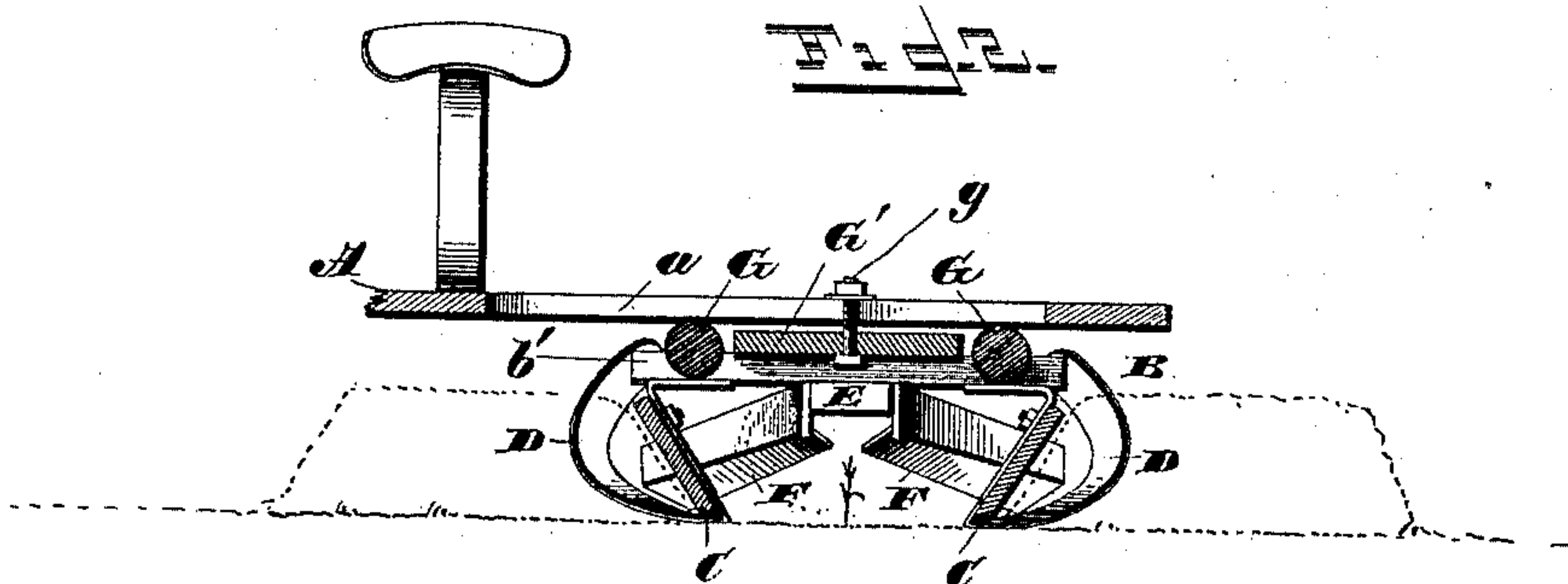
