

W. Provines.

Excavator.

No 22,612.

Patented Jan. 4, 1859.

Fig. 1

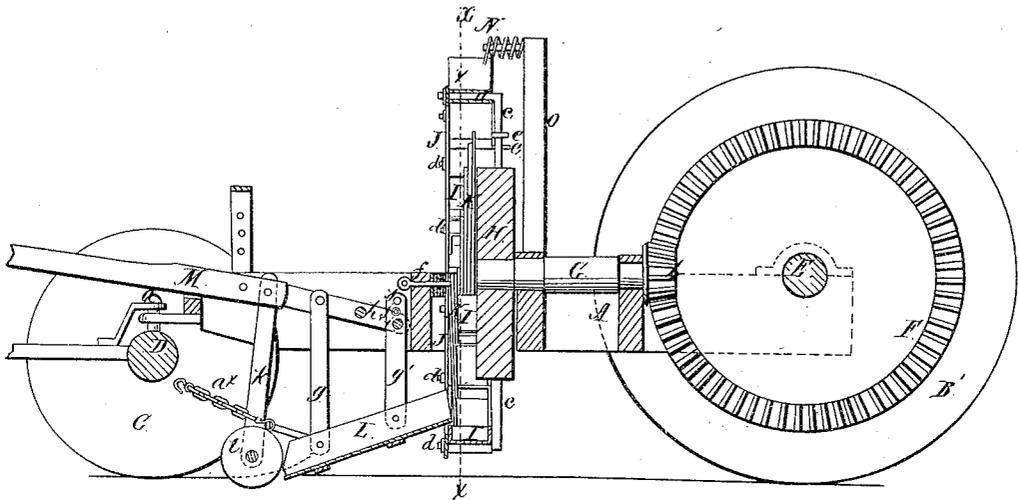


Fig. 2.

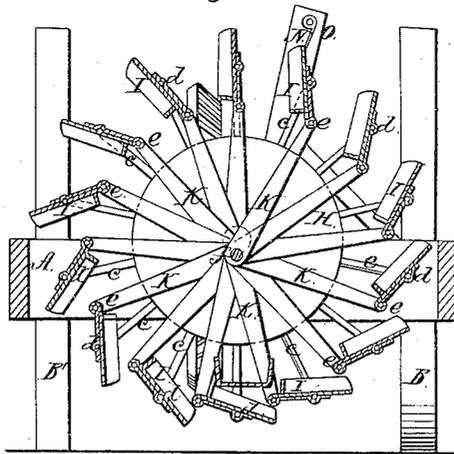
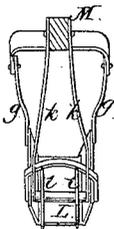


Fig. 3.



UNITED STATES PATENT OFFICE.

W. PROVINES, OF COLUMBIA, MISSOURI.

MACHINE FOR DITCHING, GRADING, &c.

Specification of Letters Patent No. 22,512, dated January 4, 1859.

To all whom it may concern:

Be it known that I, WILLIAM PROVINES, of Columbia, in the county of Boone and State of Missouri, have invented a new and Improved Machine for Ditching, Grading, and Like Purposes; 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, in which—

Figure 1, is a side sectional elevation of my invention, the plane of section passing through the center. Fig. 2, is a transverse vertical section of ditto taken in the line *x, x*, Fig. 1. Fig. 3, is a detached front view of the rotary colters and scoop.

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

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

A, represents a frame which is of rectangular form and is mounted on wheels B, B', C, C, the front wheels C, being attached to an axle D, which is connected to the frame by a bolt *a*, so that it may turn as usual. The back wheel B, is placed loosely on its axle E, but the other back wheel B', is attached permanently to the axle and consequently both rotate. On the axle E, a bevel wheel F, is placed, and this wheel gears into a bevel pinion *b*, which is placed on the back end of a shaft G, said shaft being placed longitudinally in the frame A. To the front end of shaft G, a circular disk H, is attached, and this disk is provided with radial arms *c*, the outer parts of which are bent at right angles with the radial parts as shown clearly at *d*, in Fig. 1.

On the outer parts *d*, of the arms *c*, metal scoops I, are placed. These scoops may be of ordinary rectangular form, and they are placed loosely on the parts *d*, of the arms, that is to say, they are allowed to work or swing thereon. The outer ends of the parts *d*, of the arms are secured in a rim J, which is concentric with the disk H. To the inner end of each scoop I, a rod K, is attached by a pin *e*. The inner end of each rod K, is placed on a stationary rod or shaft *f*, which is fitted in the frame A, a little eccentric with the disk H, said rod or shaft being a little below the center of the disk. The rods K, are allowed to turn freely on the rod or shaft *f*, and its inner end passes into a circular recess in the disk H.

L, is a scoop the front or cutting edge of which should be of steel, the other portion may be of iron plate. The scoop is open at its back end it being formed of a bottom and two sides only. The scoop is attached by metal bars *g, g'*, to the forked and back end of a lever M, which has its fulcrum at *h*, and the hindmost bars *g'*, are connected to the back ends of the forked lever M, by a rod *i*, which may be placed in either of a series of holes *j*, so that a greater or less degree of inclination may be given the scoop as may be desired. To the lever M, two bars *k, k*, are also attached, and to the lower end of each bar *k*, a rotary colter *l*, is secured. These colters are placed directly in front of the scoop L, a colter being in line, or nearly in line with each side. The front end of scoop L, is connected to the front axle D, by a chain *a'*, which sustains the same and enables it to resist the pressure of the earth exerted against it.

N, is a spring attached to the upper end of a vertical adjustable bar O, which is secured to the frame A. This spring is of spiral form and its outer end projects down so as to be within the plane of rotation of the scoops I.

The operation is as follows:—As the machine is drawn along the colters *l*, cut the sod, and the dirt and sod owing to the forward movement of the machine passes up the inclined scoop L, and falls in the scoops I, which serve as elevators, said scoops I, being rotated through the medium of the gearing F, *b*. The back end of the scoop L, projects over the scoops I, so that the latter will be filled as they rotate, and each scoop I, as it passes underneath the back end of scoop L, assumes a horizontal position to receive its load owing to the eccentric position of the rod or shaft *f*, relatively with the disk H, the scoops being actuated by the rods K, and for the same reason the buckets I, assume a radial or a proximate position as they pass over the upper part of their path of rotation. As each bucket assumes a vertical position it is jarred by the end of the spring N. This movement of the scoops I, allows them to be properly filled and readily emptied of their contents, the latter operation being assisted by the spring N. The scoops I, in ditching may empty their contents into a cart which may be at the side of the machine, or in grading roads the earth may be excavated or removed from the

sides and deposited or thrown by the scoops I, into the center of the road.

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

5 The arrangement and combination of the elevators I, rods K, shaft *f*, disk H, and

shaft G, substantially as and for the purpose herein shown and described.

WILLIAM PROVINES.

Witnesses:

JOHN H. FIELD,
A. B. PROVINES.