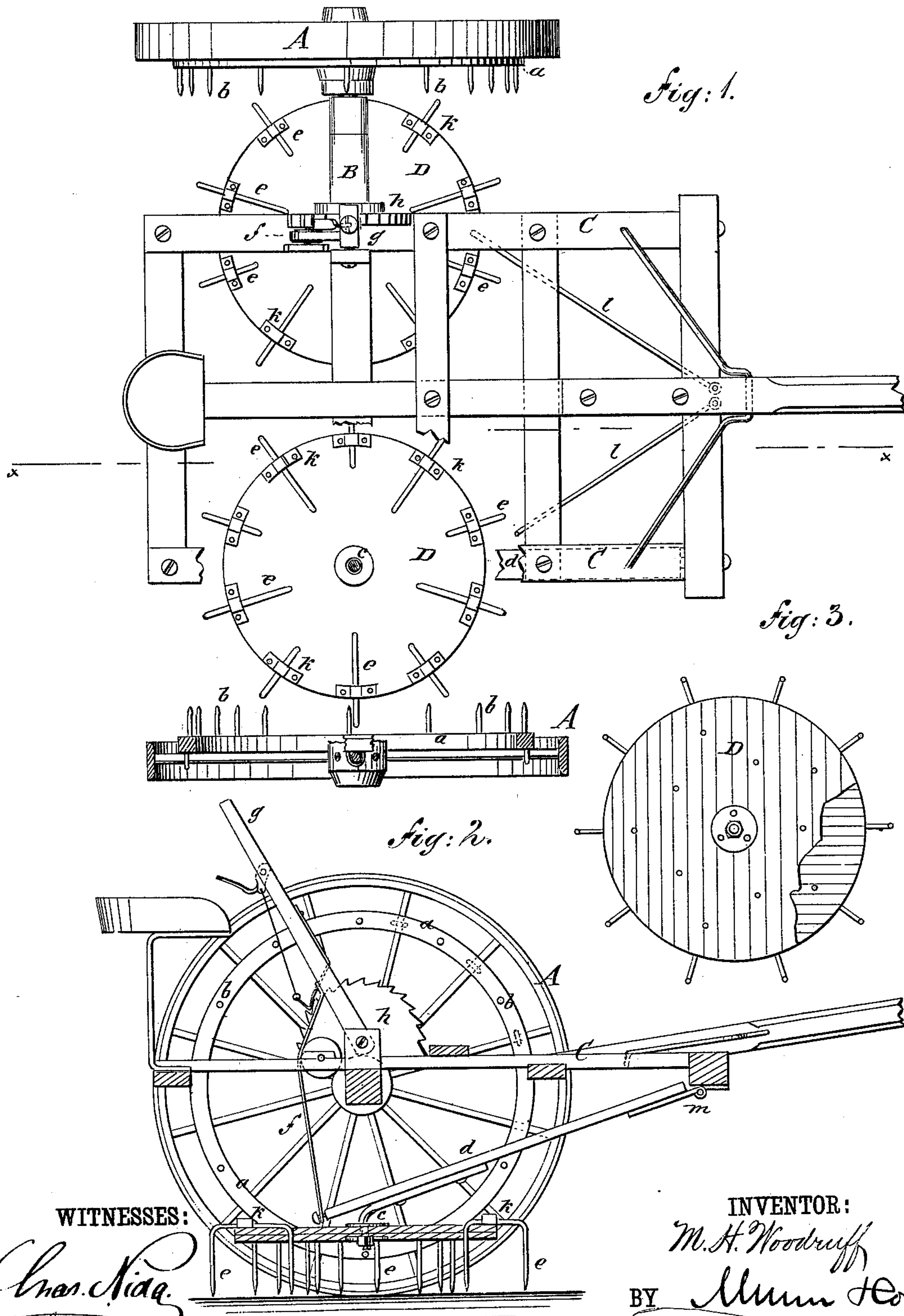


(No Model.)

M. H. WOODRUFF.  
Sulky Drag or Harrow.

No. 231,385.

Patented Aug. 17, 1880.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

MARTIN H. WOODRUFF, OF ELLICOTTVILLE, NEW YORK.

## SULKY DRAG OR HARROW.

SPECIFICATION forming part of Letters Patent No. 231,385, dated August 17, 1880.

Application filed May 31, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN H. WOODRUFF, of Ellicottville, in the county of Cattaraugus and State of New York, have invented a new and Improved Sulky Drag or Harrow, of which the following is a specification.

The invention relates to drag-harrows that are rotated about a central pin or pivot as the harrow is drawn along.

10 It will first be described in connection with the drawings, and then pointed out in the claim.

Figure 1 is a sectional plan view of my improved machine. Fig. 2 is a vertical longitudinal section on line *x x* of Fig. 1. Fig. 3 is an inverted plan view of one rotary drag.

Similar letters of reference indicate corresponding parts.

20 The sulky consists of the two wheels A A, axle B, and frame C, supported on the axle. On the inner sides of wheels A rings *a* are fixed, in which rings, at suitable intervals, there are spikes or pins *b*, projecting inward.

25 D D are the drags, which are each made of two circular disks of wood, bolted or otherwise secured together, with the grain crossing to form disks of the desired thickness which will not warp. These disks D are hung on axial pins *c*, that are fixed on the ends of bars *d*, which bars are hung by hinges *m* to the forward part of frame C.

30 From the outer ends of bars *d* straps or chains *f* extend upward over friction-rollers on frame C to hand-levers *g*, which are hung on the frame, so that by movement of the levers forward and backward the bars *d*, with drags D, will be raised and lowered.

40 On the levers *g* there are spring-pawls fitted for engagement with notched segments *h*, for retaining the levers in position as moved.

By this construction the drags D may be adjusted the desired distance from the ground, and are held for revolution in a horizontal plane, or nearly so.

The teeth *e* of the drags are formed by iron rods which are bent at their ends to form two teeth on each rod, one tooth passing down through the disks, and the other being outside the edge of the disk. Each rod is held down to place on the disk by a cap or block, *k*, attached by screws, so that it may be readily taken off for removal of the tooth.

As the machine goes forward the pins *a* on wheels A come successively in contact with the outer teeth, *e*, and the drags thus rotated continuously.

It will be seen that the space between the wheels A is entirely covered by the drags, so that by their revolution while they go forward all portions of the soil between the wheels is subjected to the action of the teeth.

The drags are placed with their axis directly beneath the axle, or nearly so, and the friction-rollers for straps *f* behind the axle, so that the frame C shall be nearly balanced.

The bars *d* are braced by rods *l*, passing to the forward part of the sulky-frame.

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

70 The combination, with two wheels, A, having spike-rings on the inside, of the disk-harrows having outwardly-extending rods turned down to form teeth and to come in contact with the spikes or pins *b*, as shown and described.

MARTIN HENRY WOODRUFF.

Witnesses:

W. A. FOX,  
J. C. PIKE.