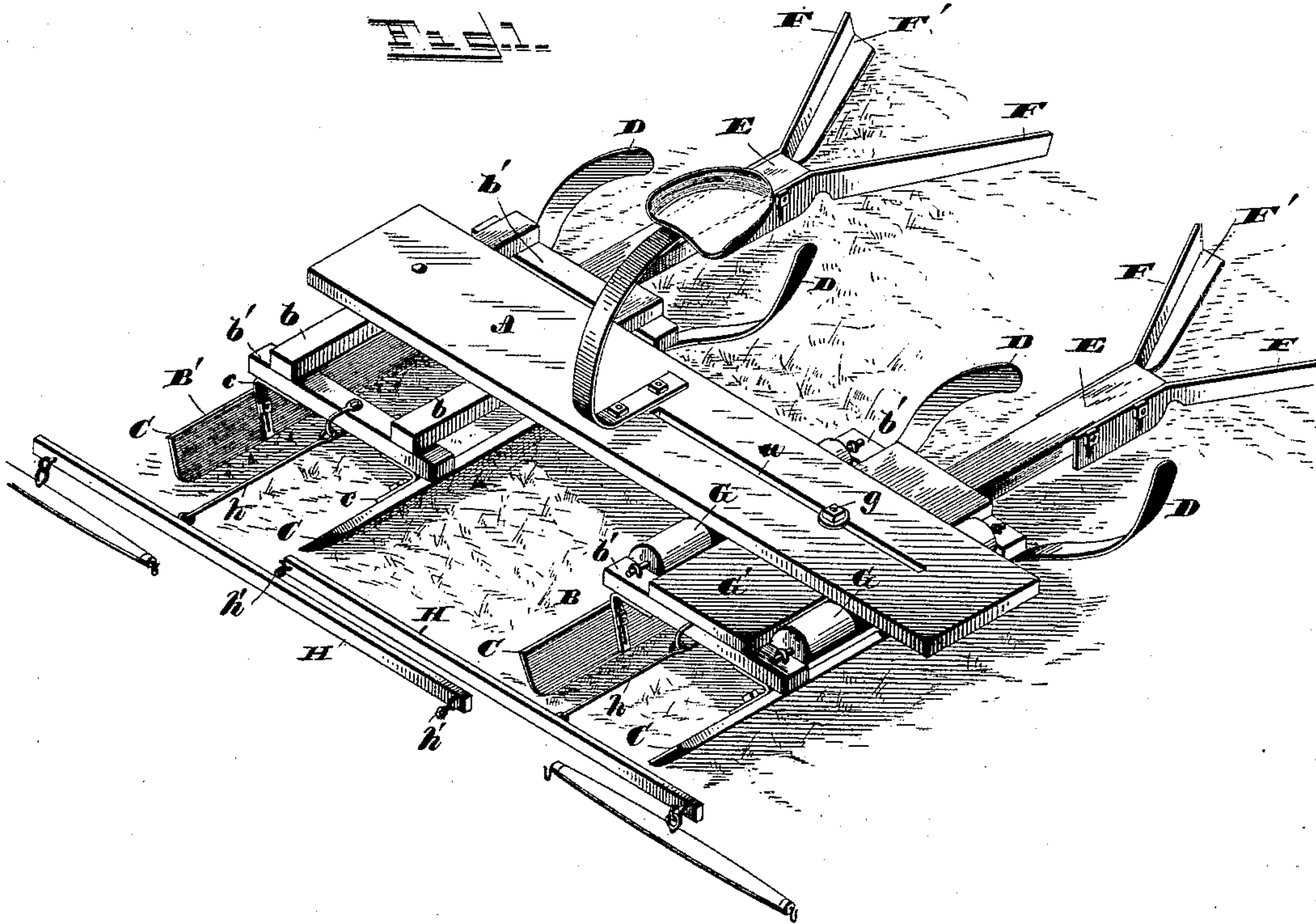


