

(No Model.)

E. D. & O. B. REYNOLDS.

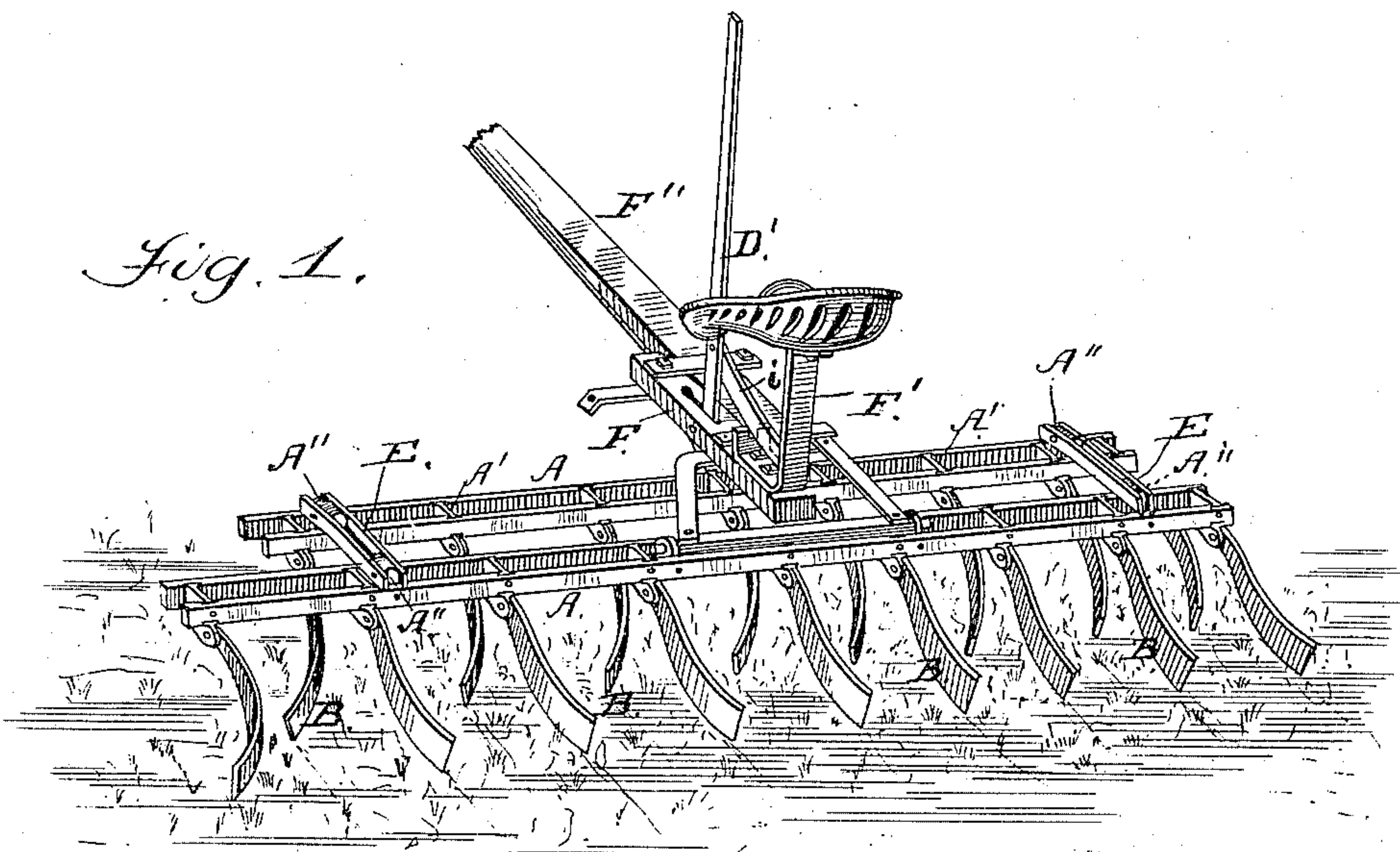
2 Sheets—Sheet 1.

HARROW.

