

W. H. CULVER.
REVOLVING HARROW.

No. 173,912.

Patented Feb. 22, 1876.

Fig. 1

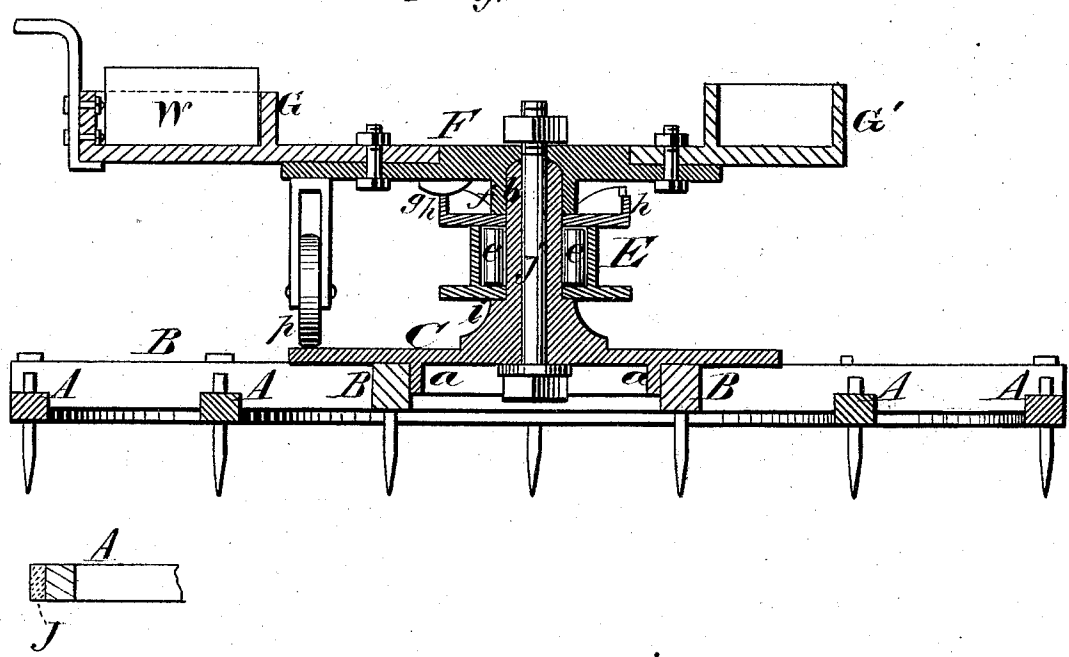
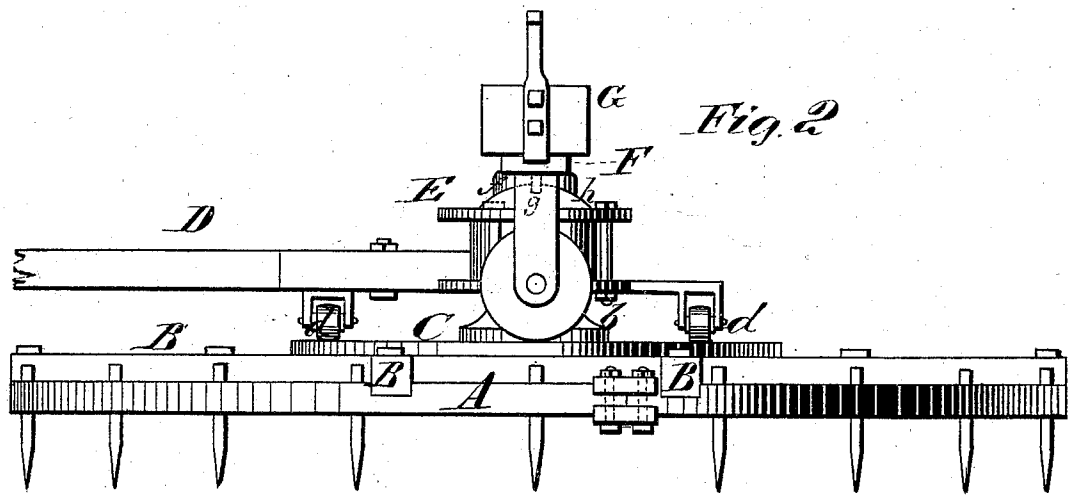


Fig. 2



WITNESSES
E. H. Bates
Geo. C. Upham.

