

(No Model.)

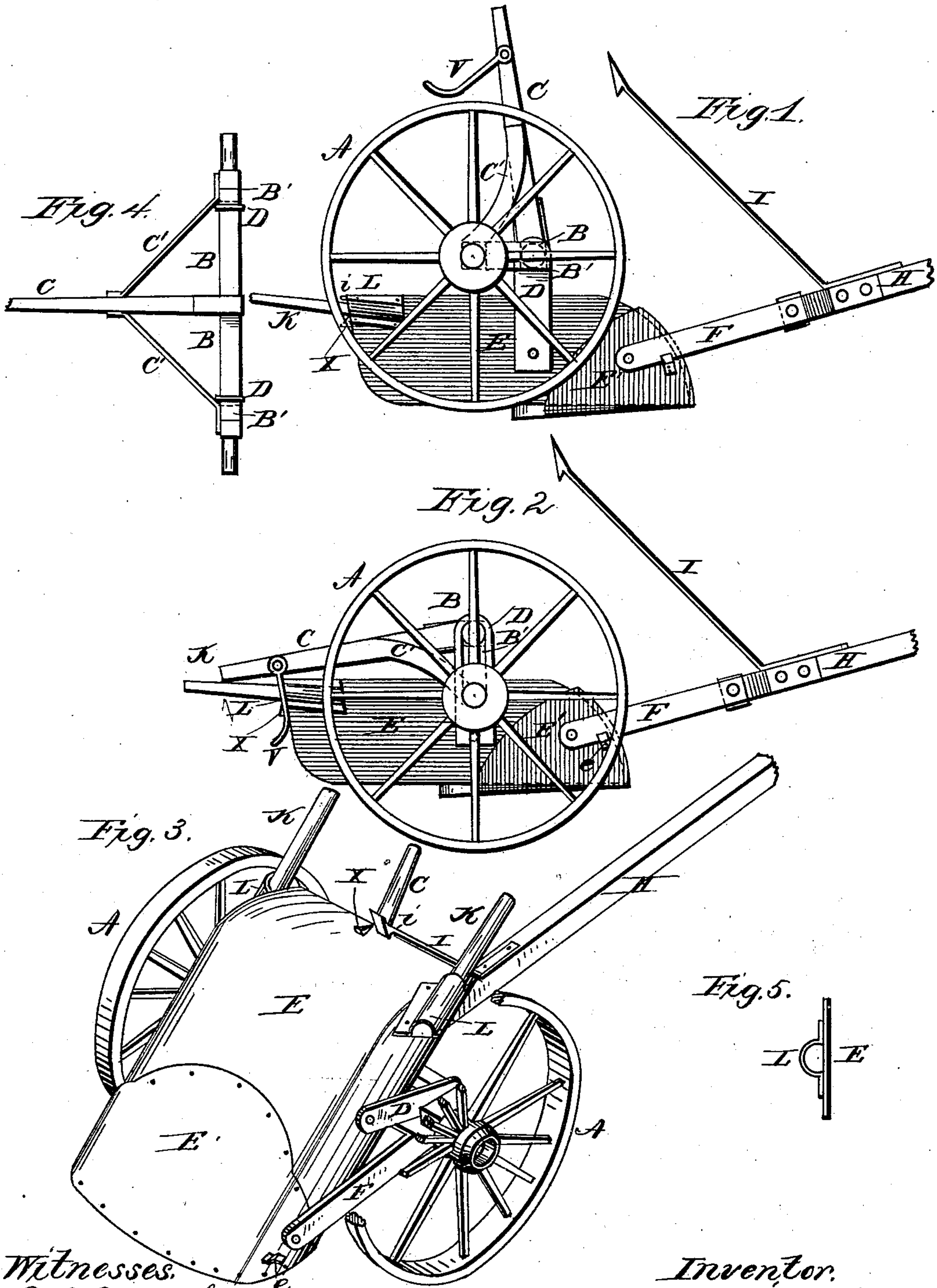
2 Sheets—Sheet 1.

J. JOHNSON.

DIRT SCRAPER.

No. 254,485.

Patented Mar. 7, 1882.



Witnesses:
A. L. Ouraud
Will. C. Garman.