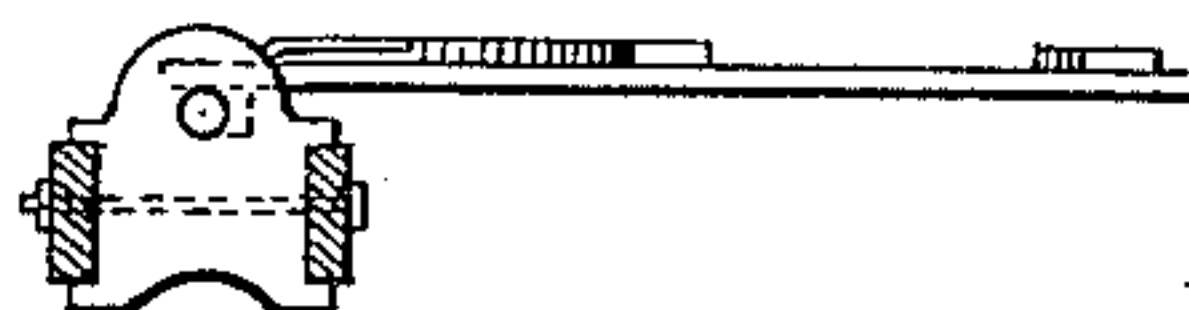
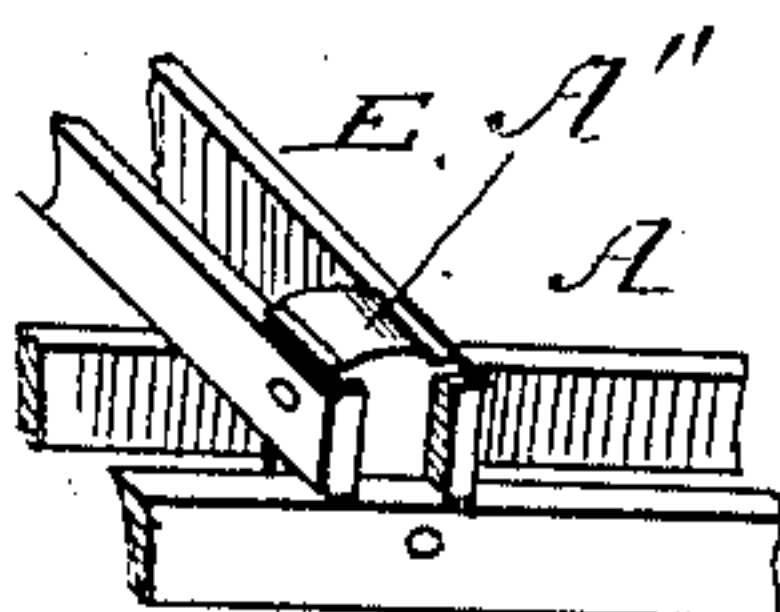
