G. H. PERKINS.

Harrow.

No. 209,509. Patented Oct. 29, 1878.

Fig. 1.

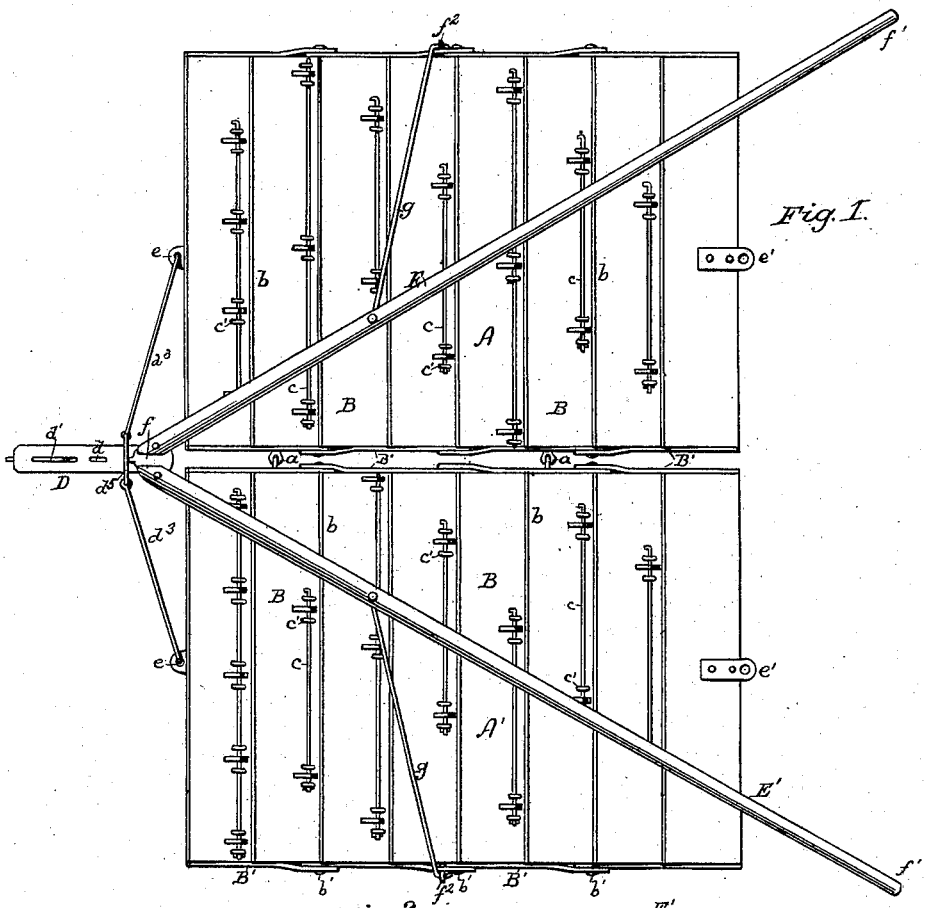


Fig. 2.

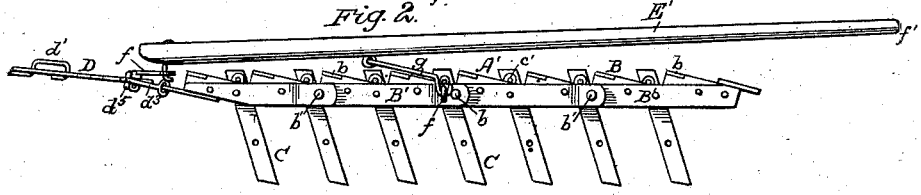


Fig. 3.

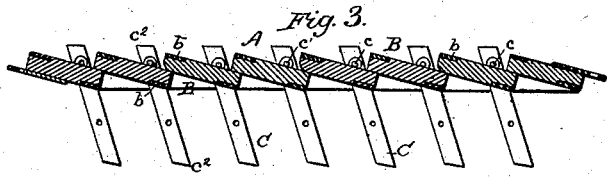


Fig. 4.

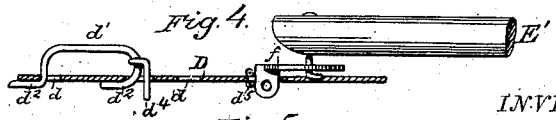
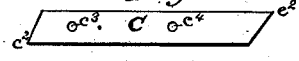


Fig. 5.



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UNITED STATES PATENT OFFICE.

GARDNER H. PERKINS, OF CAZENOVIA, NEW YORK.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **209,509**, dated October 29, 1878; application filed March 13, 1878.

To all whom it may concern:

Be it known that I, GARDNER H. PERKINS, of Cazenovia, in the county of Madison and State of New York, have invented a new and useful Improvement in Harrows; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object I have in view is to produce a harrow so constructed that by changing the positions of some of its parts the machine can be easily and quickly converted into a corn or potato coverer, a drag, or an evener and lump-pulverizer, the whole device being simple and durable in construction and efficient in operation; and my invention therein consists, first, in the peculiar construction of the frame; and, second, in the peculiar reversible teeth and the manner of securing them in the frame.

In the drawings, Figure 1 is a top view of my machine arranged as a harrow; Fig. 2, a side elevation of the same; Fig. 3, a section through the center of one of the halves of the frame; Fig. 4, a separate view of the draft-bar and the parts connected thereto, and Fig. 5 a separate view of one of the teeth.

Like letters denote corresponding parts.

The frame of the machine is composed of two parts, A A′, preferably of rectangular form, hinged together by means of eyebolts *a* or other suitable devices, so that the two parts of the frame will move vertically independently of each other. Each part of the frame is constructed of boards or planks B of any desired thickness, which are placed transversely and lapped a short distance over each other, as shown. The exposed and projecting edges of these blanks are protected from wear by means of plates *b*, of iron or steel, secured thereto.

