A. O. STIVESON.

HARROW.

No. 185,982. Patented Jan. 2, 1877.

Fig. 1.

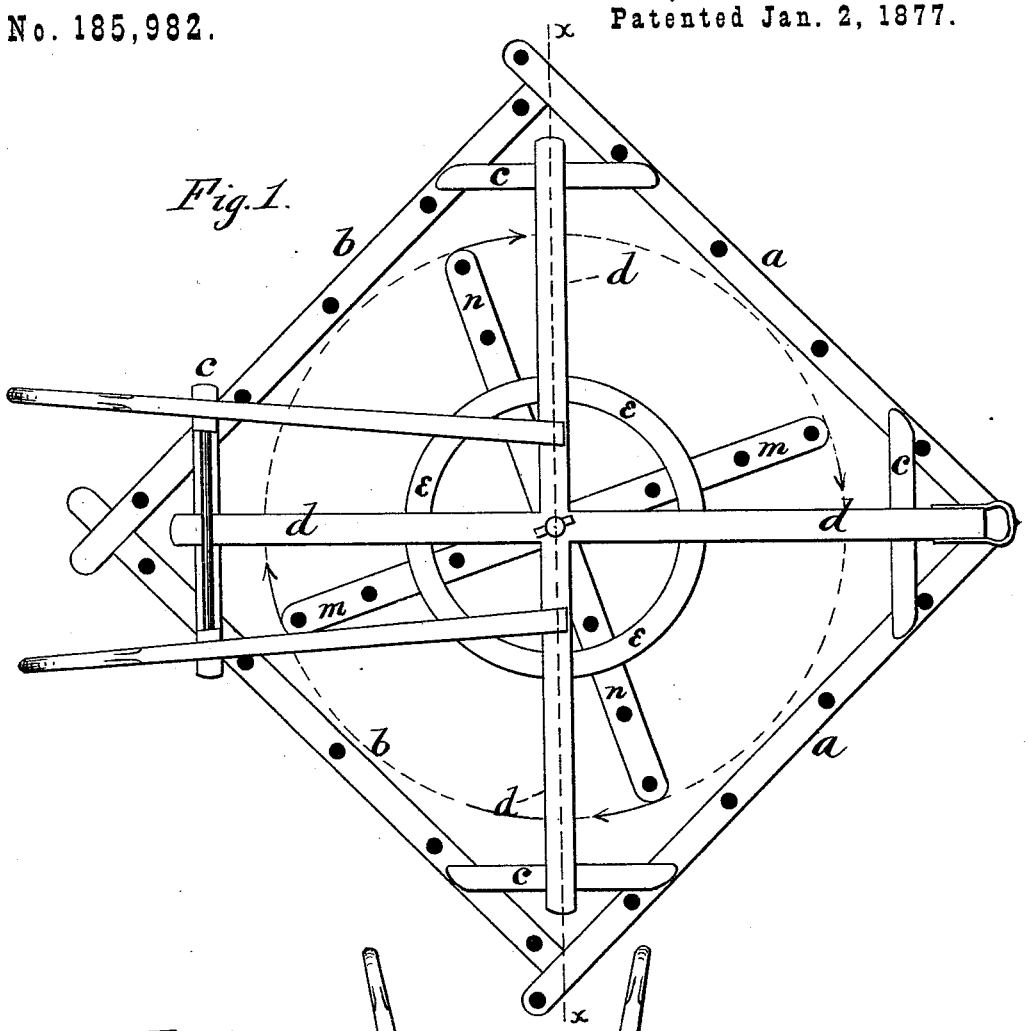
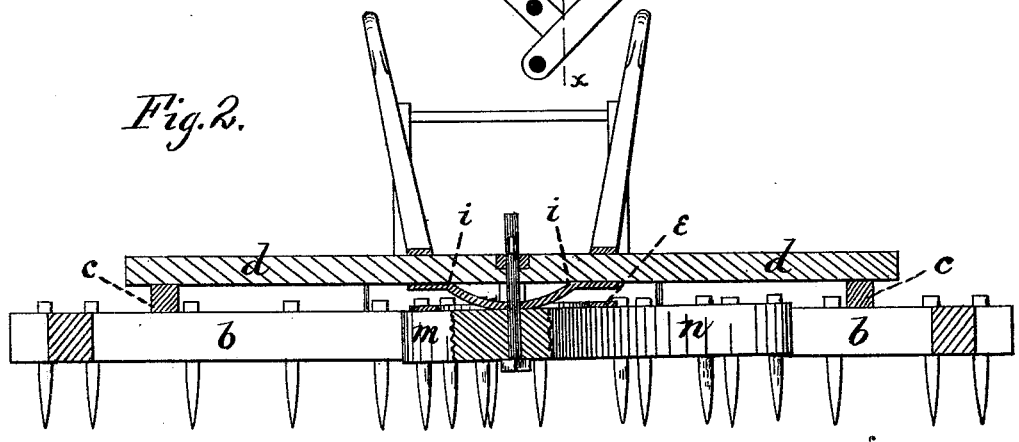