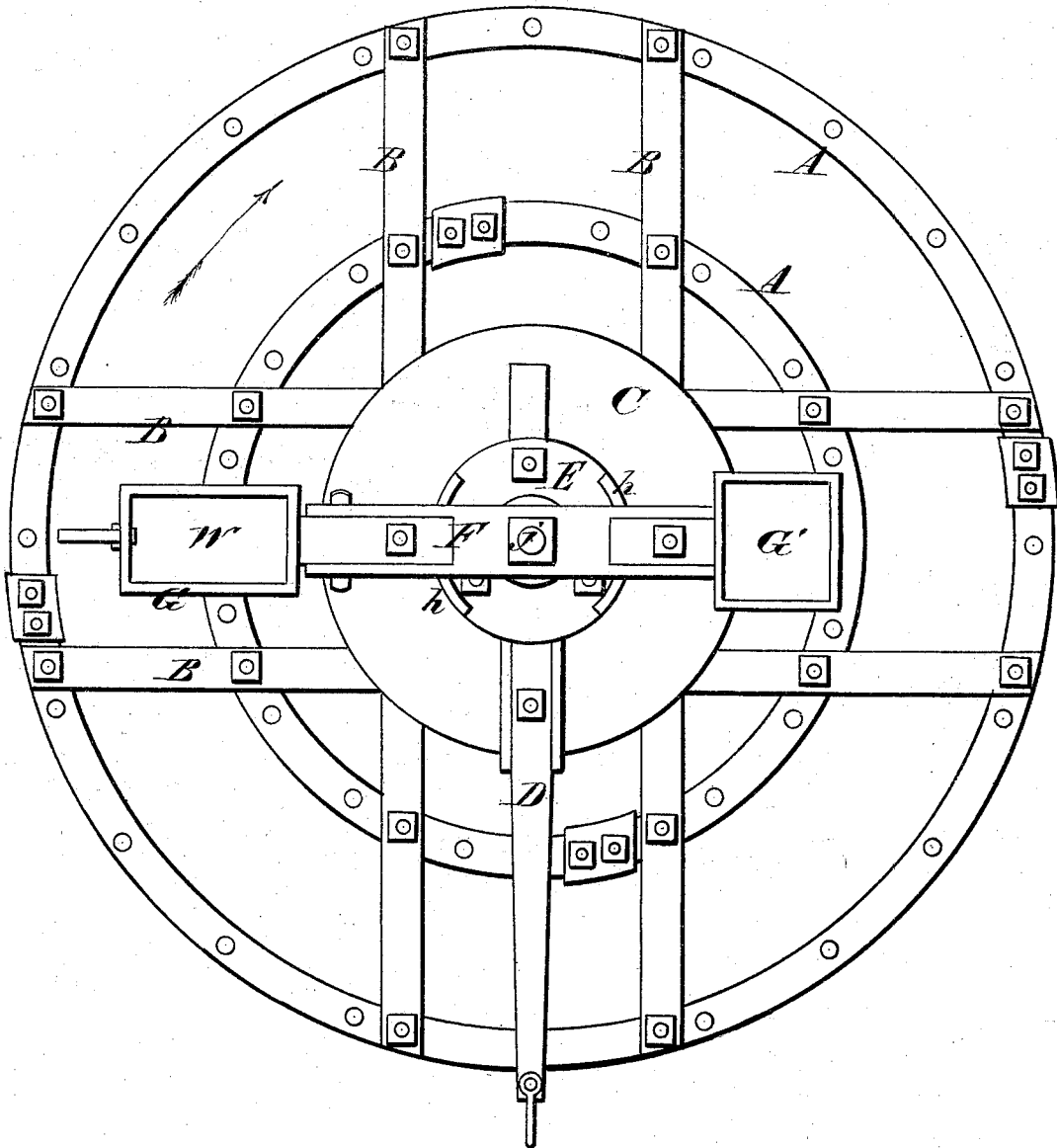
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Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM H. CULVER, OF LEAVENWORTH, KANSAS.