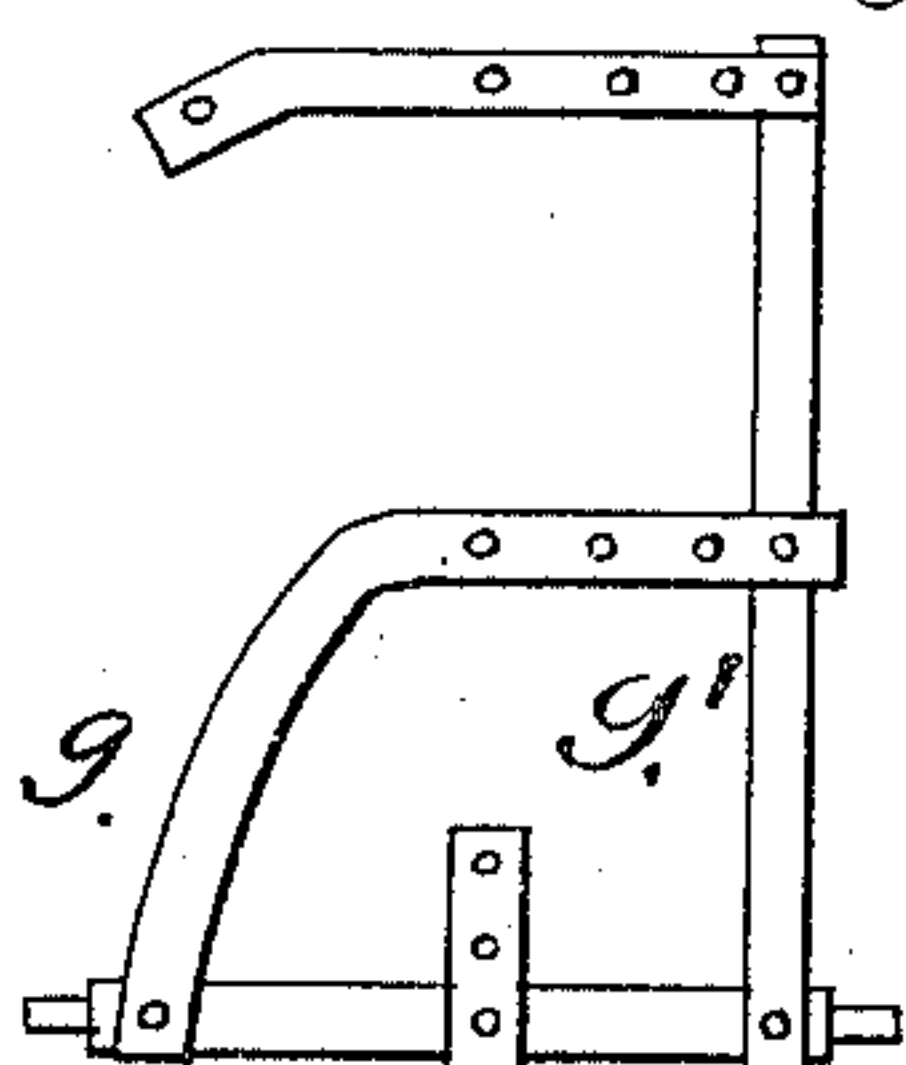
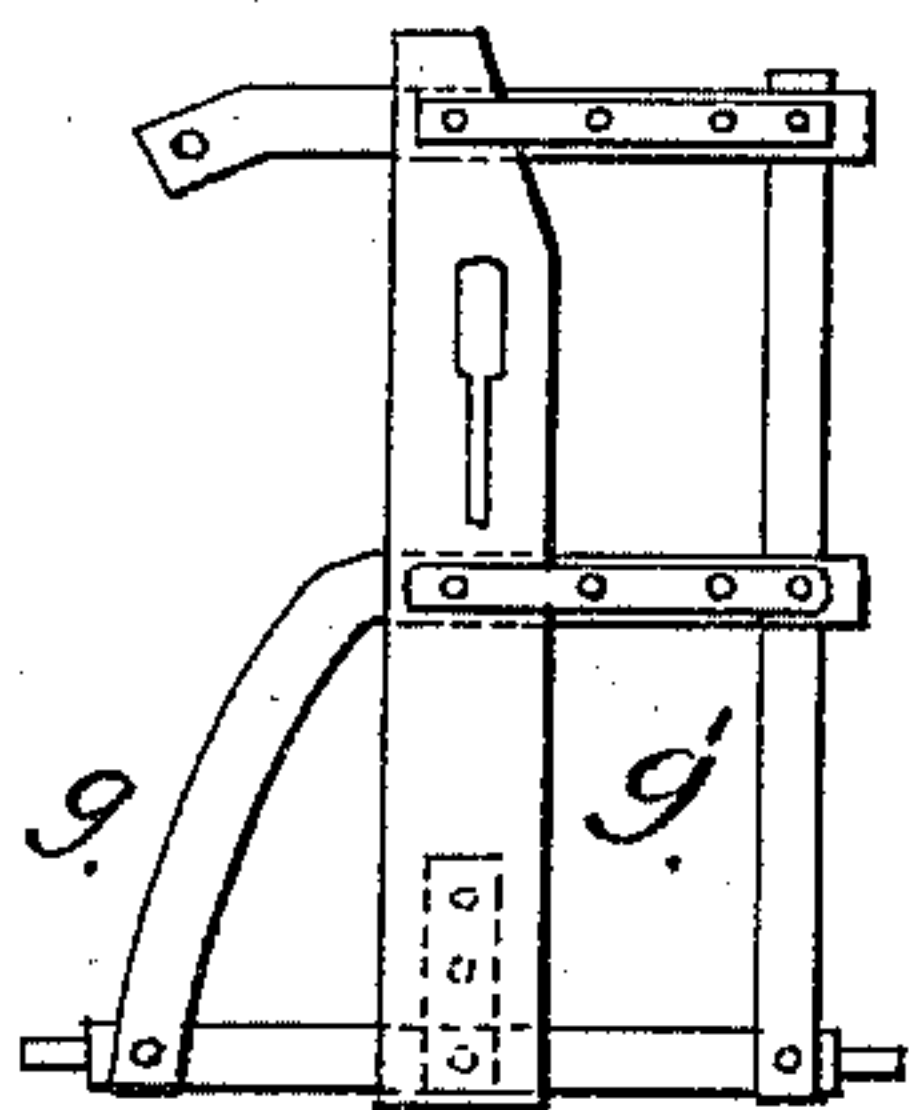
No. 311,367.

