(No Model.)

J. R. STORIE.

HARROW ATTACHMENT.

No. 493,310. Patented Mar. 14, 1893.

FIG. 1.

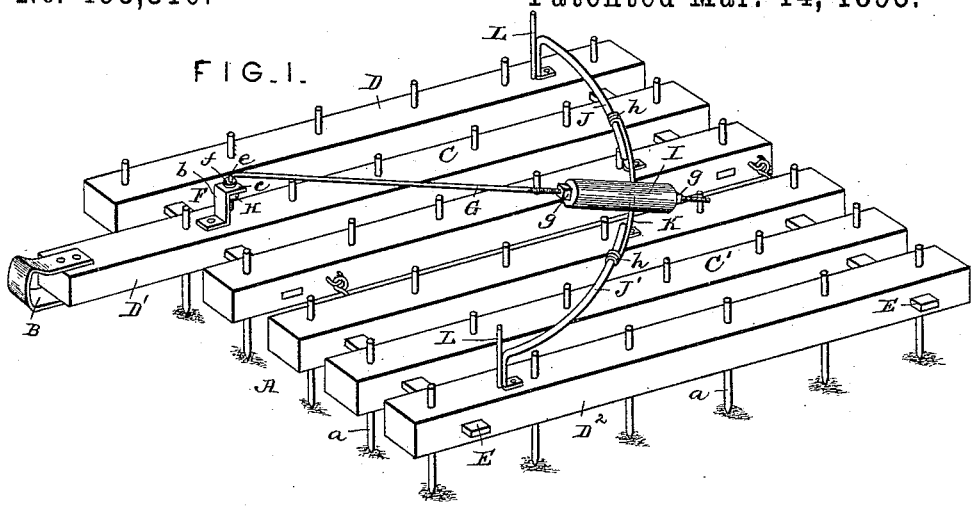


FIG. 2.

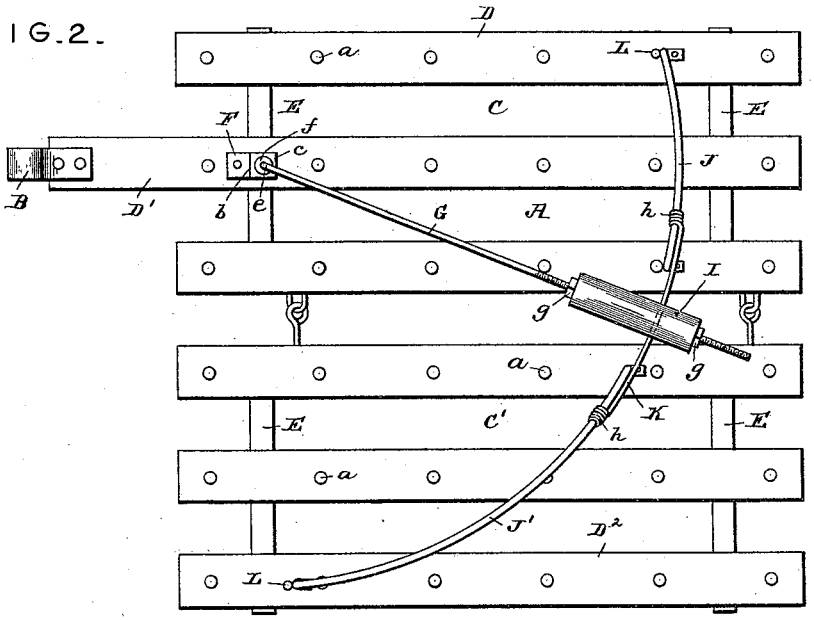
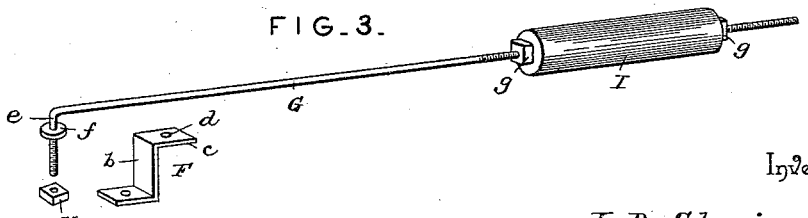


FIG. 3.



Witnesses

H. L. Amer.

F. R. Harding.

Inventor

J. R. Storie.

By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOSHUA RAYMAN STORIE, OF TRAVISVILLE, TENNESSEE.

HARROW ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 493,310, dated March 14, 1893.

Application filed July 26, 1892. Serial No. 441,286. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA RAYMAN STORIE, a citizen of the United States, residing at Travisville, in the county of Pickett and State of Tennessee, have invented a new and useful Harrow Attachment, of which the following is a specification.

My invention relates to harrows, and more particularly to a new and improved harrow attachment designed to regulate and facilitate the use of the harrow on uplands and inclinations.

My improvement comprises a self-adjusting gravitating weight, arranged to swing in a prescribed arc of a circle on top of the harrow-frame, and supported by a rod oscillating from a fixed center at some suitable point on top of the harrow-frame, whereby the necessary weight for embedding the teeth of the harrow in the soil is directed and adjusted to the proper point according to the gravity.

My invention consists further in certain details of construction, arrangement and combination of parts, all of which will be more fully described hereinafter, and the specific points of novelty in which will be particularly designated in the appended claims.

Referring to the accompanying drawings: Figure 1 is a perspective view showing my improvement attached to an ordinary harrow. Fig. 2 is a top plan view. Fig. 3 is a detail view of the swinging weight and its supporting and adjusting means.

