(No Model.) 2 Sheets—Sheet 1.

C. D. ROBERTS.

SULKY HARROW AND PULVERIZER.

No. 446,408. Patented Feb. 10, 1891.

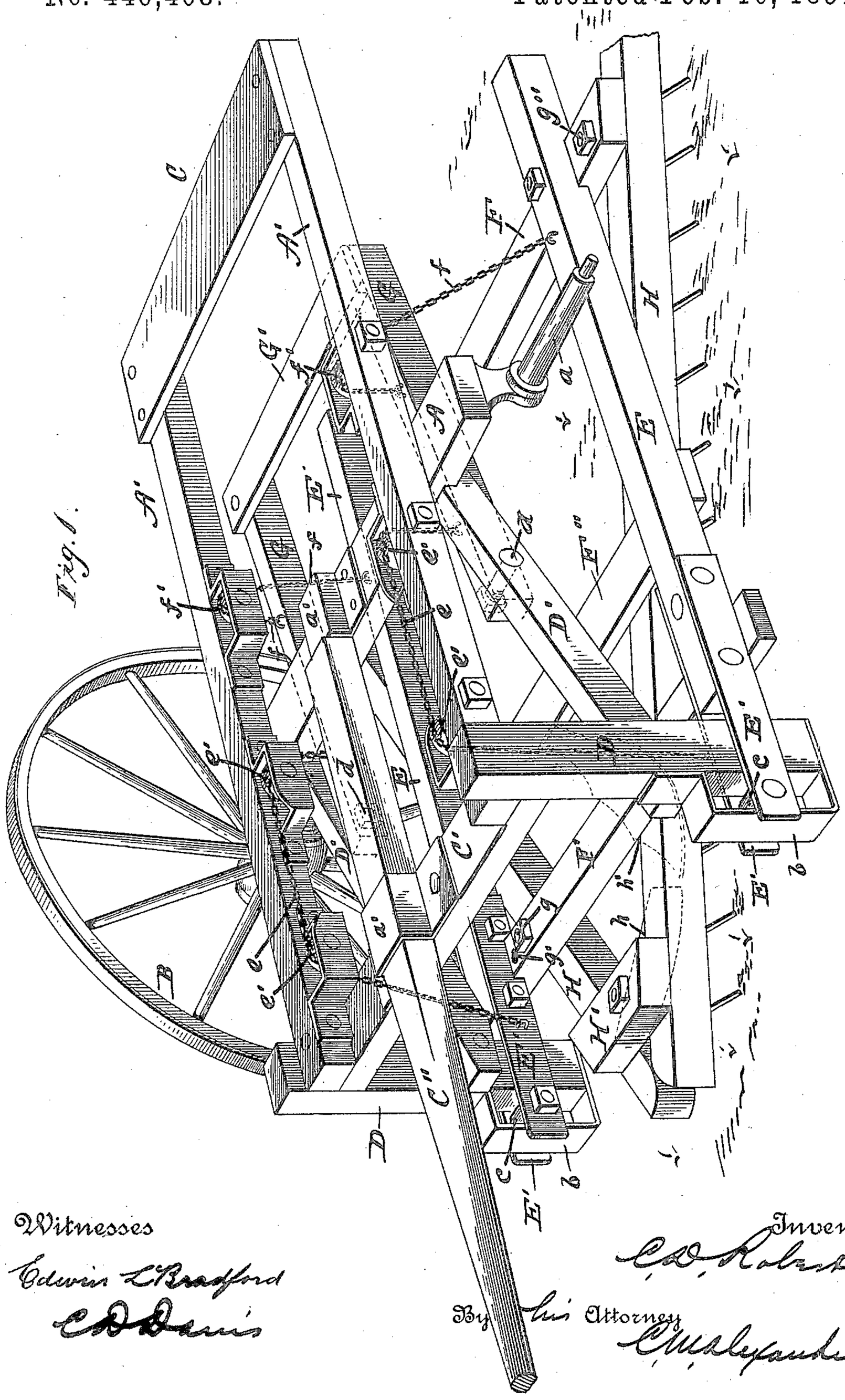

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

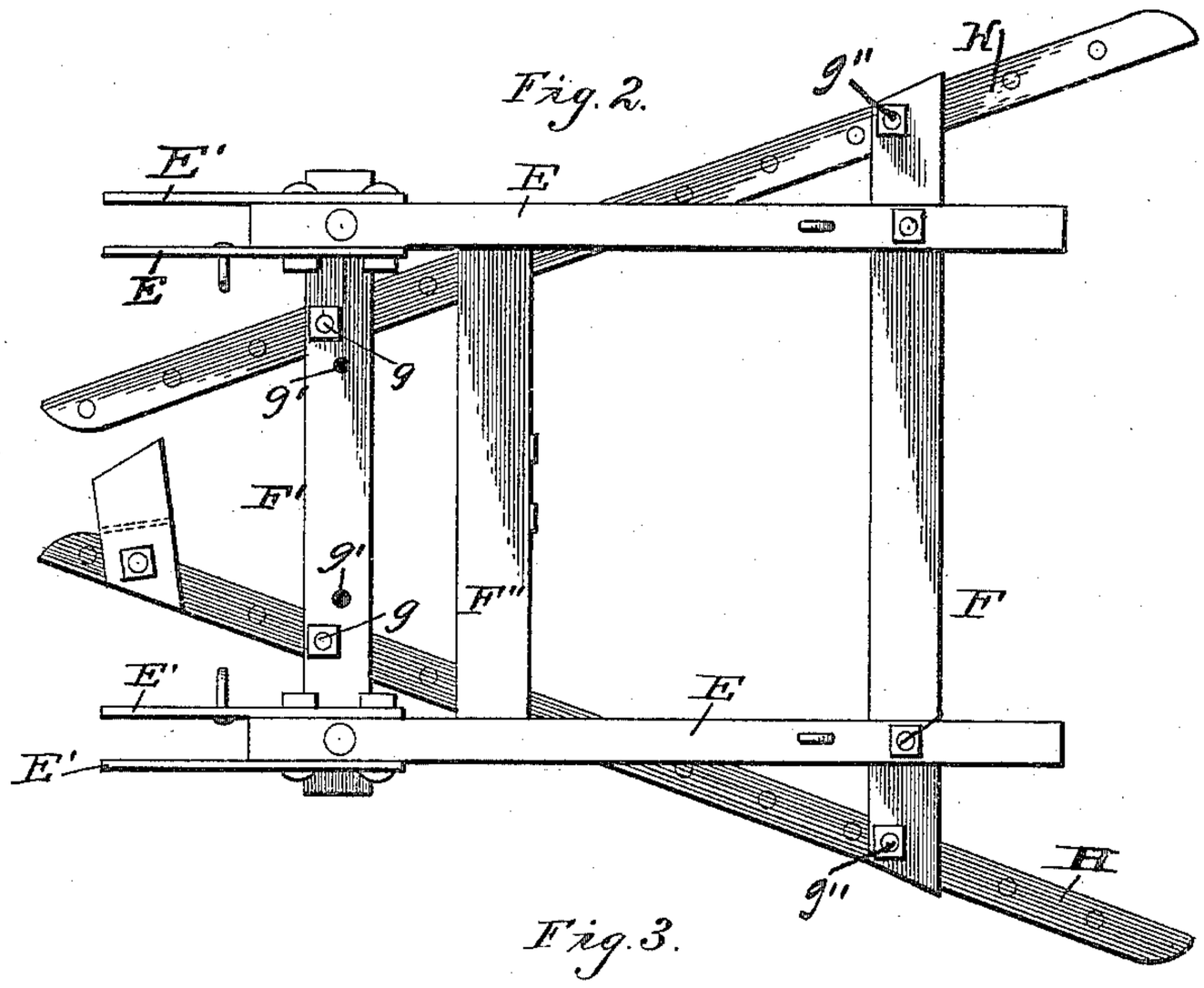


Fig. 3.

