(No Model.) 2 Sheets—Sheet 1.

W. RICHARDS.

SULKY HARROW.

No. 362,784. Patented May 10, 1887.

Fig. 1.

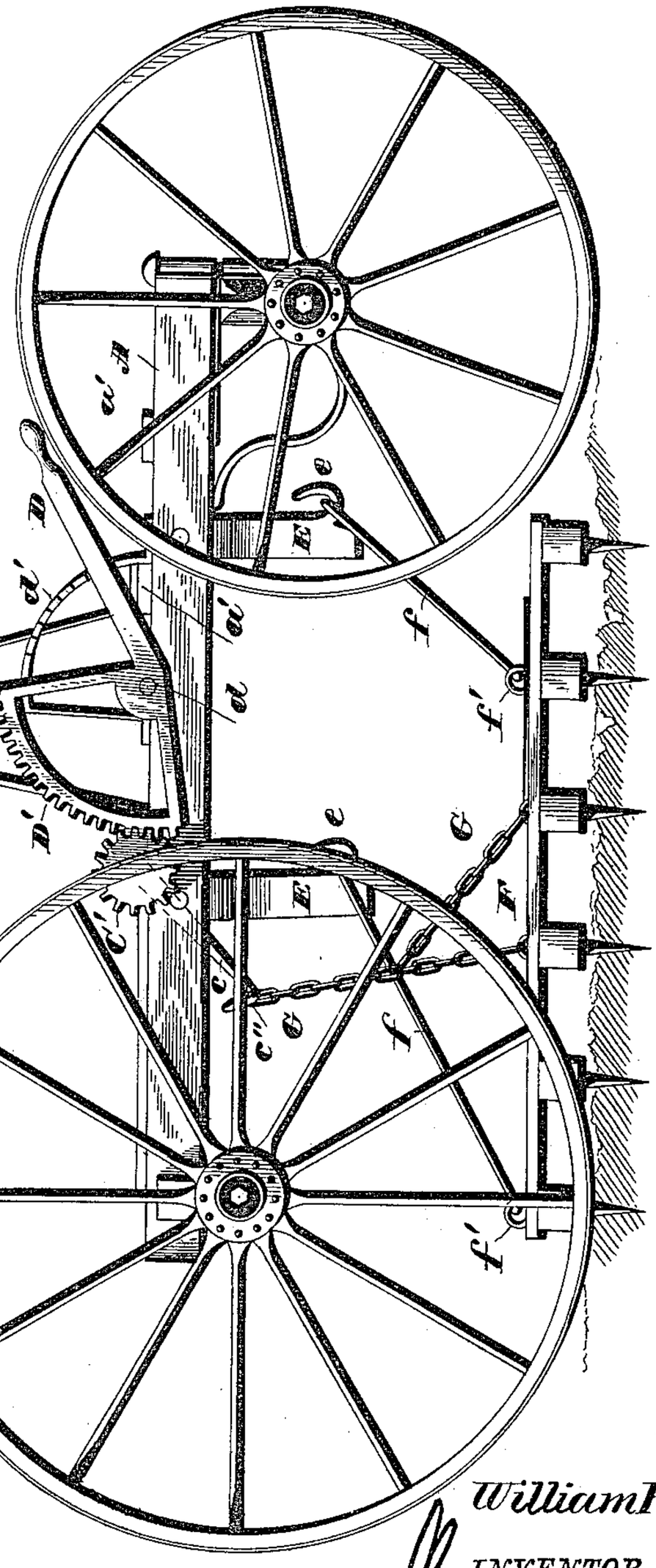
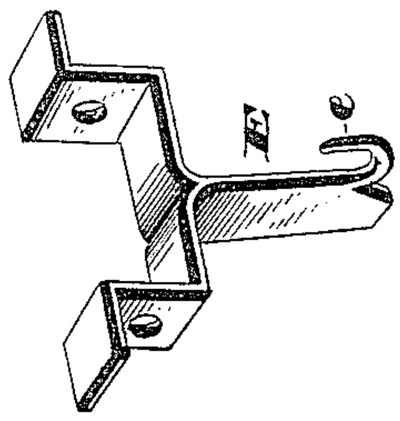


Fig. 2.



