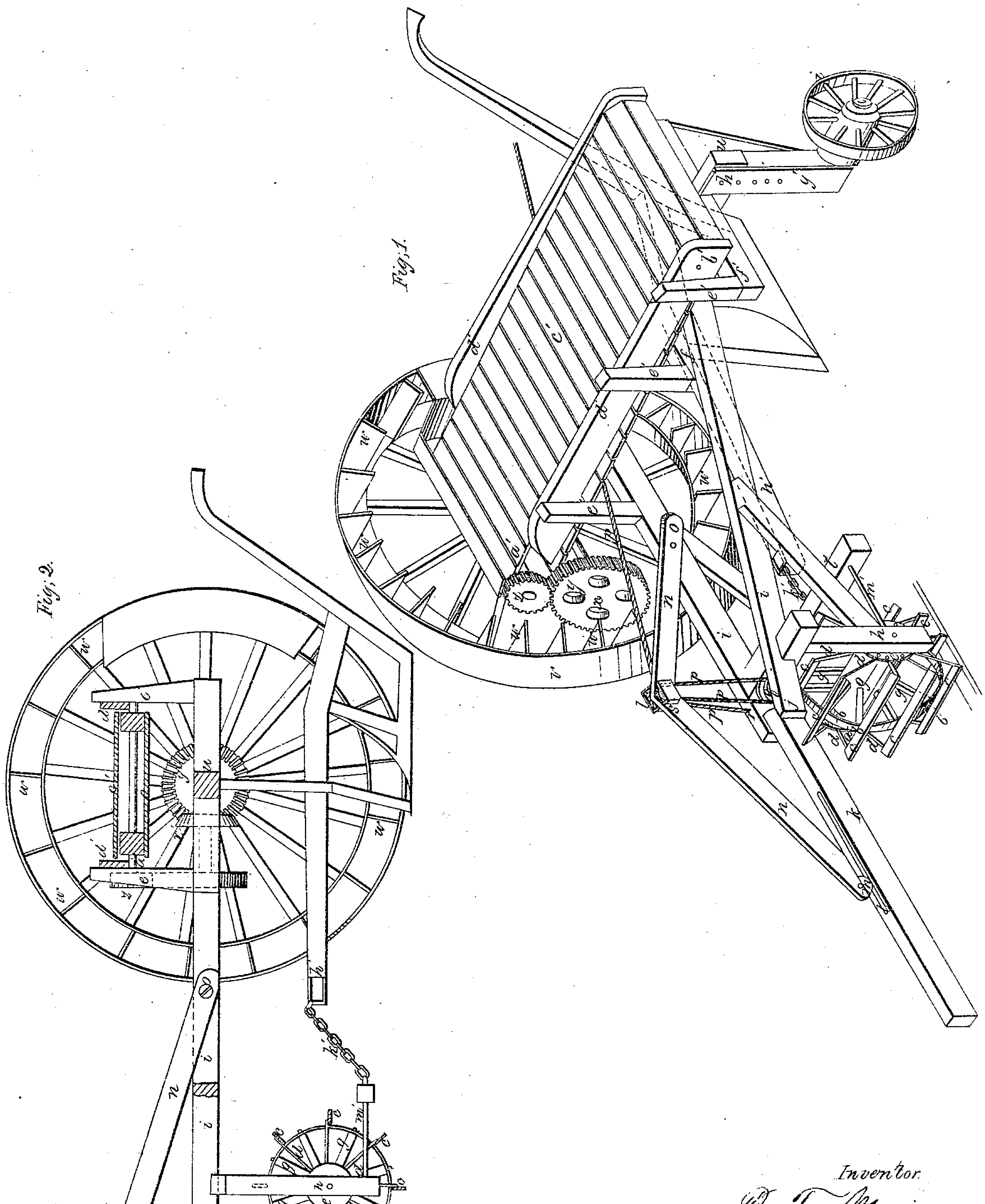
P. T. Mayne.

Excavator.

No. 29,183. Patented Jul. 17, 1860.



Witnesses.
Goodwin Y. Atkins
G. F. G. Dieterich.

Inventor.
P. T. Maine.
by Munn & Co
Attorneys.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

P. T. MAYNE, OF KEOSAUQUA, IOWA.

EXCAVATING AND GRADING MACHINE.

Specification of Letters Patent No. 29,183, dated July 17, 1860.

To all whom it may concern:

Be it known that I, P. T. MAYNE, of Keosauqua, in the county of Van Buren and State of Iowa, have invented a new and useful Improvement in Grading-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1, represents a perspective view, and Fig. 2, a vertical longitudinal section of the machine.

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

The nature of my invention consists, 1st, in the combination of hinged spades hung to central disks with a wheel, the rim of which is provided with stops.