Inventor.
Jeremiah Johnson,
per J. F. Drummond,
Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

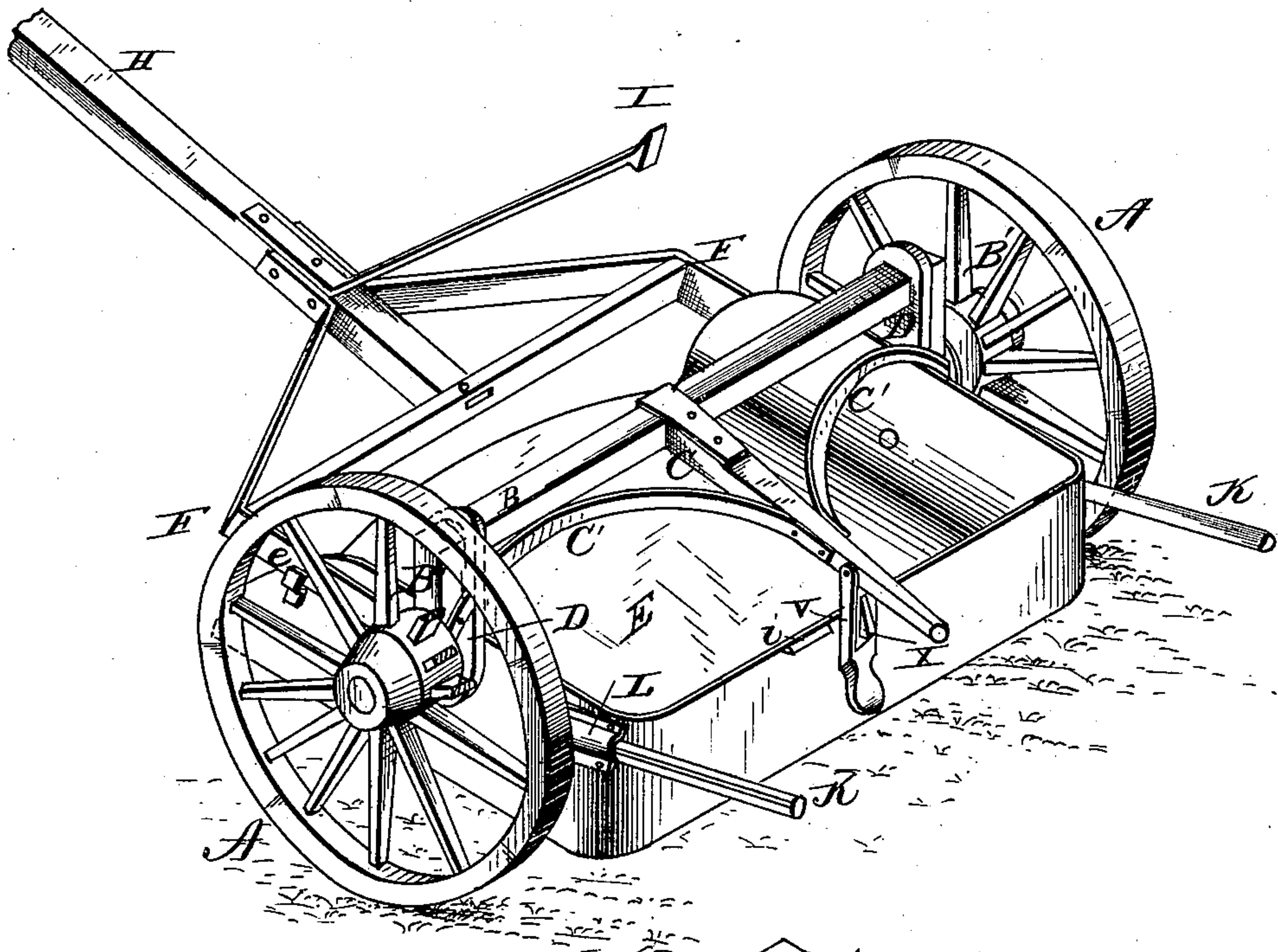
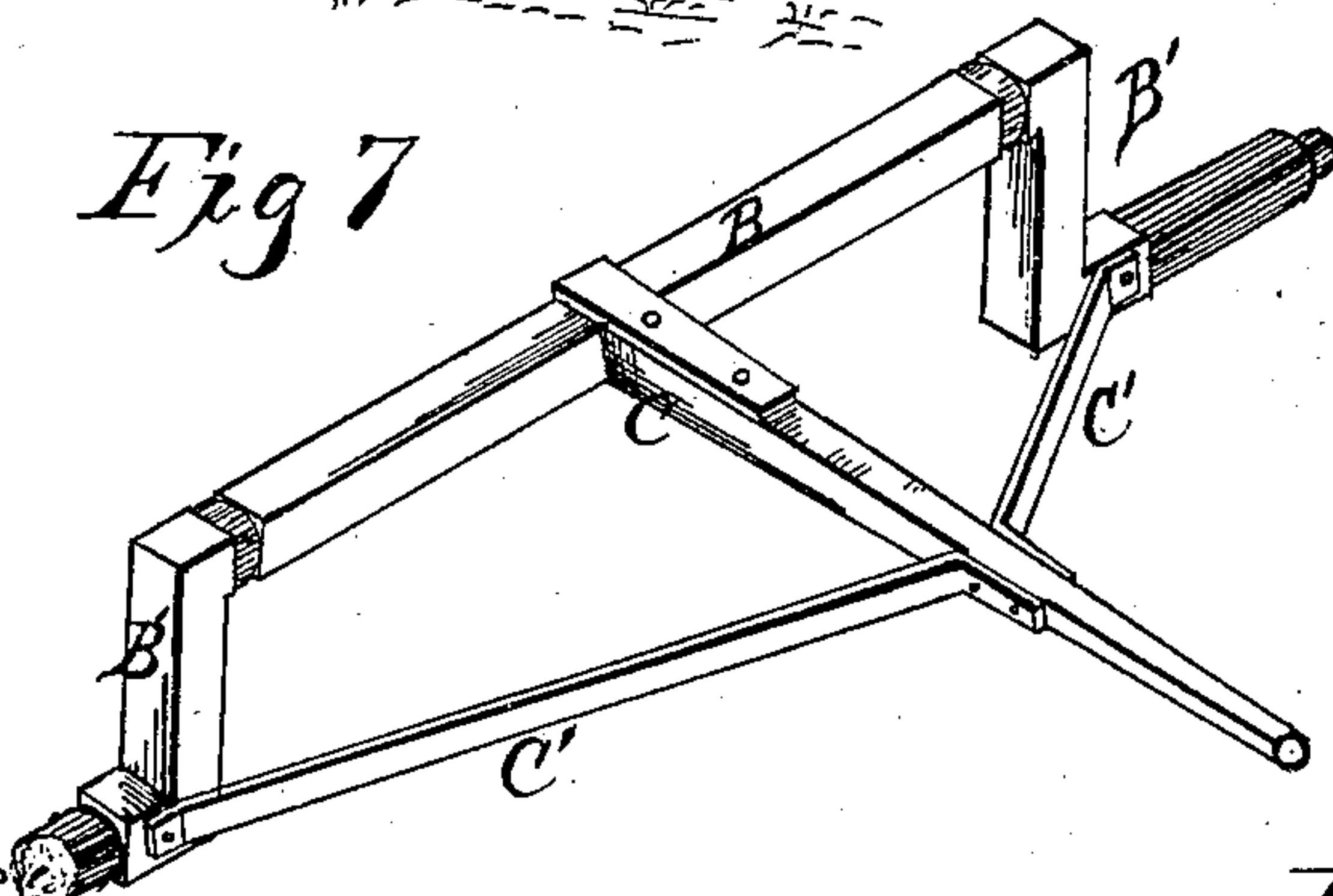


