E. GORDON.

Steam-Plow.

No. 34,751. Patented Mar 25, 1862.

Fig. 1.

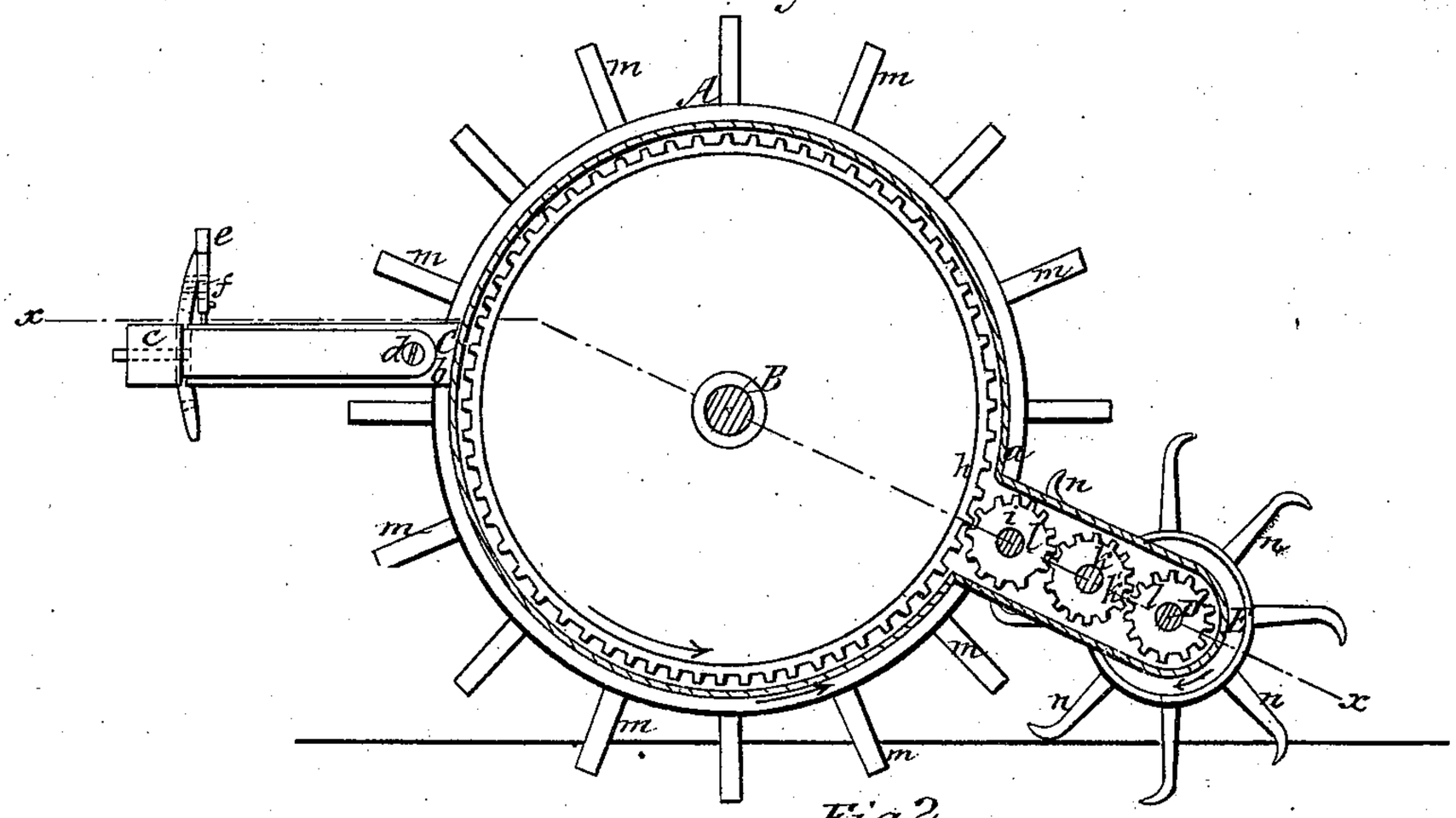
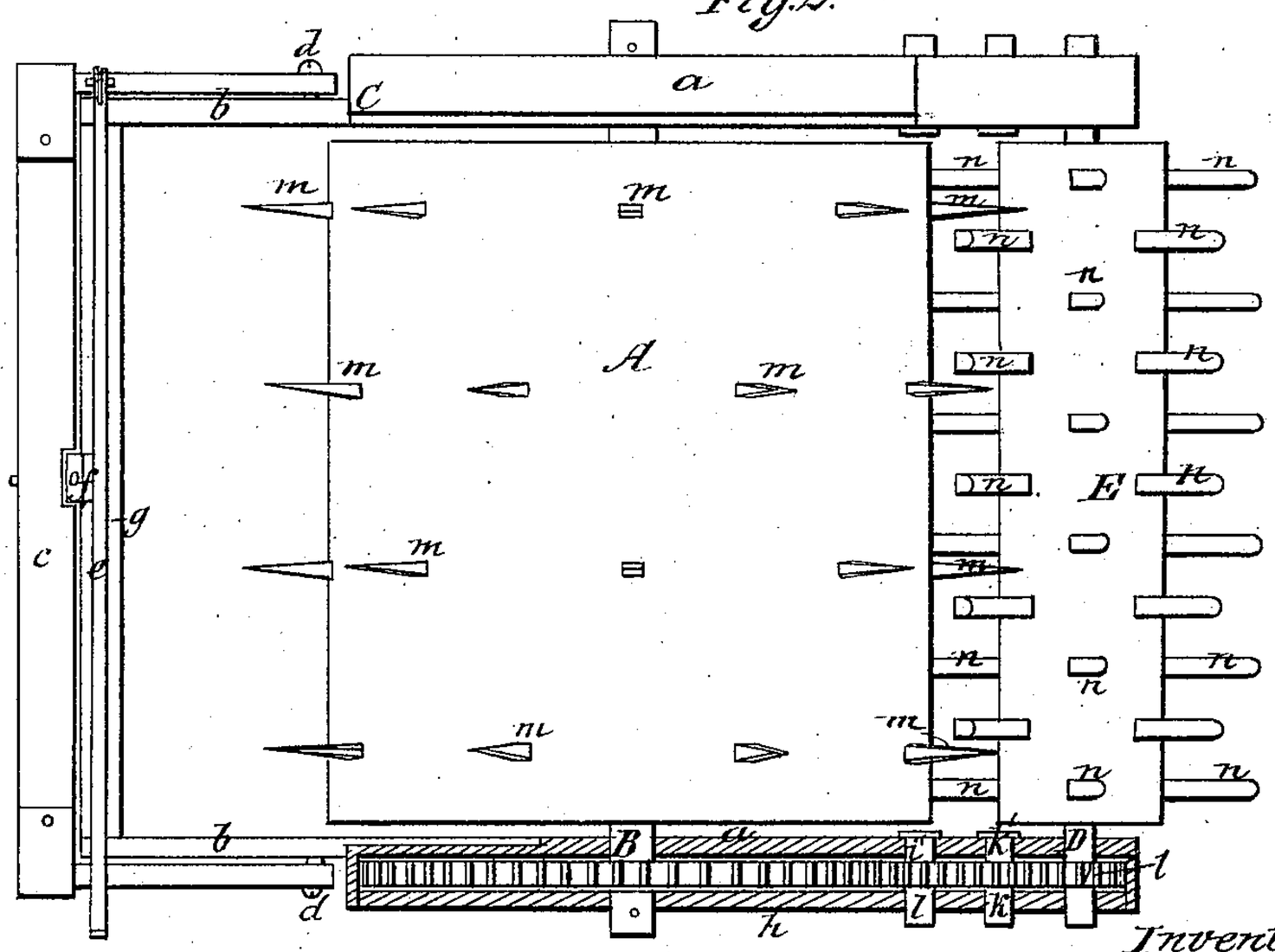


Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWIN GORDON, OF TAUNTON, MASSACHUSETTS.

IMPROVEMENT IN ROTARY DIGGERS.

Specification forming part of Letters Patent No. **34,751**, dated March 25, 1862.

To all whom it may concern:

Be it known that I, EDWIN GORDON, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Rotary Diggers; 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 sectional side elevation of my invention; and Fig. 2, a plan or top view of the same, one side of the machine being cut open in the plane indicated by the line *x x* of Fig. 1.

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

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

The main or driving cylinder A is secured to an axle, B, which has its bearings in the sides of the frame C. Said sides consist of metallic cases *a*, the rear ends of which are inclined downward at an angle of about twenty degrees, more or less, and these rear ends form the bearings for the axle D of the digging-cylinder E.

From the front parts of the cases *a* two arms, *b*, extend in a horizontal direction, and to these arms the draft-bar *c* is hinged by pivots *d*. The position of this draft-bar is regulated by a lever, *e*, which is pivoted on an upright, *f*, that is firmly secured to a cross-bar, *g*, connecting the arms *b*. One end of this lever is hinged to the draft-bar, and its other end is loose, in such a manner that by depressing the loose end of the lever the draft-bar is raised, and vice versa. The draft-bar is held in the desired position by a pin passing through it and through the upright *f*, said upright being provided with several holes, according to the various positions of the draft-bar. By these means the draft-bar can be adjusted to suit the height of different draft-animals, or, with the same draft-animals, to regulate the relative position of the two cylinders, for it is obvious that by raising the draft-bar (the height of the draft-animals being considered uniform) the digging-cylinder is raised out of the ground, and by depressing the draft-bar the digging-cylinder is also depressed. Thus the depth to which said digging-cylinder acts on the ground can be regulated at pleasure.

The two cylinders A and E are connected by gear-wheels *h i k l*, the wheel *h* being firmly secured to the axle of the driving-cylinder A, and the wheel *l* to that of the digging-cylinder E, while the intermediate wheels, *i k*, run loosely on pins *i' k'*. All of said wheels are inclosed in the cases *a*, so that they are perfectly protected against dirt or rubbish, which otherwise would be liable to interfere with their motion.

The two cylinders A and E are hollow, their round surfaces being constructed of series of slats that are firmly bolted to flanged disks, which form the heads of the cylinders, and which are rigidly attached to the axles. The object of this manner of constructing the cylinders is to facilitate the attachment of the tines or teeth, said teeth passing through the slats, and being secured on the inside by keys or bolts before the slats are fastened to their respective heads.

The tines *m* of the driving-cylinder A and the teeth *n* of the digging-cylinder B are arranged in such relation to each other that those of one cylinder pass between those of the other, and said tines and teeth are of such length that the points of the tines *m* nearly touch the surface of the cylinder E, and the points of the teeth *n* come close up to the surface of the cylinder A. By this disposition of the tines and teeth the surfaces of the cylinders and the spaces between the teeth are kept clean of dirt or rubbish, and the clogging of the machine is prevented.

The gear-wheels *h* and *l* on the axles of the two cylinders are connected by the intermediate wheels, *i* and *k*, in such a manner that the two cylinders rotate in opposite directions, as indicated by the arrows marked on the same in Fig. 1 of the drawings, and the number of cogs on said gear-wheels is so calculated that the digging-cylinder rotates at a high velocity. If the digging-cylinder E was made to rotate in the same direction with the driving-cylinder, each row of teeth would come down on the ground with a blow, whereas by rotating the digging-cylinder in a direction opposite to that of the driving-cylinder each row of its teeth digs under and lifts the ground, taking hold

of the ground at a point and gradually entering the same as the machine is moved forward. Thus arranged the machine turns smooth and regular and without those concussions that are inevitable if the digging-cylinder rotates in the same direction with the driving-cylinder; and, furthermore, if the digging-cylinder would rotate in the same direction with the driving-cylinder the digging-teeth would throw a large quantity of dirt on and against the driving-cylinder, which would considerably impede the motion of the machine, and at the same time produce an uneven and rugged surface of the ground.

The points of the digging-teeth *n* are rounded and curved, as clearly shown in the drawings, and said teeth are arranged in spiral lines or in rows in such a manner that the teeth of each row stand between the teeth of the adjoining rows, and if the cylinder receives a rapid rotary motion said teeth enter the ground and lift and turn it over, much like an ordinary hand-spade.

By this arrangement of the two cylinders A and E and of their respective tines and teeth a digging-machine is produced which combines the work of a plow and harrow.

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

1. The combination of the draft-bar *c* and adjusting-lever *e* with the bar *g*, upright *f*, arm *b*, and side cases, *a*, as and for the purpose shown and described.

2. The arrangement of the cylinders A E with each other and with the gears *h i k l*, as shown and described.

EDWIN GORDON.

Witnesses:
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