(Model.)

Z. T. CARTER.

HARROW.

No. 248,636. Patented Oct. 25, 1881.

Fig. 1.

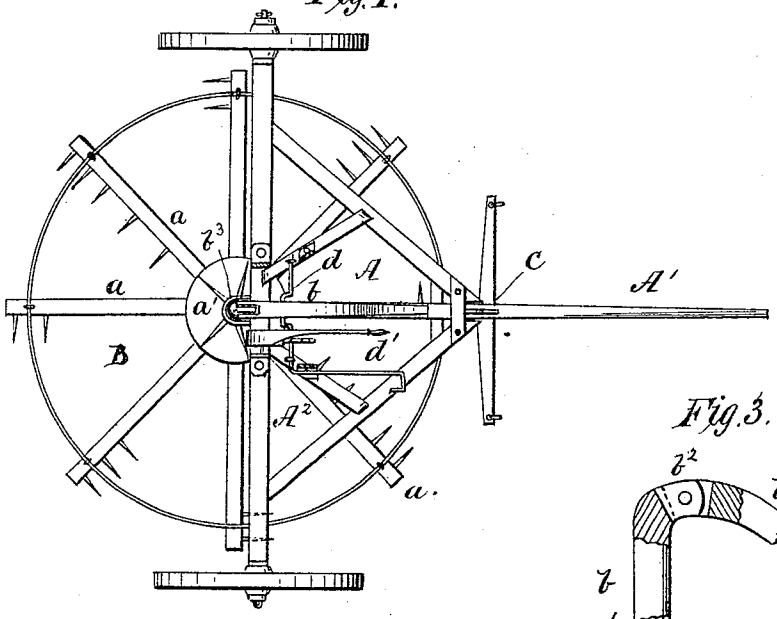


Fig. 2.

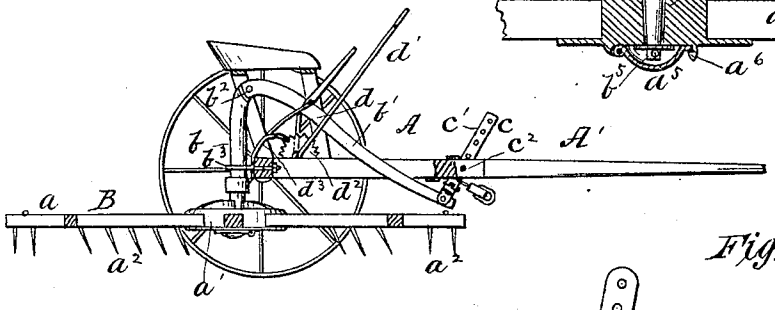


Fig. 3.

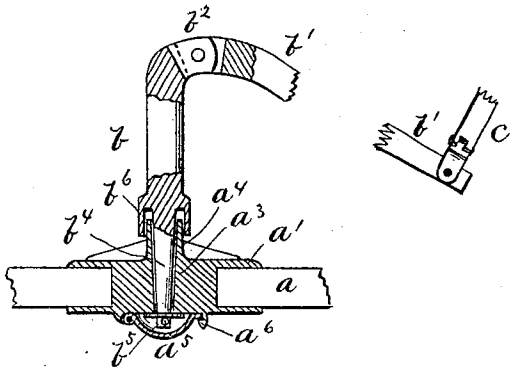


Fig. 4.

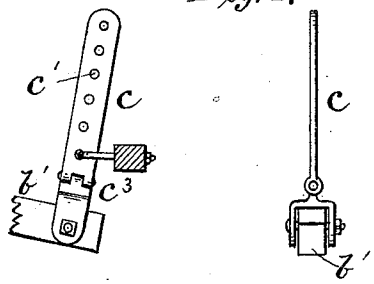
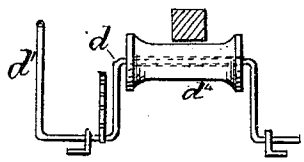


Fig. 5



Witnesses:
A. Parker.
P. B. Turpin

Inventor:
Zechariah T. Carter
By R. S. & A. P. Lacey
Attys

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ZECHARIAH T. CARTER, OF RICH HILL, MISSOURI.

HARROW.

SPECIFICATION forming part of Letters Patent No. 248,636, dated October 25, 1881.

Application filed July 28, 1881. (Model.)

To all whom it may concern:

Be it known that I, ZECHARIAH T. CARTER, a citizen of the United States, residing at Rich Hill, in the county of Bates and State of Missouri, have invented certain new and useful Improvements in Harrows; 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.

This invention relates to improvements in revolving harrows carried on a sulky.

It consists in an L-shaped arm or beam having the lower end of its vertical portion journaled in the center of the hub of the harrow, and its other end bent forward and over the axle and pivoted to an adjustable bar, so that it can be set higher or lower and have a rocking motion from side to side to permit the harrow to adjust itself to uneven surfaces; and it consists in other mechanism, all of which will be hereinafter more fully set forth and described.

