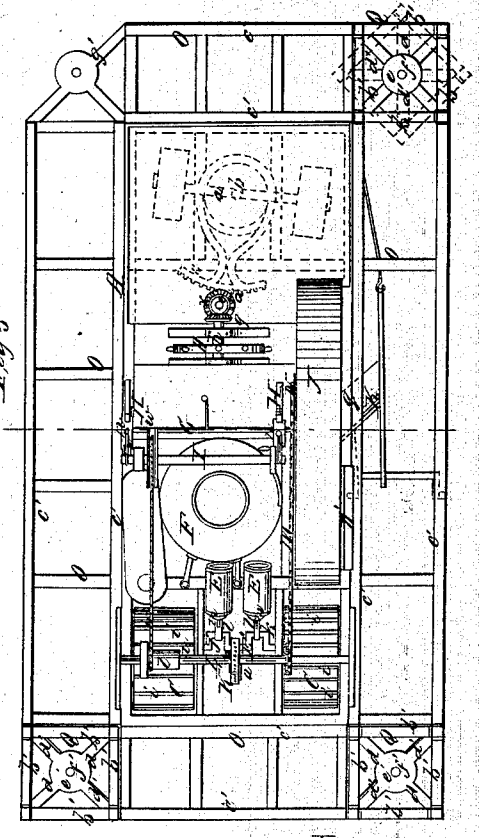


Fig. 3.



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UNITED STATES PATENT OFFICE.

W. G. GOODALE AND R. L. T. MARSH, OF CENTRALIA, ILLINOIS.

STEAM-EXCAVATOR.

Specification of Letters Patent No. 26,490, dated December 20, 1859.

To all whom it may concern:

Be it known that we, W. G. GOODALE and R. L. T. MARSH, both of Centralia, in the county of Marion and State of Illinois, have invented a new and Improved Steam-Excavator; and we 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, in which—

Figure 1, is a side elevation of our invention. Fig. 2, is a transverse vertical section of the same, taken in the line *x*, *x*, Fig. 3. Fig. 3, is a plan or top view of the same. Fig. 4, is a detached perspective view of a turn table.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists—1st. In the combination with a locomotive steam engine of an excavating wheel and suitable earth receptacles in such a manner that the machine will be propelled over the ground, under the guidance of the attendant, to the spot to be excavated, then load itself with earth and carry the load to the desired place for discharge as hereinafter set forth. 2nd. In the combination with an excavating machine as above described of an exterior rail road track in the manner to be hereinafter set forth, so that the earth as fast as it is lifted by the wheel may be received within the suitable cars to be transported upon the track to other parts of the machine. 3rd. In the combination with said track of turn tables so that the cars may be made to pass around the corners of the machine as hereinafter set forth. 4th. In making the journals of the excavator adjustable so that it can be raised or lowered at will.

To enable those skilled in the art to fully understand and construct our invention we will proceed to describe it.

A, represents a rectangular frame which is mounted on wheels B, B, C, C, the front wheels B, B, having their axle *a*, secured to the frame by a king bolt *b*. To the axle *a*, a segment rack *c*, is attached and into this rack a pinion *d*, gears, said pinion being on the lower end of a vertical shaft *e*, which has a bevel pinion *f*, on its upper end into which a corresponding pinion *g*, gears, the pinion *g*, being on the shaft *h*, of a hand wheel D. The back wheels C, C, are broad and have projecting spurs or plates *i*, on them, said plates extending the whole width of the wheels C, and preventing the slipping of the same, said wheels being the driving wheels of the machine.

The axle E, of the wheels C, C, has a toothed wheel a^x, on it and the inner side of each wheel C, has a toothed rim b^x, attached said rims gearing into pinions on a shaft E′, which has two cranks *j*, *k*, on it, one crank being at right angles to the other. To each crank a connecting rod *l*, is attached, and to each rod *l*, a piston rod *m*, is connected, the pistons working in steam cylinders E, E, which are supplied with steam by a boiler F, on the frame A. The boiler, steam cylinders and crank shaft or axle E, may be arranged in any suitable or convenient way in order to propel the machine and such connections as will best suit convenience may be made to throw the propelling wheels, excavator or other parts out or into gear.

On the frame A, at about its center, a shaft G, is placed transversely. This shaft has its journals fitted in bearings *n*, *n*, which are allowed to slide vertically between guides on standards H, H. Each bearing *n*, is connected by a chain *o*, with a shaft I, which is some distance above the shaft G, see Fig. 2.

To one end of the shaft G, an elevator J, is attached. This elevator is a wheel provided with radial buckets *p*, as shown clearly in Figs. 1 and 2, the buckets being at the side of the wheel. This elevator wheel may be of any suitable diameter according to the size and power of the machine. At the front part of the elevator wheel the buckets are fully exposed, but at the back part a guard plate D′, extends upward by its outer side and covers the buckets, see Fig. 1.

To the under side of the frame A, a plow K, is attached. This plow is provided with a mold board and land side as usual and it is so placed relatively with the elevator wheel J, that its mold board *q*, will, as the machine is moved along throw the earth into the buckets *p*, of the elevator wheel. The plow K, of course like the elevated wheel J, is made of a size to correspond with the size and power of the machine.

Around the wheel a^x, on the axle E, of the wheels C, a chain K′, passes, said chain also passing around a wheel *r*, on a shaft L, some distance above the axle E. On this shaft L, a toothed wheel *s*, is also placed, around which a chain M, passes, said chain also passing around a toothed wheel N, at the inner side of the elevated wheel J. On

the shaft L, a loose pulley t, is placed which may be made to rotate with the shaft L, when desired by means of a clutch u. Around the loose pulley t, a belt v, passes, said belt also passing around a pulley w, on the shaft I.

Around the frame A, a railway O, is placed or secured. This railway is made to receive a series of cars p, which are provided with tilting bodies a', see Figs. 1 and 2. The rail-way O, extends entirely around the frame A, and at each angle of the rail-way and consequently at each corner of the frame A, a turn-table Q, is placed in order to permit the cars to pass entirely around the machine. These turn-tables are each formed of a square frame, the sides b', of which correspond with the rails c', of the rail-way, the sides b', being supported by arms d', and a circular base e', which is attached by a center bolt f', to a diagonal bar g', secured to the rails c'.

The operation of the machine is as follows:—The wheels C, are rotated and the machine consequently propelled by the steam cylinders E, and the machine is guided by a person at the wheel D. As the machine moves along the plow K, throws the earth into the buckets p, and the elevator wheel J, is rotated from the shaft L, by the chain M, the shaft L, being rotated from the axle E, by the chain K'. As the wheel J, rotates the earth is carried up by the buckets p, the guard plate D', retaining the earth therein until they reach a point nearly over the axis of the elevator wheel when the earth is discharged by its own gravity into the bodies a', of the cars P. As each car becomes filled it is shoved along on the railway and an empty one takes its place, and when all the cars are filled the machine is propelled to the dumping place and each car dumped or its body tilted, it being remembered that the turn-tables Q, enable the cars to be moved around the corners or angles of the rail-way. The elevator wheel J, may be raised at any time by throwing the pulley t, in gear with the clutch u.

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

1. The combination with a locomotive steam engine of an earth elevator J, or its equivalent and suitable earth receptacles or their equivalents, so that the machine may be moved by its own power, under the guidance of an attendant, to the spot to be excavated, then made to load itself and transport the load to the desired place for discharge in the manner herein set forth.

2. The combination with an excavating machine made as set forth, of a rail road track O, as shown, with or without the turn tables, as herein set forth.

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