Each part of the frame is intended to be made flexible, to adapt it to the unevenness of the ground, and for this purpose the planks B are shown as connected rigidly together in pairs by metal straps or plates B′, one of which is secured to each end of each pair of lapped planks.

The plates B′ of the separate pairs of planks at each side of the frames A A′ are pivoted together by bolts *b′*, so that the parts of the frame are made flexible. The meeting-edges of the different pairs of planks which move upon each other may be rounded slightly, to allow a greater freedom of movement.

It is evident that, if the planks were narrow enough, they could be secured rigidly together in sets of three or even more, or, if sufficiently wide, each plank could be pivoted to the next adjoining plank without departing at all from the spirit of my invention.

C are the teeth of the harrow, which are secured in the frame by means of rods *c* passing through staples c^1 on the upper sides of the planks, one on each side of a tooth, and through holes in the teeth. These rods have turned ends or handles, by which they can be withdrawn, and they may be provided with any suitable means for keeping them from working out of place. Each tooth C, Figs. 3 and 5, is constructed of a steel or hardened wrought-iron plate beveled in opposite directions to points c^2, as shown. These points are preferably of different sharpness. Through the tooth are formed two holes, c^3 c^4, through which the rod *c* passes to hold the tooth in the frame. These holes c^3 c^4 are placed at different distances from the opposite ends of the tooth, so that three different lengths of tooth can be formed.

The largest tooth is made by securing it in the frame by the hole c^3. By slipping the tooth upwardly and passing the rod through the hole c^4 the shortest tooth is made, and by reversing the tooth and securing it by this same hole c^4 the medium size of tooth is formed. All three of these sizes can be used to advantage for different kinds of soil, and the reversing of the tooth prevents the uneven wear of the points.

D is the draft-bar, which is preferably made, as shown, of a flat strap or plate of metal, and has cut through it three or more rectangular holes or slots, *d*, in which the draft hook or loop d^1 is secured. This draft-loop d^1 is provided with ends d^2, bent in the same direction, and engaging with two of the slots *d;* and to this loop d^1 the single or double tree is attached by means of the slots *d*. The draft-loop can be adjusted upon the draft-bar, so as to be nearer to or farther away from the frame of the harrow, as desired. The loop may be secured in the slots *d* by a leather strap or

a pin, d^4, placed in one slot. The draft-bar D passes through a flat loop or eye, d^5, and to the ends of this loop d^5 are attached rods d^3, having hook ends, which engage with eyes *e* *e'* placed centrally on the two parts A A′ of the frame. The eyes *e* are placed at one end of the frame and the eyes *e'* are secured at the other end, the draft-bar and the attaching-rods being adapted to be changed from one end of the frame to the other.

To the inner end of the draft-bar D is attached a plate, *f*, and to this plate are hooked or otherwise secured the meeting ends of the lifting handles or levers E E′. These levers E E′ run from the plate *f*, which is situated centrally just in front of the connection of the two parts of the frame obliquely across such frame and a short distance beyond the rear of the same. The rear ends f^1 of the levers are made small, and formed so they can be grasped by the hand of the driver.

About centrally to the outer sides of the parts A A′ of the frame are secured eyes f^2, and with these eyes engage the hook ends of rods *g* connected to the levers E E′. The rods *g* are adapted to be disengaged from the eyes f^2, and to be shifted or reversed when the draft attachment is changed. By means of the levers E E′ the entire frame can be lifted from the ground when desired, or one part of the frame can be raised by lifting only upon one of the levers.

The parts of my machine being constructed as above described, it is used in the following manner: As a harrow, the horse or horses are attached to the draft-bar and the frame drawn forward, it being controlled by means of the levers. The draft attachment can be shifted to the opposite end of the frame, so that teeth inclined in either direction can be used. As a corn or potato coverer, the teeth are removed, and the frame rests directly upon the ground. It then being drawn forward, the drills will be covered the desired depth. As an evener or lump-pulverizer, the teeth need not be removed at all, but the frame can be simply turned over and drawn in either direction, or the teeth can be removed and the frame used on either side and drawn in either direction.

It will be seen that, when used for any of the purposes named, the frame can be worked either side up and drawn in either direction, the draft attachment being changed, and the lifting-levers and teeth being either removed or shifted to suit the position of the frame and the work to be performed. By having the frame constructed in two flexible parts, it will conform to any unevenness in the ground, and will work close to the sides of any obstruction over which it may pass. As an evener and lump-pulverizer it is much superior to a roller-machine, since it rubs the lumps along until they are crushed, and does not merely press them into the soil. The controlling-levers can be removed at any time, and the device used without them for any of the purposes named.

My machine has numerous other advantages apparent upon inspection.

Having thus fully described my machine and explained some of its advantages, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A flexible frame for the purposes set forth, composed of lapped boards or planks placed at right angles to the line of draft, substantially as described.

2. The flexible frame constructed in two hinged parts, A A′, each part being composed of lapped boards or planks B, flexibly pivoted together and placed at right angles to the line of draft, substantially as and for the purpose set forth.

3. The flexible frame composed of lapped boards or planks secured together at their ends by pivoted straps or plates, substantially as described and shown.

4. The reversible harrow-tooth C, pointed at each end, and having holes c^3 c^4 at different distances from the opposite sides of its center, constructed and arranged substantially as described and shown.

5. In a harrow, the combination, with the frame, of the teeth C, projecting up through the frame, and the rods *c*, passing through two or more of the teeth and through staples c^1, secured to the top of the frame, constructed and arranged substantially as described and shown.

This specification signed and witnessed this 1st day of March, 1878.

GARDNER H. PERKINS.

Witnesses:
M. J. STONE,
CHAS. B. CANNON.