In the drawings, Figure 1 is a plan of my harrow and sulky, the driver's seat being removed to show the mechanism more clearly. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section of the harrow-head or drum and the L-shaped arm, showing the construction of the journal and bearing; and Fig. 4 shows the adjusting-bar, which carries the front end of the beam or arm, and Fig. 5 is a detail view.

A is the sulky by which my improved harrow and operating mechanism are carried.

B is the harrow, which is composed of a series of radial arms, a, which project from the central hub, a', and they are provided with teeth a^2, which are set in an inclined position, as shown. The hub a' is made dust-tight. The arms a are fitted snugly into the head, so that neither dust nor dampness can get into the sockets. A central vertical bearing, a^3, is formed in the drum or head to receive the gudgeon on the end of the beam. Surrounding the upper end of the bearing a^3, I form an annular flange or rim, a^4, and the lower end of the bearing is covered by a small semi-globular cap, a^5, which swings on a hinge, and when closed is fastened by a suitable catch, a^6. This cap is constructed so that when closed it makes a dust-tight joint and excludes dust and dampness from the lower end of the bearing a^3.

C is the arm or beam which carries the harrow. It is made L-shaped and in two parts, b b', which are jointed and hinged together at their angle or elbow, b^2. The hinge b^2 could be located farther forward on the part b', if desired; but I prefer to locate it at the elbow formed by the junction of the two parts, as shown. The arm or part b' has its forward end by preference depressed and carried under the rear end of the tongue A', and it is secured to the lower end of a bar, c, which is passed upward through a mortise in the tongue. The rear vertical part, b, stands against the rear side of the axle A^2, to which it is held loosely by a staple, b^3. On the lower end of the vertical arm or part b', I place the gudgeon or spindle b^4, which fits into the bearing a^3 in the hub a' and is held by a nut, b^5, or other suitable retaining device on its lower end. The spindle b^4 extends through the hub and through the annular rim a^4. b^6 is an annular depending rim formed around the part b of the beam, and is arranged so as to pass close to and on the outer side of the annular rim a^4. This makes a close-fitting joint between the rims a^4 and b^6, which excludes dust from the spindle b^4. By the dust-cap a^5 and socket-joint made by the rims a^4 b^6 it will be seen that all dust is kept out of the hub and away from the spindle. The beam, being held loosely by the staple b^3, can rise or fall, or can turn laterally sufficiently to permit the harrow to adjust itself to inequalities in the surface of the ground.

The adjusting-bar c, which carries the forward end of the beam A, is provided with a series of pin-holes, c', by which it is secured in place on the vertical mortise in the tongue by means of suitable pin or bolt, c^2, which also secures the tongue in the hounds of the sulky. The double-tree or draft-bar is secured to the bar c below the tongue. The bar c has on its lower end suitable means for holding the end of the beam, and may, if desired, be constructed with a hinged joint, c^3, which will facilitate any lateral swinging motion of the harrow.

The beam b can be raised or let down by means of a crank-lever, d, which is journaled on the cross-bars of the sulky, and is operated by a lever, d', a ratchet d^2, and a pawl, d^3, all under the control of the driver. The crank

bears under the beam and lifts the latter. When the crank is turned down the gravity of the harrow draws the beam down.

This harrow is substantial in its structure, and is adapted to do good work on all kinds of ground. It readily adjusts itself to any unevenness in the surface, and when not in use can be raised clear of the ground for removal to other localities.

The beam *b* would give very good results without being made in two parts hinged together, as described; but I prefer to make it as shown.

d^4 is an anti-friction roller placed on the crank and arranged to bear under the harrow-beam.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a revolving harrow, the combination of the hub *a*, provided with a bearing, a^3, and the annular upwardly-projecting rim a^4, surrounding the upper end of the bearing, the cap a^5, hinged to the under side of the hub and covering the lower end of the bearing a^3, and the spindle b^4, provided at its upper end with the depending rim b^6, which fits down on the outer side of the rim a^4, substantially as set forth.

2. In a sulky-harrow, the bent or L-shaped beam *b*, provided with means at one end for carrying the harrow, and having its other end bent upward and over the axle of the sulky and extended forward, with its front end secured to the framing of the sulky and held so that it can be raised or lowered at will, substantially as set forth.

3. In a sulky-harrow, the combination, with the harrow and with the sulky, of the beam *b*, made in two parts, hinged together and secured to the sulky and to the harrow, so that it can be adjusted vertically, substantially as set forth.

4. In a sulky-harrow, the combination, with the beam *b* and the harrow B and the sulky-frame, of the adjustable bar *c*, connected to the forward end of the beam, and the crank *d*, journaled to the sulky and bearing on the under side of the beam and under the control of the driver, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses, on this 5th day of July, 1881.

ZECHARIAH T. CARTER.

Witnesses:
S. L. LONG,
SAML. HACKETT.