The object of this device is to cut up the ground preparatory to its being dug up; the spades are arranged so as to cut across the track of the plow or other digging instrument following in rear of the spade wheel. By this means the action of the digging implement is considerably facilitated and resistance and loss of power obviated to a considerable extent.

It consists, 2nd, in an angular frame pivoted at one end, and bearing with the other end upon the tongue, in combination with the pulleys and rope for the purpose of lifting the spade wheel above the ground, when desired.

To enable others skilled in the art, to make and use my invention, I will proceed to describe its construction and operation.

The whole machine rests upon a shaft u, one end of which is supported by a large wheel v, and the other by a small wheel i. The inner surface of the broad rim of wheel v, is provided with buckets w, which are intended to receive the earth dug up by the plow j', traveling alongside of the inner face of the wheel v, as will afterward be described. The buckets as they ascend during the revolution of the wheel v, elevate the earth deposited in them and drop it onto an endless band c', which carries the earth off and deposits it in front of the wheel i', at the other side of the machine.

The endless band c', is arranged upon two shafts a', b', which have their bearings in a frame consisting of two shields d', d', (one at each side of the endless band, so as to prevent the earth from falling over the sides of the band) uprights e', and cross timbers f', attached to the main shaft u, of the machine.

The bearing of the wheel i', is connected to the outer end of shaft u, by uprights g', which are vertically adjustable (by means of holes h') so as to admit of this end of shaft u, and of the endless band being placed at a greater or less height above the ground, and thereby to increase or diminish the inclination of the endless band c'. The endless band receives motion from shaft a', which is connected with a secondary shaft x, by means of gear wheels z y, the shaft x, receiving motion from the driving wheel v, by means of bevel gear x', y'.

The main frame i, i, of the machine is fastened (at its rear end) to the main shaft u, and the tongue k, is jointed to its forward end at j. Two uprights, extending below the forward end of frame i, i, serve as bearings for a wheel f, g, a, the circumference of which is armed with spades c, for cutting up the ground, in a direction transverse to the direction in which the machine is drawn. The spades c, are hung to two central disks, e, e, upon the hub f, of the wheel, by means of radial arms d, one at each end of each of the spades c. The spades are firmly fastened to the outer ends of these arms, while their inner ends are hung in holes in the disks e. The rim a, is connected with the hub f, by suitable spokes g; and stops b, project from the surface of said rim, for the spades to rest against, while descending. The spade which is lowest, rests on the ground and as the whole weight of the forward part of the machine bears on it, it is caused to cut into the ground. The spade being hung to the central disks e, e', as aforesaid, will be allowed to cut down perpendicularly, until the next spade comes to rest on the ground. The weight of the forward part of the machine will now come to bear on this next spade and it will commence to cut into the ground while the other spade is gradually withdrawn from the cut it has made. As the spade is hung in the manner described, it can withdraw perpendicularly, the same as it cut. It will be seen that by this means, the cutting and withdrawing of the spades is very considerably facilitated. As the spade wheel turns on its axis, each spade as it passes the highest point, will drop onto its stop b, and thus be ready for the next cut. A cross-bar l', is fastened to the up-

rights h, by iron rods m', and a plow j', is hung to said cross-bar by a chain k'.

The plow is arranged in line with and behind the spade wheel, and alongside of the bucket wheel v, so as to dig up the ground which has been previously cut up by the spades c, and throw the earth into the buckets w, of wheel v, to be elevated and carried out of the way, as above set forth.

An angular frame n, n, is pivoted to the main-frame i, at o, (at the rear end of the angular frame.) The forward end of the frame n, n, is provided with a friction roller m, traveling in a groove l, in the top surface of the tongue k. Two pulleys t, s, are arranged at the apex of the angular frame, and a pulley q, has its bearings underneath the apex of said frame, and near the forward end of the main frame i, i.

A rope p, is fastened at one end to the front end of frame i, i, as seen at r, and passes around pulleys t, q, and s, as represented in the drawings. On pulling at the rear end of this rope, the forward end of the angular frame will be made to bear against the tongue, and the rear end of the tongue and front end of the main frame i, i, together with the spade wheel, will be raised up. By this means, the depth to which the spades cut can be adjusted, or the spades may be altogether lifted above the ground so as to suspend its operations and work with the plow alone, whenever the nature of the soil makes it desirable, or whenever it is desired to turn the machine around.

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

1. The combination of hinged spades c, hung to its central disks e, with a wheel the rim a, of which is provided with stops b, substantially as and for the purposes set forth.

2. An angular frame n, pivoted at one end, and bearing with the other end upon the tongue k, in combination with pulleys q, s, t, and rope p, substantially as and for the purposes set forth.

P. T. MAYNE.

Witnesses:
SILAS TOLMAN,
HARRY FORD.