IMPROVEMENT IN REVOLVING HARROWS.

Specification forming part of Letters Patent No. **173,912**, dated February 22, 1876; application filed January 29, 1876.

To all whom it may concern:

Be it known that I, WILLIAM H. CULVER, of Leavenworth, in the county of Leavenworth and State of Kansas, have invented a new and valuable Improvement in Revolving Harrows; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical section of my revolving harrow; and Fig. 2 is a front view of the same. Fig. 3 is a plan view thereof.

This invention has relation to revolving harrows, and it consists mainly in the combination, with a circular harrow, of a center spindle-plate, which is rigidly secured to the cross-beams; also in a novel construction of the spindle-box to which the draft-beam is secured, whereby anti-friction rollers can be used around the spindle, and also a balancing-beam can be rigidly but adjustably secured to said box, as will be hereinafter explained. The invention also consists in a circular revolving harrow, having its rim cushioned in such manner that it will not bruise young trees which it may strike, as will be hereinafter explained.

The frame of the harrow is composed of two concentric circles, A A, which are rigidly secured together by means of cross-beams B B. The circular portions A A are each composed of two pieces of semicircular form, united by clasps and bolts, and the beams B are halved upon the circular pieces and bolted rigidly to them.

C designates a center spindle-plate, having rectangular flanges *a* formed on its lower side, which are received in the space formed within the crossings of the four beams B. This plate is bolted upon the beams B, and in the center of it is the spindle *b*, having a shoulder, *i*.

D designates the draft-beam, which is rigidly secured to a flanged spindle-box, E, that is supported upon the shoulder *i*. Between the inner surface of the box E and the spindle *b* are anti-friction rollers *e*, which allow the

harrow-frame to turn freely while it is being dragged over the ground. The bottom flange of the box E is constructed with two extensions, beneath which are wheels *d d*, which roll on the spindle-plate C, and thus aid the rollers inside of the spindle-box in allowing freedom of rotation to the harrow-frame.

F designates what I denominate a balance-beam, which is composed partly of metal and partly of wood, with boxes G G on both ends, which are designed for receiving weights.

The metal portion of the beam F is constructed with a cup, *f*, and a tooth, *g*. The cup *f* is fitted on the upper end of the spindle *b*, and the tooth *g* is received in one of two notched flanges, *h h*, formed on the upper end of the spindle-box. The beam F is secured to the spindle-box at right angles to the draft-pole D by means of a bolt, *j*, and the tooth *g*, and said beam can be reversed end for end by loosening the nut on bolt *j*. That end of the beam F to which the box G is secured, and in which is a weight, W, is supported upon the plate C by a wheel, *p*, which rolls on this plate near its periphery. The weight W causes the harrow-frame to revolve in the direction indicated by the arrow in Fig. 3. If the beam F is reversed, weight W will cause the harrow-frame to revolve in the opposite direction. If an additional weight be put in the box G', the harrow will operate more successfully in heavy land.

J designates a band or tire, which is made of India-rubber or other elastic material, and suitably secured to the periphery of the harrow-frame. This will prevent the harrow from injuring trees.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a revolving harrow, composed of circular pieces A A and crossed pieces B B, the center spindle-plate C, flanged and applied to the harrow-frame, substantially as described.

2. The flanged spindle-box E, constructed with notched flanges to receive a tooth, *g*, and provided interiorly with anti-friction rollers *e*, in combination with draft-beam D and the loaded beam F, applied and supported substantially as described.

3. In combination with the loaded beam F,

the cupped bearing *f*, roller-bearing *p*, spindle-plate *C*, bolt *j*, and a harrow-frame, constructed substantially as described.

4. The elastic cushion *J*, in combination with the circular rim of a harrow-frame, for the purpose specified.

In testimony that I claim the above, I have

hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. CULVER.

Witnesses:

GEO. S. WOODWARD,
WM. GREEN.