Patented Jan. 27, 1885.

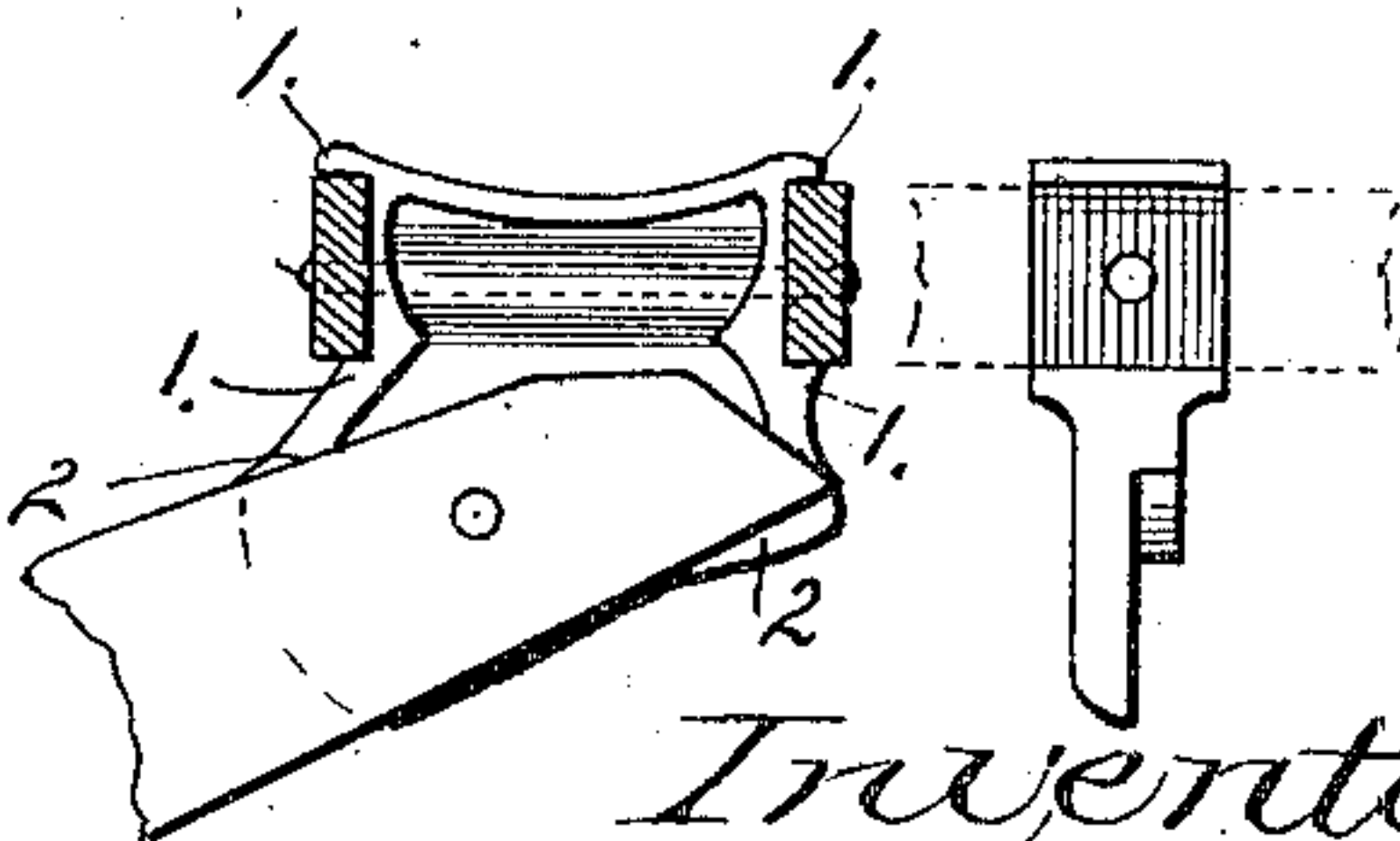