Fig. 2.



Witnesses

F. A. Pollock.

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UNITED STATES PATENT OFFICE.

ANTHONY O. STIVESON, OF APOLLO, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO JOSHUA COOPER, OF SPRING CHURCH, PENNSYLVANIA.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **185,982**, dated January 2, 1877; application filed November 27, 1876.

To all whom it may concern:

Be it known that I, ANTHONY O. STIVESON, of Apollo, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a plan view. Fig. 2 is a vertical section on line *x x*.

This invention relates to improvements in rotary harrows; and consists in the construction and arrangement of parts, substantially as hereinafter fully described and claimed.

The frame of the harrow is made up of four beams, *a b*, joined at their ends to form a hollow square, one corner forming the front of the harrow, and the opposite corner the rear, beams *a* inclosing the front, and beams *b* the rear. Beams *a* and *b* are armed with teeth so disposed that those in front will register between those in the rear, and thus the rear teeth will break up the soil that passes between the front teeth. Across the corners of the frame are set braces *c*, to strengthen the frame and make it rigid. Resting upon the braces *c*, and extending diagonally across the frame, are beams *d*, meeting at the center of the frame. Attached to the cross-beam *d*, and supported by standards from the rear brace *c*, is a pair of handles for the guidance of the harrow. At the center of beams *d* a hole is bored, lying in the lateral vertical plane, but out of the longitudinal vertical plane. Extending up through this as a bearing is a king-bolt, supporting on itself as pivot a rotating frame, also armed with teeth, and composed of two arms, *m n*, crossed at right angles, strengthened by means of a ring-brace, *e*, and held downwardly at distance by means of a spider, *i*, extending from the beams *d*, and forming a bearing, against which the rotating frame is guided in its proper eccentric plane of rotation.

The operation is as follows: The harrow being drawn forward, the teeth on the front *a* of the inclosing frame first break the clods in the direction of the line of motion of the whole harrow. But the rotating frame inside performs a distinct operation, which is, that the arms forward of the center break across the line of motion in one direction, and those rear of the center in the opposite direction, and over the same soil, so that thus far we have, practically, three passes on the same portions of the soil. Now, the rear, *b*, of the inclosing frame comes along, and again breaks up the soil in the direction of motion as at first, thus giving four passes. If the driver see a stone, stump, or other immovable obstacle in his way, he need not drive around it, but, instead, so guides the harrow as to allow the object to pass between two teeth of the forward frame *a*, then between the arms of the central rotating frame, after the manner of a turnstile, while this frame will at the same time break up the clods about the obstacle. Thus, in going over the land but once and in one direction, it is harrowed to the same extent as if passed over four times in as many directions by the old style of harrow.

The construction is compact, simple, and very effective in withstanding shocks of all kinds, while the operation is easy and the work is thoroughly done.

Having thus described my invention, I claim—

In combination with the frames *a b*, the corner-braces *c* and diagonal beams *d*, meeting at their center, the end of one of the beams *d* constituting the draft-bar of the whole, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of November, 1876.

ANTHONY O. STIVESON.

Witnesses:
JOSHUA COOPER,
ALBAN F. DIMOND.