

(No Model.)

S. MILLER.

COMBINED HARROW AND CLOD CRUSHER.

No. 285,644.

Patented Sept. 25, 1883.

Fig. 1.

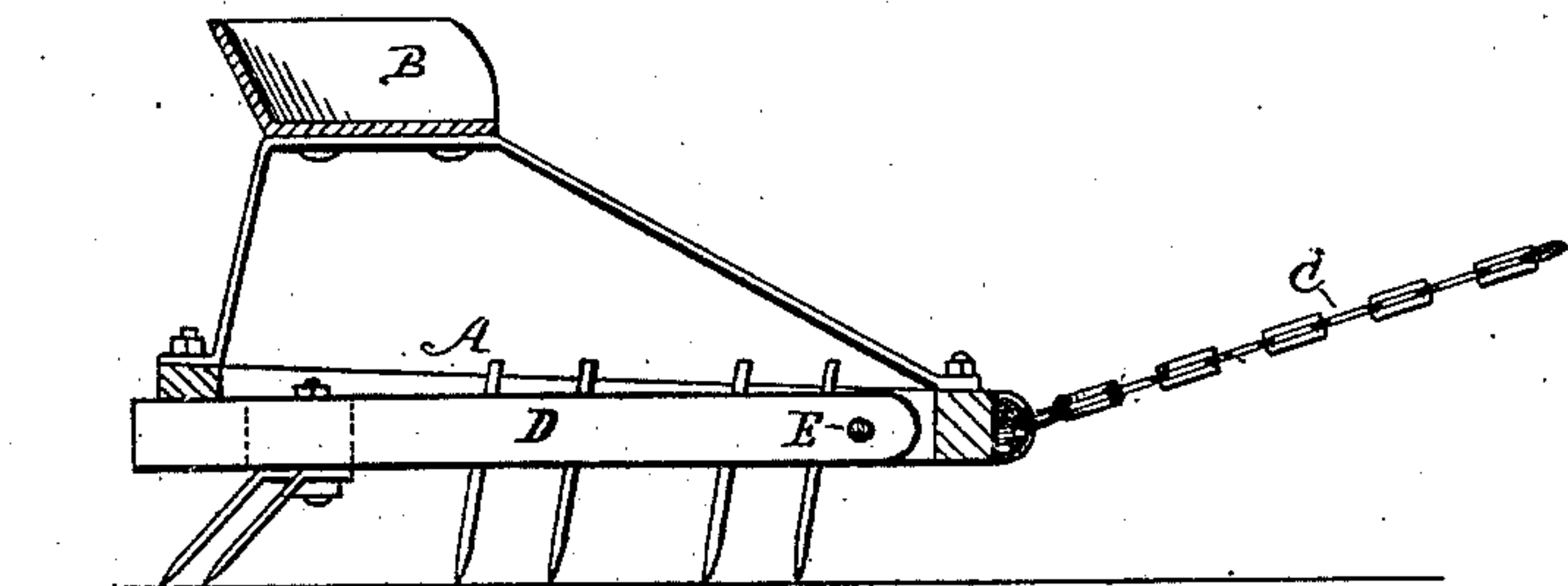


Fig. 3.