Fig 7



Witnesses:
Frank L. Curaud,
Will. L. Garman

Inventor:
Jeremiah Johnson
Per Jas. J. Drummond,
His Atty.

UNITED STATES PATENT OFFICE.

JEREMIAH JOHNSON, OF MOUNT PLEASANT, IOWA, ASSIGNOR OF ONE-THIRD TO WALDO A. STEARNS, OF SAME PLACE.

DIRT-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 254,485, dated March 7, 1882.

Application filed November 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH JOHNSON, of Mount Pleasant, in the county of Henry and State of Iowa, have invented certain new and useful Improvements in Dirt-Scrapers, of which the following is a specification.

My invention relates to an improved manner of constructing scraper-boxes, and to mechanism for elevating and carrying a loaded scraper-box.

The object of my invention is to provide a scraper-box more firmly constructed and stronger in the usually weak parts than hitherto made, so as to resist the strain exerted upon it while being filled and moved, and at the same time being constructed in such a manner and shaped so that but a small portion is made to rub on the ground while filling, or otherwise in use, and which part, by being made of steel, will suffice for all of the demands for such metal in a scraper-box, thus providing for the use of cheaper material as the general constituent of the same, and such as can be more easily worked, and equally as good practically as if all were made of steel.

A further object is to provide means by which a loaded scraper-box may be more easily elevated to a position suitable for transporting on wheels by means of power exerted by the operator than has hitherto been known, all of which I will proceed to fully describe by the aid of the accompanying illustrative drawings, of which—

Figure 1 is a side elevation of a machine embodying my invention, showing a scraper-box mounted on wheels as lowered for filling. Fig. 2 is a side elevation of the same with the box or load raised for traveling on wheels. Fig. 3 is a perspective of the same with the box inverted for traveling empty. Fig. 4 is a plan view, showing the elevating-lever with its braces, and manner of attaching them to the axle of the machine. Fig. 5 is a cross-sectional view of a detached socket for receiving and holding the handles of a scraper. Fig. 6 is a perspective of a rear view of the machine with the box raised in traveling position; and Fig. 7 is a perspective of the axle detached, having also an operating-lever and braces attached thereto.

The letters of reference indicated in the drawings indicate like parts in the different figures, and dotted lines parts hidden from view.

A are the traveling wheels of the machine, which play loosely on the ends of an upward-arched or double-elbow-bent axle, B.

C is a lever, rigidly attached to said axle B, near its center, having braces C' rigidly attached to said lever and to the axle B, near the lower end of the elbows B', thus forming a stout and rigid lever for rotating said axle in the wheels A in raising a load or in lowering the box.

To the axle B, near the ends of its straight elevated or middle section, are pivoted pendants D. Said pendants are bolted to the sides of the scraper-box E, (one on either side,) and are used for supporting the said box by suspending it from the said axle B. When the said box is lowered for filling, the said elbow-bends B' will lie in a forward horizontal position at, or about at, right angles with the said pendants D, and the said lever C will stand in nearly a vertical position. When the said box is filled with dirt it is raised entirely from the ground to the required height for traveling by means of the operator taking hold of the said lever C and rotating the said axle B backward until the said elbows B' will be in a vertical position and parallel with the said pendants, and the said lever C in nearly a horizontal position. The elevated center section of the said axle B, to which are attached the said pendants D, is by this means made to describe an arc of a quarter-circle, terminating in its zenith, with the weight of the load resting directly over the bearings of the axle, as above described. The resistance to the operator is thereby continually decreased while raising a load until it entirely ceases, when it rests directly over the bearings of the said axle, as above stated. This diminution of resistance is caused by the shorter arm of the elevating-lever being continually diminished in its projecting length, or in the distance between perpendiculars from the fulcrum and the point of resistance while the said point of resistance is passing through the said arc. In this combination the said elbow-bends B' constitute or are equivalent to the said shorter arm of the

said lever, and the spindles of the axle, with their bearings in the wheels, constitute the fulcrum. Therefore, as the straight or middle section of the said axle B approaches the zenith of the said arc, it also correspondingly approaches a perpendicular from its bearings, thereby shortening the leverage on the resistance side and producing the results above named.

10 The importance of having the lever C attached to the axle B at right angles with the shorter arm, or in this case with the elbow-bends B' of the said axle, which are equivalents to the shorter arm of the lever, is to have
15 room for operating the said lever, so that while its shorter arm or the said elbows are passing through the said upper quadrant or arc, as described, the longer end or lever C will describe the opposite upper quadrant or arc of a larger
20 circle, but by reverse movement, thereby affording ample room for the working of the said parts in the manner described. By this arrangement and operation of the said parts the weight of load while traveling rests perpendicularly over the bearings and directly
25 on the said pendants D, which are supported from the said axle B, thereby avoiding the strain that would come on the elevating-lever or its equivalents, and the rear end of the box
30 also, while carrying a load poised over the axle or pivot bearings by means of the said lever, thus supporting the said box, which is usually done by devices for raising one end of the box at a time.

