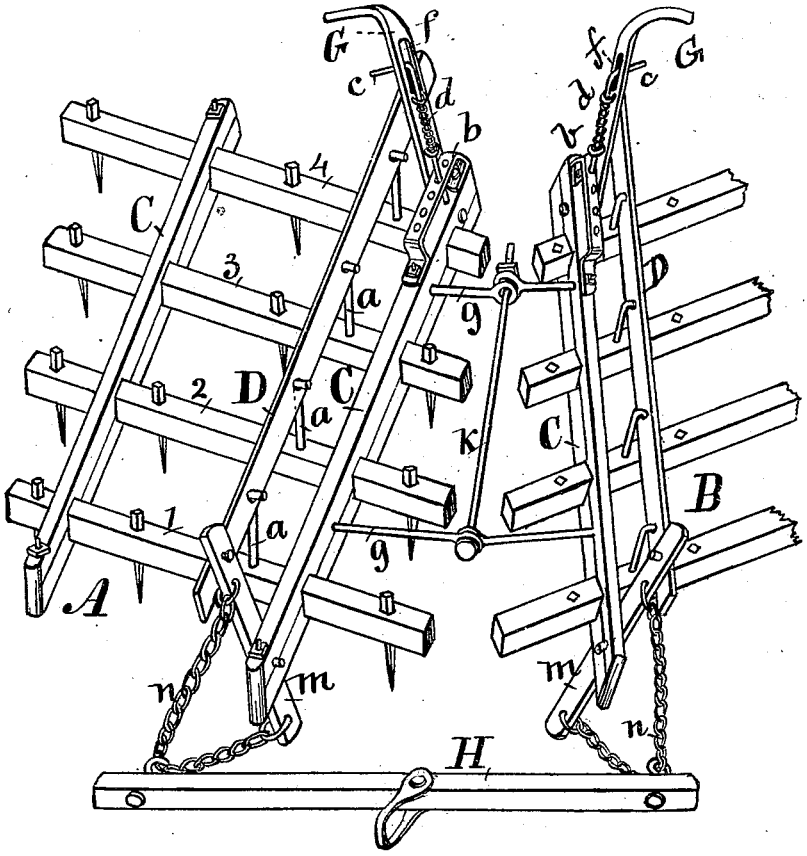
A. F. DAVIS.

HARROW.

No. 186,664. Patented Jan. 30, 1877.

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# UNITED STATES PATENT OFFICE.

ABRAM F. DAVIS, OF LISCOMB, IOWA.

## IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **186,664**, dated January 30, 1877; application filed October 10, 1876.

*To all whom it may concern:*

Be it known that I, ABRAM F. DAVIS, of Liscomb, in the county of Marshall and State of Iowa, have invented an Improved Harrow, of which the following is a specification:

The object of my invention is to construct a harrow in such a manner that the teeth can be readily adjusted to stand at various angles as required for different kinds of soil, and to be made inoperative, as required, to pass over obstructions, and to clean the teeth, and then again made operative.

It consists in two diagonal frames, having rock-bars governed by hand-levers, being coupled together by rods of unequal length to bring the two wings into parallel position to be connected with, and jointly moved by, a drag-bar in such a manner that the operator can turn the teeth to angle rearward, and lock them in such position, and also free them again when desired to be turned forward while the harrow is in motion, all as hereinafter fully set forth.

My drawing is a perspective view illustrating the construction and operation of my invention.

A and B represent the two diagonal frames, hinged together by rods of unequal length, so that they can be readily separated for convenience in handling and shipping, and also for the purpose of allowing them to conform with ridges and furrows when operated upon uneven ground. C C are cross-bars, each of which is composed of two pieces bolted together to inclose and form bearings for the teeth-carrying rock-bars 1 2 3 4, and to form a complete diagonal frame. Each bar carrying teeth is thus journaled in the frame, as required, to turn and rock to present the teeth to the ground at various angles. The bars 1 2 3 4 are each provided with a pin or arm, *a*, rigidly fixed thereto. These arms stand upward, and are bent at right angles at their tops to be linked or pivoted to a vibrating rod or bar. D D are vibrating bars, perforated to receive the bent tops of the arms *a*. G G are hand-levers, pivoted to the rear ends of the vibrating bars D, and also to the rear ends of the harrow-frames and inside bars C. *b b* are perforated plates, rigidly fixed on top of the rear ends of the inside bars C. *c c* are key-bolts, operated by springs *d*, to engage the perforated plates *b*. The upper ends of these bolts are bent at right angles to pass through slots *f* in the upper portions of the hand-levers G, and form handles by means of which the bolts can be readily withdrawn from the perforated plates *b*.

Complete locking devices are thus composed of the parts *b c d*, to retain the levers G and the harrow-teeth at any angle desired.

*g g* are rods of unequal length, projecting inward from the inside bars C of the diagonal wings A and B, and serve to form a coupling. Each rod *g* has an eye at its free end, through which a rod, *k*, is passed to form a hinged connection that will allow independent action to the wings, so that the harrow will conform to any uneven surface over which it is dragged. *m m* are vertical bars, pivoted to the front ends of the bars C and D. *n n* are chains, linked to the ends of the vertical bars *m*. H is a drag-bar, connected with the chains *n*, in any suitable way, in such a manner that it will shift on the chains and alternately direct the draft applied thereto from the tops and bottoms of the bars *m*, to aid in the adjustment of the teeth.

In the practical operation of my harrow, the driver and operator walks in the rear and center thereof, and, in a measure, between the two diagonal wings, in such a position relative to the levers G that he can seize and operate one or both whenever desired. By unlocking these levers G, when the harrow is in operation, the draft-bar H will shift on the chains *n* and swing the vibrating bars D forward, and thereby preserve the angle of the teeth, and thus automatically adjust the harrow, and make it inoperative, as required, to allow weeds to drop off the teeth, and to pass over obstructions and from one field to another. By pulling the levers G rearward and locking them, the harrow is again made operative.

I am aware that adjustable bars carrying harrow-teeth have been in use; but I claim that my manner of forming and combining two diagonal wings, so that each wing can be operated independently for the purposes of cleaning the teeth and making them inoperative, and then again adjusting them to make

them operative while the harrow is advancing, is novel and greatly advantageous.

I am also aware that chains have been attached direct to adjustable teeth to make them operative by applying draft to the chains; but I claim that my manner of adjusting the teeth by means of the pivoted bar *m* placed between the chains and the teeth, is a new and useful improvement.

I claim as my invention—

1. The independent diagonal frames and harrow-wings A and B, composed of the cross-bars C C, and series of rock-bars 1 2 3 4, each wing carrying coupling-rods *g* of unequal length, substantially as and for the purposes shown and described.

2. The pivoted vertical bars *m*, in combination with the fixed frame-bars C and vibrating bars D, chains *h* and drag-bar H, substantially as and for the purposes set forth.

ABRAM F. DAVIS.

Witnesses:

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