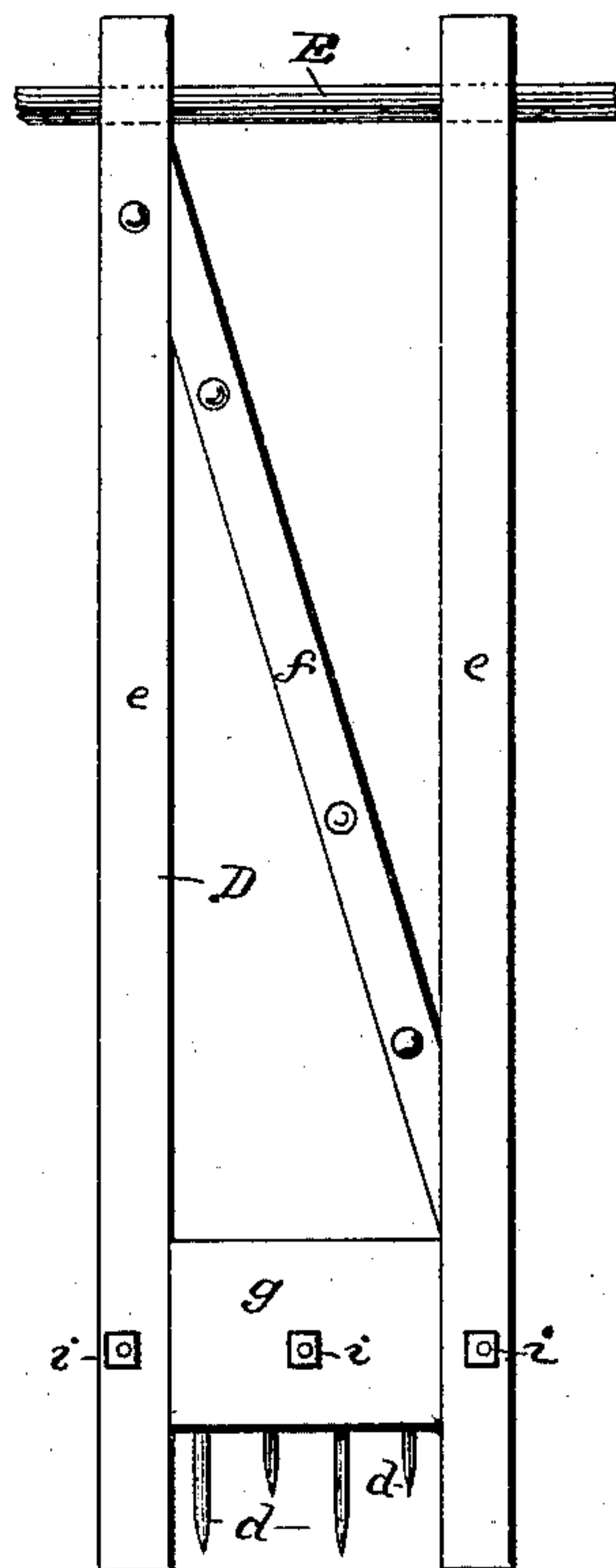


Fig. 2.