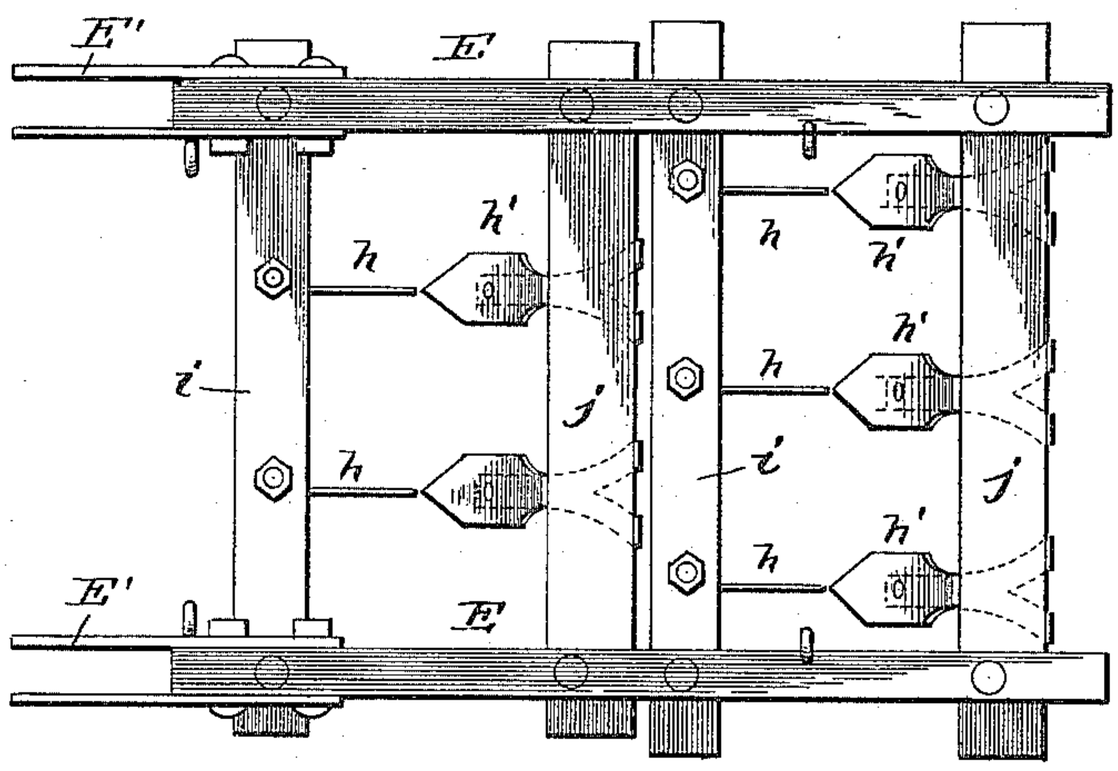
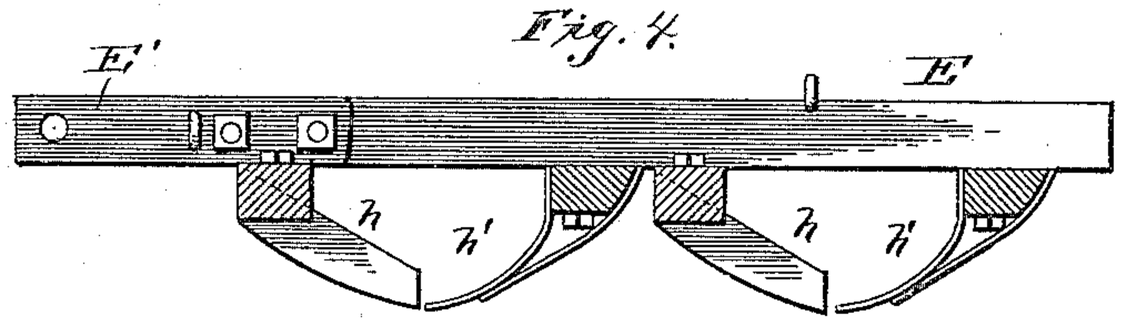


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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SULKY HARROW AND PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 446,408, dated February 10, 1891.