WITNESSES

G. S. Elliott.

E. M. Johnson

William Richards

INVENTOR

Edw. M. Johnson

Attorney

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

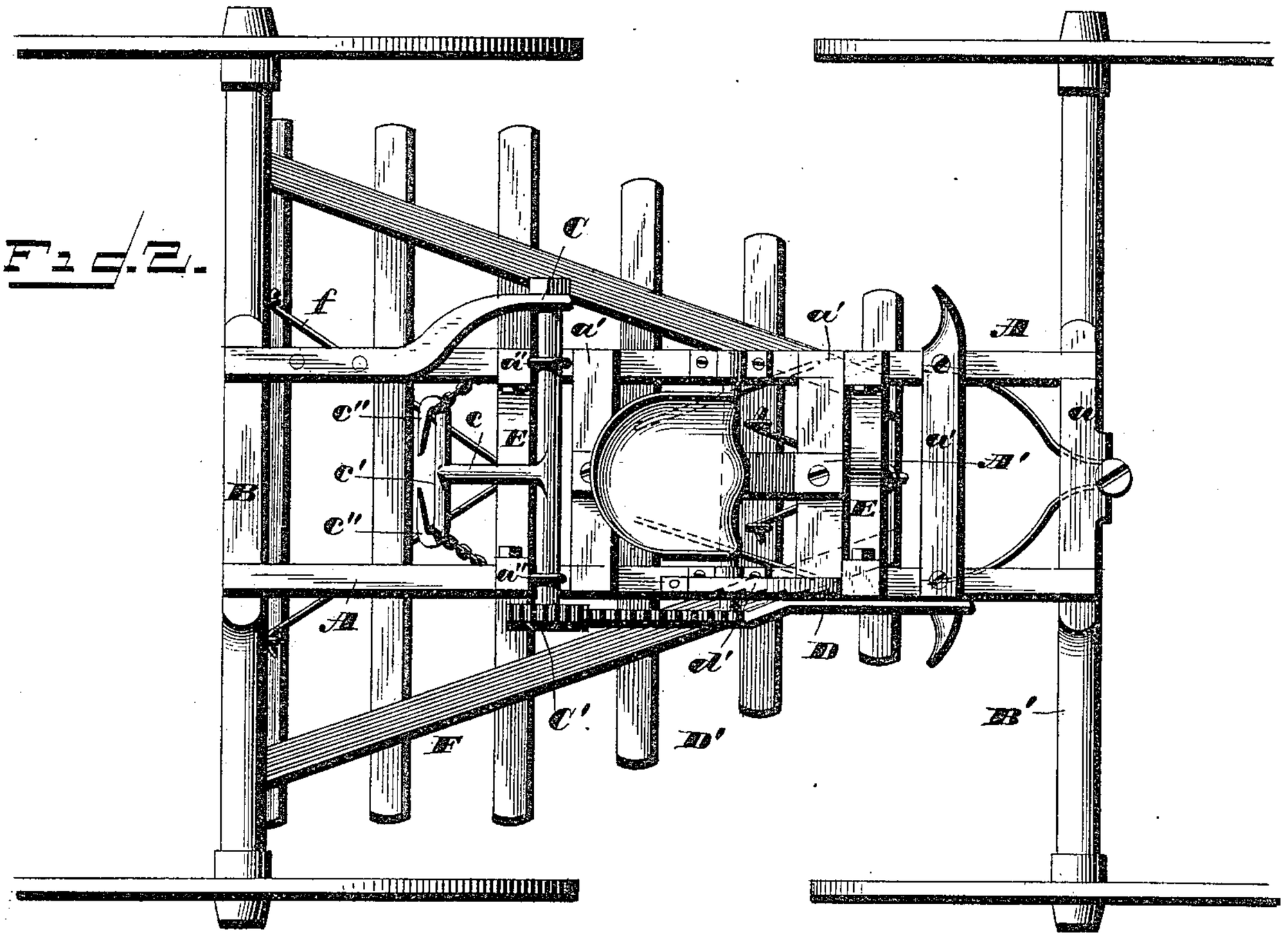
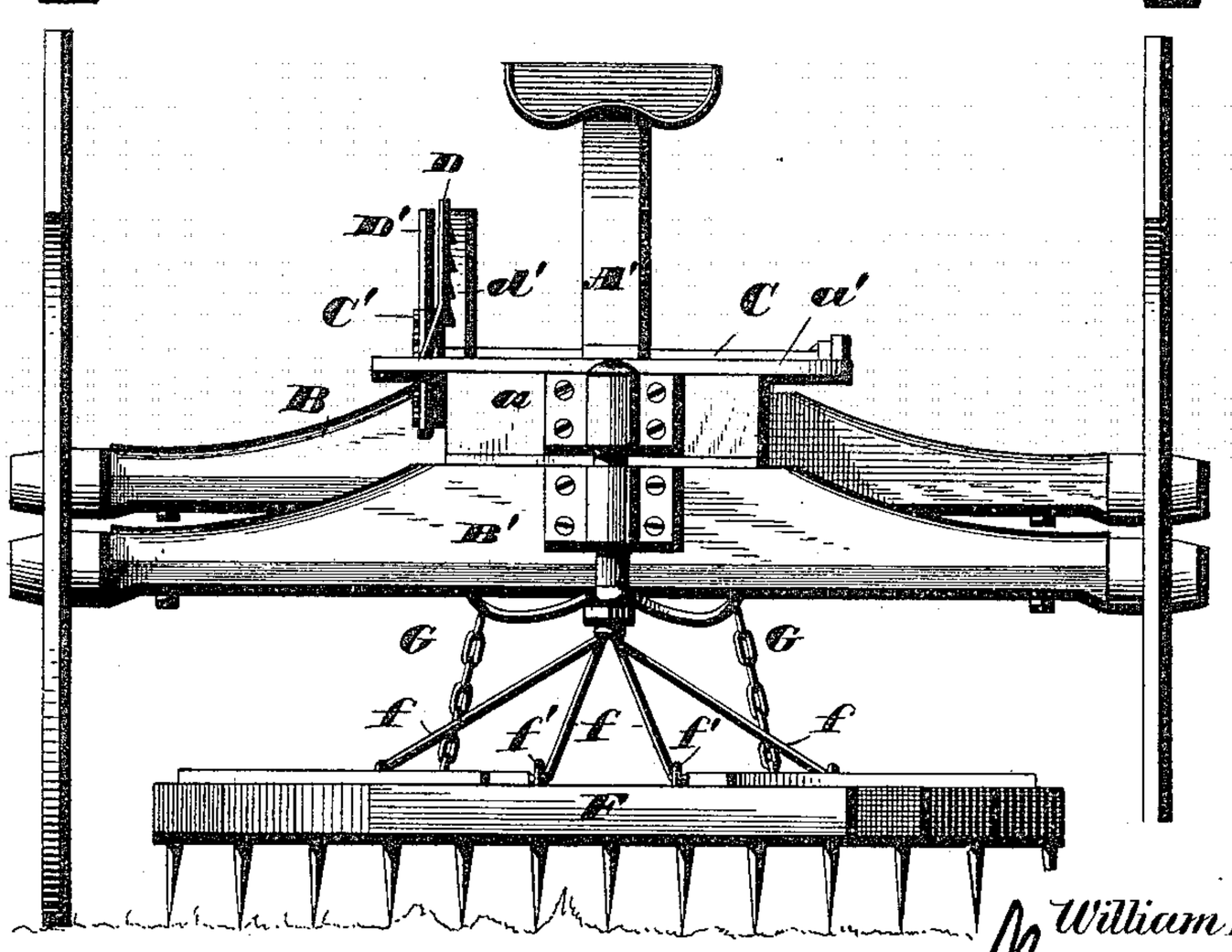