35 I am aware that there are scrapers and other devices required to raise heavy loads now in use, which do their raising by means of levers poised over axles or other analogous devices as fulcrums, which have their levers straight
40 or in one continuous plane, either by continued or unbroken levers or by analogous combinations, which arrangement cannot accomplish the results above described for want of room to operate them, as their rear ends would strike
45 the ground in attempting to do so. Such devices also first raise the forward ends of the scraper-boxes, leaving the rear ends resting on the ground until the said levers are brought down sufficiently to hook on or in some way
50 to attach them to the rear end of the said box, when the said rear end is also raised from the ground by means of poising the weight over the axle or its equivalent, as above described, which, however, causes the forward end to descend equal to the distance thus raised at the
55 hind end, all of which requires more time than where the load is raised at one operation, and often necessitates the stopping of the team to thus connect said parts. The said devices are
60 therefore objectionable on that account, which objections are obviated, as will be seen in this my invention, by means of the mechanism above described for raising the scraper-box in comparatively a level position at one operation,
65 and for carrying it when raised and centrally suspended directly from the axle. The said

scrapers, requiring the forward ends of their boxes to be raised in advance of their rear ends, are further objectionable where they have lugs or arms on their forward parts impinging with the draft-bars or attachments thereto, to prevent their rear ends from drooping with an excess of load therein, which impinging or locking of their forward parts with the tongue or draft-bars rigidly connected therewith necessitates the raising of the entire tongue and its appendages while thus raising the aforesaid forward end of the scraper-box.

Sometimes it becomes necessary to raise a scraper-box quickly while filling, to prevent its forward or cutting edge from engaging with obstructions connected with the ground, and in such an event my method of raising the same through the upper forward quadrant of a circle gives it a relative backward movement in raising, thereby materially assisting in clearing such obstructions, while scraper-boxes raised through the lower forward quadrant of a circle have an accelerated forward movement, causing the scraper to frequently strike the said obstructions, requiring the backing of the team to get loose. Therefore this my invention is superior to such devices in that respect.

Pivoted to the lever C is a hasp, V, which catches on a hook, X, attached to the rear end of the box E for holding said box and axle in a balanced elevated position while traveling with a load. The load of dirt is dumped by means of the operator taking hold of the handles K and elevating the rear end of the box until its forward end strikes the ground, when it is partially inverted, so as to discharge its load by means of a forward movement of the team. Said box is held in a semi-inverted position for traveling empty by means of a spring-catch, I, attached to the tongue H, which takes over a catch, i, on the rear end of said box, the readjustment and lowering of said box for reloading being done by reverse movement of said parts. The draft-bars F, being fastened to the tongue H and diverging, so that their rear ends will pass outside the forward part of the box, are pivoted to it forward of its bearings. Said box E is also provided with lugs e, made so as to catch underneath the bars F, to prevent the rear end of it from drooping when being carried loaded.

In order to strengthen the forward part of a scraper-box to prevent it from buckling or its edges from bending by it coming in contact with hard substances while filling, a steel plate, E', is fitted and firmly fastened around underneath its forward part, (far enough back, however, to protect its wearing parts,) and extending up the sides to near the top, so as to receive the draft attachment, and forward beyond the forward edge of the inner layer of said box, so that it will form the cutting-edge of the scraper, thus constituting a scraper-box very stiff, and having its principal wearing part made of steel, so as to protect it from wear, while the main

body of the box may be made of iron or other cheaper material, such as is easier to work and equally as good practically as if all were made of steel, thereby providing a scraper-box stiff
5 in the usually weak parts and at less expense than the present manner of constructing them.

I am aware that additional plates of steel have been fastened to the bottom of dirt-scraper made of steel plates in different forms and
10 used as shoes upon which to rock the scraper while filling; but they neither extend up the sides as a stiffening to the box to prevent buckling, or forward far enough to form a cutting-edge, as in my invention.

15 On the upper rear corners of the box E are also provided sockets L, for receiving the handles K, which sockets are made in a half-round or semi-oval form transversely and slightly tapering lengthwise, and riveted or otherwise
20 securely fastened to the outside of the said box.

Having thus fully described my invention, so as to enable others skilled in the art to which

it appertains to make and use the same, what I claim as new, and desire to secure by Letters Patent, is—

1. A scraper-box, E, constructed of a metallic plate constituting the inner or principal dirt-holding device, in combination with a supplementary steel plate, E', fitted underneath and up the sides of the forward part of the box E,
25 and fastened thereto, constituting both the wearing part and a stiffening device to a scraper-box, and forming its cutting-edge, substantially as herein shown, and for the purposes
30 specified.

2. The combination of an arched or double-elbow-crooked axle, B, wheels A, lever C, with braces C', pendants D, and box E, all formed and arranged substantially as herein shown,
35 and for the purposes specified.

JEREMIAH JOHNSON.

Witnesses:

W. S. BABB,

J. T. DRUMNORD.