Application filed August 28, 1890. Serial No. 363,258. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. ROBERTS, a citizen of the United States, residing at Fairfield, in the State of Illinois, have invented certain new and useful Improvements in Sulky Harrows and Pulverizers, of which the following is a specification, reference being had therein to the accompanying drawings.

Referring to the accompanying drawings, Figure 1 represents a perspective view of my improved cultivator, one of the wheels being removed to better show the parts; Fig. 2, a plan view of the harrow detached from the main frame and arranged as a straddle-row harrow; Fig. 3, a plan view of a cultivator or pulverizer that may be employed in lieu of the harrow, and Fig. 4 a longitudinal sectional view thereof.

The invention relates to certain new and useful improvements upon sulky harrows and pulverizers; and it consists in certain novel features of construction and arrangements of parts, that will fully hereinafter appear, and be particularly pointed out in the claims appended.

To enable others skilled in the art to construct and use this invention, I will now proceed to describe one means for carrying it into effect.

Referring to the drawings by letter, A designates an axle provided with spindles *a*, on which are journaled the transporting-wheels B. Mounted on the axle is a rigid frame composed of the two longitudinal beams A′, secured rigidly to the axle and connected at their forward ends by a transverse beam C′ and at their rear ends by a transverse board C, which latter serves as a seat for the driver. This seat-board may of course be provided with a suitable seat, if desired. Secured rigidly to this frame at its forward end are two depending posts or hangers D D, which are braced by rearwardly and upwardly inclined braces D′, extending from these posts to the axle, and which have secured to their lower ends, preferably on their front sides, straps or plates *b* to form vertically-elongated boxes or slots. A suitable pole or tongue is secured to this frame by means of metallic clips *a′*. This frame serves to carry and transport the cultivating devices, which may be of any suitable construction, but which are preferably constructed as follows:

In Fig. 1 the frame is shown as connected to a V-shaped harrow, which is composed of the rearwardly-diverging tooth-beams H H, suitably bolted to transverse bars F F′, which are in turn bolted to the longitudinal draft-beams E E, these beams being connected and braced by a transverse beam F″, this beam F″ not being connected directly to the harrow-beams. Bars or plates E′ are bolted upon opposite sides of the forward ends of the draft-beams E, so as to loosely embrace the lower ends of the depending beams D of the frame. Rollers *c c* are journaled between the forward ends of the plates E′ and adapted to work in the vertical openings formed by the metallic straps *b* and bear upon the front side of the rigidly-braced depending beams D D.

The harrow is raised and lowered by means of a pivoted frame composed of the bars G G, pivoted at *d* to the braces D′ and connected at their rear ends by a transverse bar G′, this frame being connected to the harrow-frame by means of a double set of chains *f* and *e*, which pass over suitable pulleys or rollers mounted on convenient parts of the main frame. The front pair of chains *e e* are attached to the forward ends of the bars G and passed up over the pulleys *e′ e′*, and then down to the harrow-frame, to the forward end of which they are removably connected, while the rear chains are connected to the bars G near their rear ends and carried up over the pulleys *f′ f′* and then down to the harrow-frame, where they are removably connected. In operation, it will be observed, this manner of connecting the harrow to the main frame permits the harrow free oscillatory and vibratory movements, so that it may freely accommodate itself to the undulations and irregularities of the soil, while at the same time it enables the driver to lift it bodily off the ground when moving from one field to another, or in passing an obstruction, by simply pressing down with his foot upon the bar G′, which, through the medium of the chains, will lift the harrow and its frame bodily. The driver may, if he desires, keep the harrow

pressed down firmly against the ground by pressing down with his foot upon the rear cross-beam of the harrow.