Fig. 3.



WITNESSES

G. Sargent. Elliott.

E. W. Johnson

William Richards.

INVENTOR

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM RICHARDS, OF VAN WERT, OHIO.

SULKY-HARROW.

SPECIFICATION forming part of Letters Patent No. 362,784, dated May 10, 1887.

Application filed February 3, 1887. Serial No. 226,406. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM RICHARDS, a citizen of the United States of America, residing at Van Wert, in the county of Van Wert and State of Ohio, have invented certain new and useful Improvements in Sulky-Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such 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.

This invention relates to that class of harrows in which the harrow-head is attached to and guided by a truck.

The object of my invention is to produce a light-draft drag-harrow in which the harrow-head may be raised to the truck for removal from place to place, and in which said harrow-head may be adjusted upon the truck to cause the teeth to work at a greater or less depth. These and minor objects are attained by the device illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved truck-harrow. Fig. 2 is a top plan view thereof. Fig. 3 is an end elevation, looking toward the front; and Fig. 4 is a perspective detail of one of the supporting-hooks.

The truck-frame consists of the parallel reach-bars A A, rigidly secured to the rear axle, B, and at the front provided with a head-block, *a*, to receive the king-bolt, by means of which the front axle, B′, is secured.

Secured upon the reach-bars A are cross-boards *a′*, which serve to support the seat-frame A′ and as a foot-rest. The reach-bars are provided to rear of these cross-boards with bearings *a″*, in which a rock-shaft, C, is journaled, said rock-shaft being provided centrally with a rearwardly-extending rigid arm, *c*, having at its outer end a cross-bar, *c′*, the ends of which terminate in hooks or rings *c″*. Upon one end of the rock-shaft C is keyed a pinion, C′, arranged to mesh with a toothed sector, D′, formed on the rear end of a hand-lever, D, which is pivoted on a stud, *d*, projecting from the frame. A notched arc, *d′*, is rigidly secured to the frame in such a position that the notches therein may be engaged by the lever D, so that said lever may be locked in different positions of adjustment.

Draft-hangers E, preferably of the form shown in Fig. 4, are secured to and between the reach-bars A forward and to rear of driver's seat, and these hangers are provided at their lower ends with hooks *e*, designed to receive and hold the free forward ends of rigid draft-links *f*, the rear ends of which are secured in eyes or staples *f″*, carried by the harrow-head F. Lift chains or ropes G are also secured to the harrow-head, their upper ends being attached to the hooks or rings *c″* at the outer ends of the cross-bar *c′* of arm *c*.

A pole or shafts will be secured in the usual manner to the front axle, B′; but as such devices and their manner of attachment are so well known, their illustration is deemed unnecessary.

In moving the harrow from place the hand-lever D will be drawn backward to rotate shaft C and elevate the rear or free end of arm *c*. This operation raises the harrow-head F to the desired height free from the ground. The lever D is now engaged in one of the notches in the side of the notched arch *d′*, to lock the parts in this position. When it is desired to put the harrow in operation, the lever D is released and carried forward to lower the harrow-head F to the desired extent, when the lever D is engaged in another notch in the arch to maintain said harrow-head in a fixed position with relation to the periphery of the wheels of the truck. It will be observed that by this construction I provide for working the harrow-teeth at a greater or less depth in the ground, as by the proper adjustment of the lever D the harrow-head may be caused to move close to the surface of the ground, so that the teeth will sink deeply therein, or raised a distance from the ground to cause said teeth to work at a less depth. It will also be noted that, owing to the employment of rigid draft-links, the harrow-head will travel in a straight line between the wheels, thus avoiding the zigzag movement of ordinary drag-harrows, and that the ground can be worked close up to stumps or other obstructions, then lifted over, and again lowered to resume work close to the other side of the obstruction. This action is rendered more

perfect from the fact that the links are rigid, and when the harrow is in operative position the rear or free end of the lifting-arm C is positioned to rear of point where the lower ends of the lift-chains G are connected to the harrow-head, so that as the arm C is raised the harrow-head will move upward and to rear, traversing an arc the radius of which is equal to the length of the draft-link; hence as the harrow-head rises with a retrograde movement it may be carried closer in operation to an obstruction before being elevated than a harrow-head which is raised in a true vertical line.

In practice I have so proportioned the parts of this device that when the harrow-head is raised to the full limit the lower ends of the teeth will clear the ground about twelve inches; but of course proportions may be varied to suit the views or necessities of different users.

In practice I construct my harrow-head quite heavy, as its arrangement with the truck renders the draft quite light.

I claim—

1. The combination, substantially as before set forth, of a four-wheeled truck having parallel reach-bars, the hooked hangers secured to and between said reach-bars, the harrow-head, the rigid draft-links secured at their rear ends to the harrow-head and at their forward ends to the hooks of the hangers, the rock-shaft provided with a rearwardly-extending rigid arm, lift-chains connected at their forward ends to said arm, and mechanism carried by the truck for rotating the rock-shaft.

2. The combination, substantially as before set forth, of a four-wheeled truck having parallel reach-bars, the hooked hangers secured to and between the reach-bars, the rock-shaft journaled in bearings carried by the reach-bars, and provided with a rearwardly-extending arm and a pinion, the hand-lever having a geared sector, the notched arch, and the harrow-head having draft-links and lift-chains connected, as described, with the hooked hangers and the arm of the rock-shaft.

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

WILLIAM RICHARDS.

Witnesses:
C. F. MANSHIP,
SILAS SMITH.