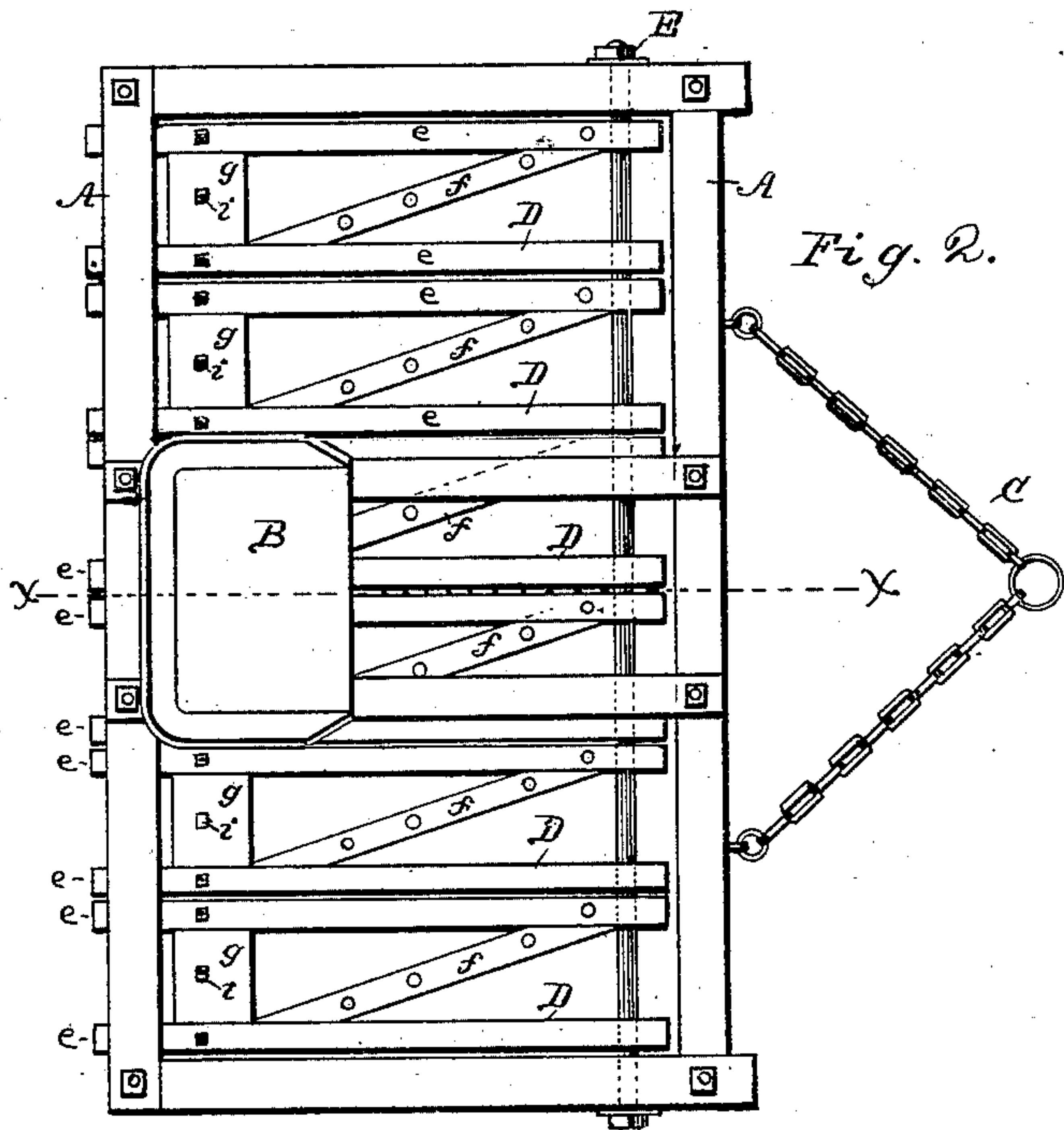
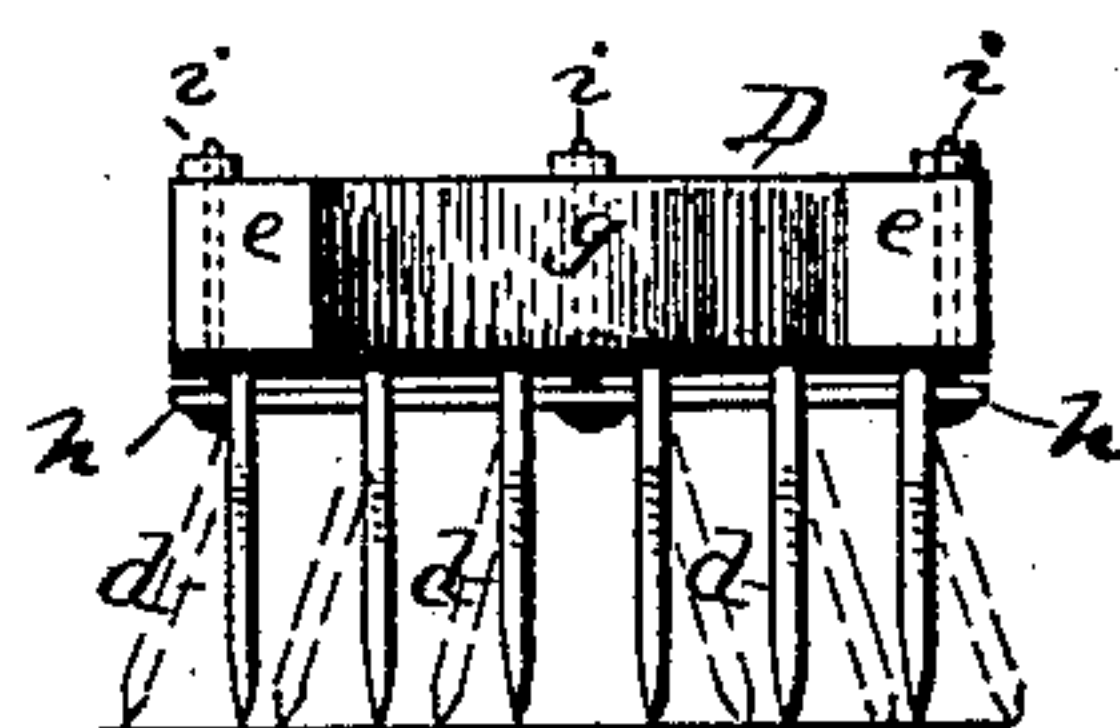


Fig. 4.