To open the front end of the harrow and slightly contract the rear end thereof, I provide the front cross-beam F′ with an extra set of bolt-holes g' for the passage of the securing-bolts g. To open the tooth-beams, as shown in Fig. 2, to convert the harrow into a straddle-row harrow, it is simply necessary to remove the bolts g (that connect the tooth-beams to the front cross-beam F) from the inner bolt-holes, then spread the tooth-beams so that the bolt-holes therein will register with the outer set of holes in the cross-beam, and then insert the bolt in the registering-holes. In opening the front ends of the harrow the rear ends will be contracted, the bolts g'' serving as the pivotal bolts on which the tooth-beams turn.

Secured to the cross-beam F″, so as to be in line with the central line of the harrow, is a forwardly-inclined shovel h', of suitable construction, which serves to form a furrow through the center of the path of the harrow, thereby serving as a mark or guide for a corn-planter or seed-drill. To cut away trash and prevent it gathering upon the shovel, I employ a cutter h, which is secured directly in front of the shovel to a block H, carried by the harrow, and which is inclined rearwardly and downwardly, terminating near and in front of the shovel. This arrangement of the cutter and shovel absolutely prevents trash gathering upon them, the trash that is not cut being carried down under the shovel or forced to one side. Most of the trash will be cut, however, as the cutter is so arranged as to exert a draw cut upon the same.

Instead of the harrow shown in Figs. 1 and 2, I may attach to the draft-bars any suitable apparatus for cultivating and pulverizing the soil. For instance, I may employ the pulverizer shown in Figs. 3 and 4 in lieu of or in addition to the harrow. In this pulverizer two or more transverse series of the shovels h' are secured to cross-beams j, carried by the draft-beam, the shovels or blades of the front series alternating with those of the rear series, as shown. Cutters h are secured to transverse beams i, directly in front of the shovels, to cut the trash, and thereby prevent it gathering upon the shovels, and to also assist in the pulverization of the soil.

To remove the harrow and substitute the pulverizer, and vice versa, it is simply necessary to unhook the chains e and f from the draft-frame and remove the bolts upon which the rollers c c are journaled, as is evident. It is evident that the shovel h' and its cutter (shown in Fig. 1) are not used when the harrow is adjusted as a straddle-row harrow.

Having thus fully described my invention, what I claim is—

1. The combination of a frame mounted upon wheels, vertical beams D D depending from the forward end of the frame and braced by braces D′ D′, vertical boxes b b, secured to the lower ends of the said depending beams, a frame E E, provided with rollers at its forward ends adapted to work in the boxes b b, cultivating means attached to this frame E, a pivoted frame G G, pivoted to the main frame, chains f f, connecting the rear ends of the frame E E to the said pivoted frame, chains e e, connecting the forward ends of the frame E E to the pivoted frame, and rollers upon the frame, over which these chains pass.

2. The combination of a frame mounted upon transporting-wheels, a tongue secured to this frame, vertical braced beams D D depending from the forward end of the said frame, metallic straps b b, secured to the front lower sides of the said depending beams, rearwardly-extending draft-beams E E, provided with metallic plates on the opposite sides of their forward ends, these plates embracing the lower ends of the said depending beams and having rollers journaled between them, these rollers working in the elongated boxes formed by the metallic straps and bearing upon the vertical front sides of the depending beams, and means for harrowing and pulverizing the soil, these means being carried by the said draft-beams, substantially as described.

3. The combination of a draft-frame having hangers D and boxes b, the draft-beams E E, having rollers c, the transverse connecting-beams F and F′, the rearwardly-diverging toothed harrow-beams carried by the said frame, bolts g'' g'', pivotally securing the rear ends of the said toothed beams to the transverse beam F, and removable bolts g g, connecting the forward part of the harrow-beams to the forward transverse beam F′, this beam F′ being provided with an extra set of bolt-holes g' g', whereby the front ends of the harrow may be separated when desired.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES D. ROBERTS.

Witnesses:
THOS. MCCARTHY,
A. F. KEEN.