(No Model.)

T. S. WARNER.
CULTIVATOR.

No. 397,404.

Patented Feb. 5, 1889.



WITNESSES,
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M. Johnson

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by *[Signature]*
Attorney

UNITED STATES PATENT OFFICE.

THOMAS S. WARNER, OF FRANKFORT, KANSAS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 397,404, dated February 5, 1889.

Application filed November 1, 1888. Serial No. 289,769. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. WARNER, a citizen of the United States of America, residing at Frankfort, in the county of Marshall and State of Kansas, have invented certain new and useful Improvements in Lister-Cultivators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in lister-cultivators.

The object of my invention is to provide a cultivator especially adapted to cultivate plants which are planted in rows; and it consists in the construction and combination of the parts, as will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a lister-cultivator constructed in accordance with my invention. Fig. 2 is a detail sectional view taken through one of the cultivators.

A refers to a board or platform to which the cultivator-frames B and B' are attached. This board is provided on one side of its center with a slot, *a*, by means of which one of the cultivators can be adjustably secured to said board, and to the center of this board, on the upper side thereof, is secured the drivers' seat.

The cultivator-frame B' consists of a pair of parallel longitudinal beams, *b b*, which are rigidly secured to the board A, and to the front and rear ends of these beams *b b* are secured transverse beams *b'*. To the under side of the transverse beams are attached angle-irons *c*, the lower ends of which are bent inwardly and secured to runners C, the upper portions of said angle-irons having slots, so that they may be adjustably secured to said transverse beam. These runners have secured at their rear ends blades D, formed of sheet metal of sufficient thickness, said blades D being curved first downwardly and then rearwardly and outwardly, so as to provide a portion which will be almost parallel with the

lower edge of the runners, but still have a slight angle downwardly at their front edges. The rear portions of these blades are curved upwardly and inwardly, so as to throw the dirt between the runners. These blades D are rigidly secured to the rear ends of the runners. To the center of the rear beam *b'* is secured a beam, E, which extends rearwardly of the runner-carrying frames, said beam being provided at its rear end with metallic runners F F, which are vertically adjustable on said beam by means of slots and bolts. These runners F are rearwardly extended and form blades F', which are rectangular in cross-section, the upper vertical portion being adapted to remove the surplus dirt thrown inward by the blades D, and thereby prevent the plants from becoming covered.

The opposite runner-frame is of similar construction to the one hereinbefore described; but instead of being provided with horizontal beams *b* longitudinal rollers G are substituted therefor, said rollers being journaled on the transverse beams *b'*, and said beams *b'* are rigidly connected to each other by a board, G', above the plane of which the rollers G extend. This board G' is provided centrally with a bolt, *g*, which passes through the slot *a* and forms a means for adjustably connecting the frame B to the board A. Each of the frames B and B' are connected to suitable whiffletrees by rods *h h*.

By means of the construction hereinbefore described the runners may be adjusted toward each other, so as to cultivate rows of plants in furrows of different widths, and in cultivating the plants will first pass between the runners C C under the frames, and the earth will be loosened from the sides of the ridges and turned toward the growing plants. The rear blades will then throw out the surplus dirt and clear the plants.

As shown in Fig. 2, the machine works in furrows, and by means of the rollers G and central board, A, the device is rendered self-adjustable and adapts itself to the unevenness of distance between the furrows.

The whiffletree attachment hereinbefore referred to consists of two bars, H, secured to the frame B by rods *h*. The outer end of each of said bars H has a singletree attached

thereto, and the inner ends are provided with hooks or eyes *h'*. Three horses can thus be attached to the whiffletree attachments and walk on the top of the ridges.

5 Having thus described my invention, I claim—

1. In a lister-cultivator, the combination, substantially as described, of a platform, a runner-frame, *B'*, rigidly secured to one end
10 of said platform, a runner-frame, *B*, provided at top with longitudinal rollers to support the other end of the platform, and means for connecting the frame *B* loosely to the platform to permit of the automatic lateral movement
15 of said frame with relation to frame *B'*.

2. In a lister-cultivator, the combination, with the frame, runners adjustably secured thereto so that they will incline inwardly, blades *D D*, secured to the rear ends of the
20 runners, and a rearwardly-extending beam carrying diverging blades *F'*, substantially as shown, and for the purpose set forth.

3. The combination, in a lister-cultivator, of a board or platform, *A*, having rigidly at-
25 tached thereto a runner-frame, *B'*, said board *A* being provided with a slot for adjustably

securing a runner-frame, *B*, thereto, said runner-frame having rollers *G G*, substantially as shown, and for the purpose set forth.

4. In a lister-cultivator, the runner-sup- 30
porting frames *B* and *B'*, one of said frames being adjustably secured to a slotted board or platform, *A*, said frames being provided with runners *C*, the rear ends of said runners having attached thereto blades *D*, the front 35
edges of which adjacent to the runners are bent downwardly to enter the soil, the rear ends of said blades being curved upwardly to throw the soil inwardly, and rearwardly-extending beams *F*, carrying runner-blades *F'F'*, 40
the rear portions of which are bent so as to provide horizontal and vertical portions, said blades diverging rearwardly from each other and the whiffletree attachments, the parts being organized substantially as shown, and 45
for the purpose set forth.

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

THOMAS S. WARNER.

Witnesses:

E. C. DUNHAM,

GEO. F. REXFORD.