WITNESSES:

Thos. Houghton.

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SAMUEL MILLER, OF MOWEAQUA, ILLINOIS.

COMBINED HARROW AND CLOD-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 285,644, dated September 25, 1883.

Application filed May 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MILLER, a citizen of the United States, residing at Moweaqua, in the county of Shelby and State of Illinois, have invented a new and useful Improvement in Combined Harrows and Clod-Crushers, of which the following is a specification.

This invention is designed as an improvement upon Patent No. 188,379, issued to W. H. Kuhn and myself. I have found that in use the sections marked D in said patent, made as therein described, "oblong rectangular planks," will very quickly warp, owing to the double action of the sun above and the dampness of freshly-turned earth below, thus binding on the pivot-rod E and avoiding their purpose by preventing them from swinging on the rod, and that the same action frequently checks said planks and allows the teeth to fall out; and the object of the present invention is to overcome these objections and to provide a better way of fastening part of the harrow-teeth; to which end it consists in the construction and combination of parts hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of my combined harrow and clod-crusher. Fig. 2 is a plan view of the same. Fig. 3 is a top view of one of my harrow-frames in detail, and Fig. 4 is a rear end view of the same.

A represents the frame of the harrow, of rectangular form, bolted together at the corners, so that the beams may be separated and closely packed for transportation.

D represents a system of frames, all hung to swing vertically on one common rod, E. Each of these frames consists of two parallel bars, *e*, hung upon rod E, a diagonal or brace bar, *f*, and a cross-bar, *g*, all rigidly secured together. The grain of the wood of cross-bar *g* runs in a direction at right angles to the sides *e*. To the under side of this cross-bar I secure teeth *d* by means of one or more straps, *h*, and screw-bolts *i*. These teeth lean forward at an angle of about forty-five degrees, and each tooth is bent to form the

upper part into a shank, to rest against the under side or in grooves in the under side of the cross-bar *g*. The straps *h* are placed below these shanks and bound by bolts *i* up to the cross-bar, rigidly holding said teeth. By this means fewer holes are made in the cross-bar, and the teeth may be readily removed for sharpening. They may also be twisted to stand leaning sidewise by partly rotating the shank, thus causing the earth to turn to or from plants, as may be desired. In the diagonal bar *f*, I place other teeth, *c*, leaning forward only a little. Each section being hung independently of the others, when a clod is caught under any one section, it raises the main frame and the driver occupying seat B. The united weight supported on said raised section tends to crush the clod under it. In case straw, grass, or other obstructions get caught in the teeth, each section, being made up of timbers, is open, permitting easy access directly to the obstruction to remove the same by pressing it down with a stick while the harrow drags over it. While the main weight of the frame will be supported by any one of the sections which rises above the others, they will, each by its own weight, swing down and continue to work in the ground. Individual sections may be removed to adapt the harrow to cultivate between rows of low corn, &c.

The harrow will be provided with any usual means for attaching a team, such as the chain C; and the driver's seat B may be attached in any usual manner to the main frame A.

I am aware that a harrow made in sections somewhat similar to mine is the subject of Patent No. 201,435, and I do not claim the same as my invention.

What I claim as my invention is—

1. The combination, with the main frame A, provided with a cross-rod, E, of a series of frames, D, consisting of the side bars, *e*, hung upon rod E, the diagonal bar *f*, and the cross-bar *g*, firmly secured to side bars, *e*, said frames D hanging independently upon rod E, and teeth *c* and *d*, fixed to said frames D, as and for the purpose specified.

2. The combination, with a harrow-frame

having longitudinal grooves in its under side, of bent harrow-teeth having shanks adapted to rest in said grooves at any angle, and bodies hanging to the rear from said shanks, 5 a strap to rest against the under sides of said shanks, and bolts passing through the strap and frame, as described, whereby the body of the tooth may be rotated upon its shank as an axis, and fixed at different angles of right or left inclination from a longitudinal to vertical plane.

SAMUEL MILLER.

Witnesses:

A. J. STEIDLEY,
J. C. MILLER.