Like letters of reference indicate like or corresponding parts in the several views of the drawings.

A indicates a harrow of any ordinary or approved construction, provided, as usual, with the harrow-teeth *a a* and the clevis B. In this particular instance the harrow is shown as made in two sections, C C′, suitably hinged together, and to a certain extent independent in operation. The object of this construction being for the usual purpose of permitting either section to be uplifted to free the teeth from any clinging foreign matter, without disturbing the position of the other section.

D D′ D^2, respectively designate the longitudinal supporting-beams, which, together with the transverse braces E E, constitute the harrow-frame. At a suitable point on top of the harrow, such as near the forward extremity of the beam D′, I locate an angle-iron F, consisting of the vertical portion *b* and the horizontal rectangular projecting arm *c*, having a central circular orifice *d*, located therein to receive and permit the oscillation of the swinging arm G, having at its forward end the downwardly-extending finger *e*, provided with a limiting shoulder *f*, and screw-threaded at its extremity to receive and hold the correspondingly-screw-threaded retaining-nut H, which prevents the removal of the arm G from its pivotal support, while the limiting shoulder *f* prevents the finger *e* from descending too far in the orifice of the support. On the rear extremity of this arm G is loosely mounted the cylindrically-shaped roll or weight I, made of some cheap heavy metal, and longitudinally and centrally perforated, whereby it is loosely and rotatably mounted on the arm G, being limited from longitudinal displacement thereon in either direction, forward or backward, by the stop-nuts *g g*, running on screw-threads formed on the exterior of the rod or arm G. The said weight I is designed to swing in an arc of a circle on suitable guide-ways or supports over both sections of the harrow, the center of the arc being the angle-iron E, as clearly shown in Fig. 1. To this end, J designates a curved guide-rod or bracket placed in a higher horizontal plane than the top of the harrow and held in such position by means of its bent downwardly-projecting extremities, respectively bolted to the beams D D^2; said guides being bent to conform to the curvature of the arc of the circle in which the weight I is designed to swing; and the curvature and continuity of this arc is preserved, on the other section of the harrow by a similar guide J′ of like construction, and secured in the same manner as the guide J to the respective beams of the other section. The break or space between the adjacent ends of the guides J J′ is spanned by a yoke-rod K, having at each extremity an eye *h*, loosely embracing a guide J or J′, as the case may be, and its body-portion preserving the alignment and shape of the continuous guideway, thus forming a bridge between the two sections and preserving the continuity of the arc-shaped guideway, extending unbrokenly over both sections of the harrow. By means of the loosely-em-

bracing eyes *h*, the yoke K is permitted to move in a corresponding manner to the hinges when it is necessary or desirable to uplift one of the harrow-sections. Respectively at each extremity of the guideway is located an upwardly-projecting guard or stop L, for the obvious purpose of preventing the weight I from rolling off at either end of said guideway.

It will be noticed by inspection of Fig. 1 that from each extremity the guideway slopes downwardly or converges toward the center thereof, which center is intermediate of the two harrow-sections. Thus it will be seen that the normal tendency of the gravitating weight I, on level ground, is to occupy the position shown in Fig. 1; but, on the other hand, it will be understood that when either section occupies a higher plane than the other,—as would occur where the same was being used on a hillside,— the weight I will roll along the guideway under the influence of gravity, descending to a set position bearing upon the lowermost section, and serving to embed the teeth of the same firmly in the soil.

Having thus described my invention, what I claim is—

1. In a harrow, the combination with the frame thereof, of an oscillating arm pivotally supported thereon and provided at its rear extremity with a gravitating weight arranged to shift in the arc of a circle and bear upon the said frame in accordance with the influence of gravity, substantially as described.

2. In a rectangular harrow, the combination with a harrow-frame and a superimposed track formed on the arc of a circle and extending diagonally across the frame, said track declining from opposite ends toward its center, of a movable superposed weight arranged to shift its position in accordance with the influence of gravity, substantially as described.

3. In a harrow, the combination with a harrow-frame, of an oscillating arm fixed on said frame and arranged to swing in the arc of a circle, the gravitating weight carried at the free end of said arm and rotatably mounted thereon, and suitable supports or guides for said weight arranged in an arc of a circle on top of the harrow-frame, substantially as described.

4. In a harrow, the combination with a harrow-frame, of an oscillating arm fixed on said frame and arranged to swing in the arc of a circle, the adjustable gravitating weight carried at the free end of said arm and rotatably mounted thereon, and suitable supports or guides for said weight arranged in an arc of a circle on top of the harrow-frame substantially as described.

5. In a harrow, the combination with a harrow-frame, of an oscillatory arm pivotally supported above said frame and arranged to swing in the arc of a circle, the adjustable gravitating weight carried at the free end of said arm and rotatably mounted thereon, and a suitable support or guideway for said weight also arranged in an arc of a circle above the top of the harrow-frame, and sloping or converging from both extremities to its center in a downward direction, as set forth.

6. In a harrow, the combination with a harrow-frame, of an oscillatory arm fixed on said frame and arranged to swing in the arc of a circle, an adjustable gravitating weight carried at the free end of said arm and rotatably mounted thereon, an arc-shaped guideway or support for said weight permitting its free rotation thereupon, and limiting agencies respectively at the ends of said guide-way, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSHUA RAYMAN STORIE.

Witnesses:
BEN MOODY,
W. B. THOMAS.