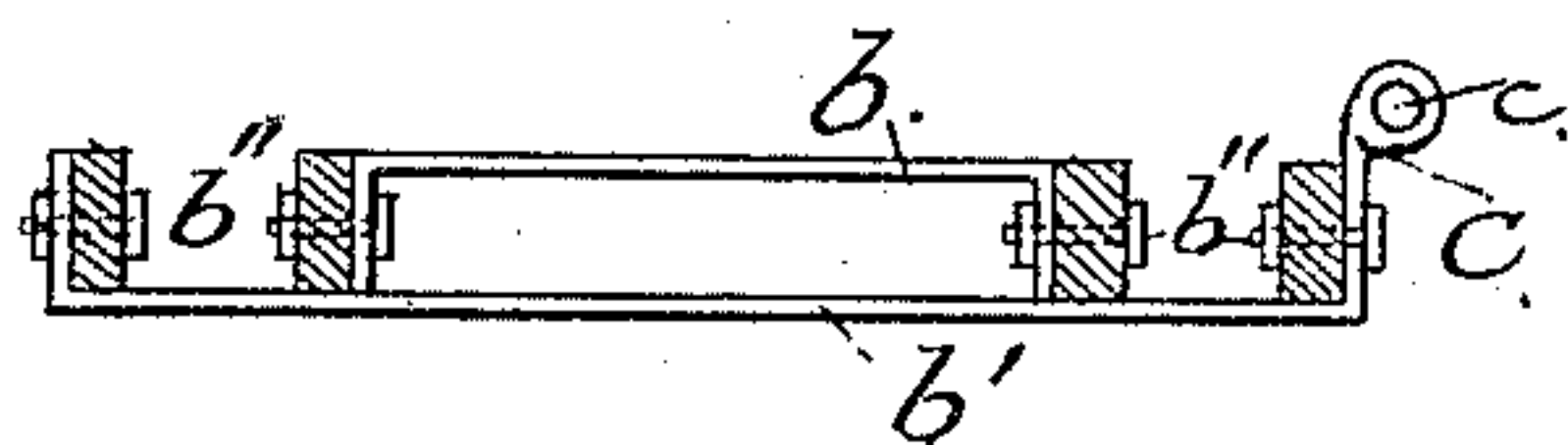
*Fig. 1.*



*Fig. 4.*



*Fig. 5.*



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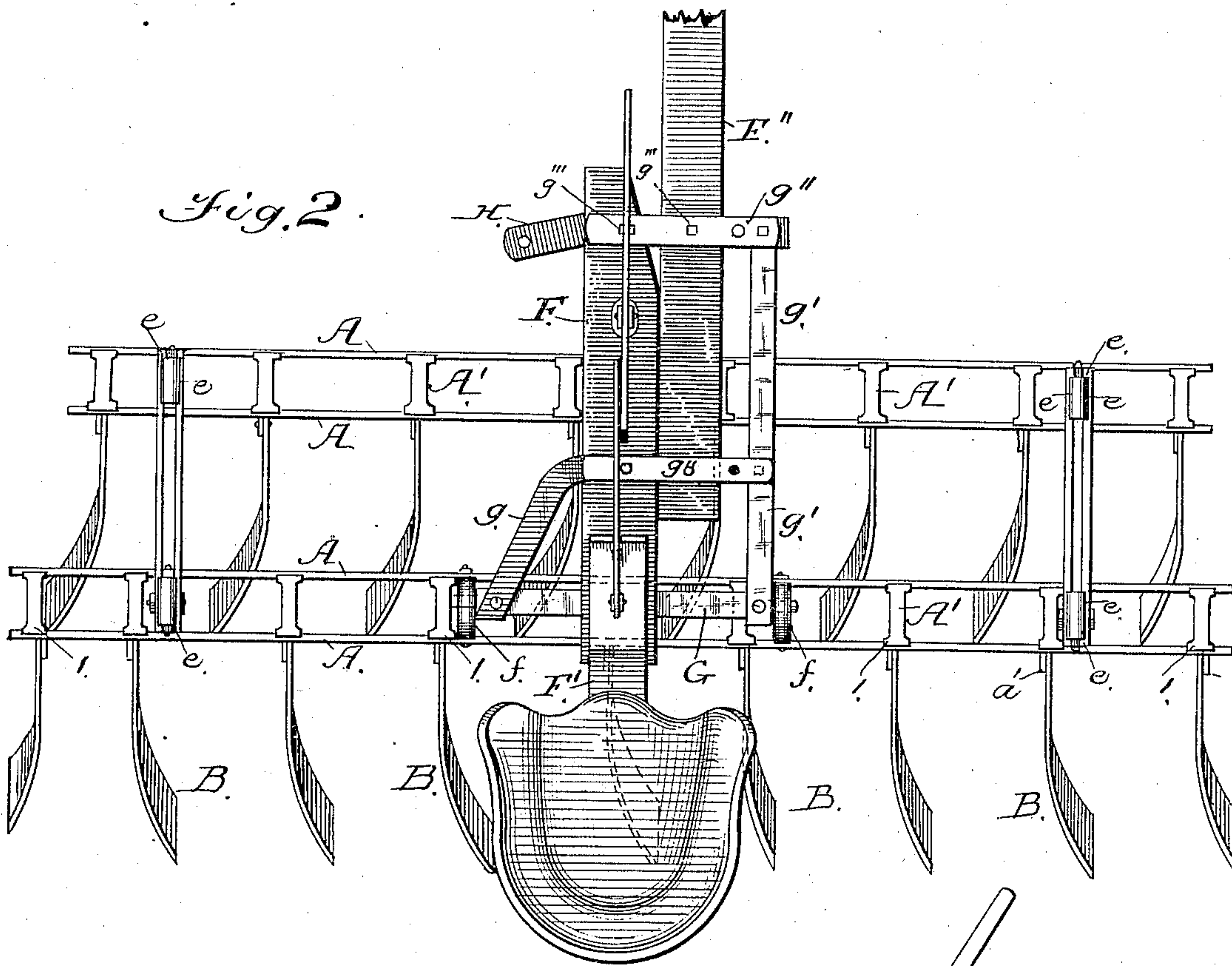
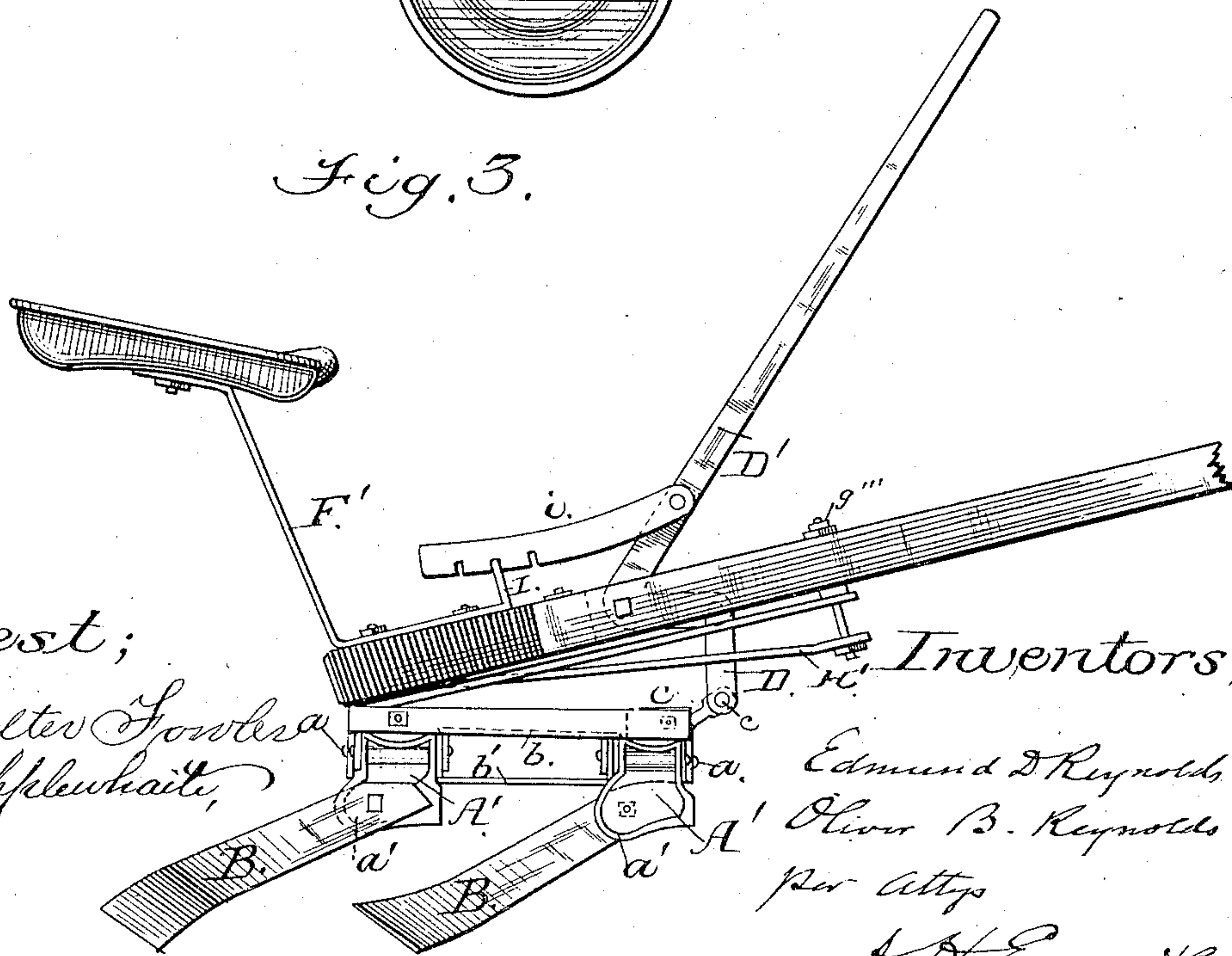


Fig. 3.



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# UNITED STATES PATENT OFFICE.

EDMUND DUNBAR REYNOLDS AND OLIVER BRADFORD REYNOLDS, OF  
BROCKTON, MASSACHUSETTS.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 311,367, dated January 27, 1885.

Application filed April 14, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, EDMUND D. REYNOLDS and OLIVER B. REYNOLDS, citizens of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Harrows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a perspective view of a harrow with our improvements attached. Fig. 2 is a plan view of the same. Fig. 3 is a side view. Figs. 4 and 5 are details of construction to be referred to.

Our present invention relates to that class of harrows having gangs of teeth and carrying the driver's seat; and it consists in the several combinations of devices hereinafter described and claimed.

To enable others skilled in the art to make and use our invention, we will proceed to describe the exact manner in which we have carried it out.

In the drawings, A A represent metal bars separated by blocks A', and secured together by bolts *a*, passing through the bars and blocks. The block A' is formed with an extension, *a'*, projecting downward and rearward, to which projection is secured the tooth B, as shown in Fig. 3. This block has shoulders 1 1 extending out above and below the bars A, by which the blocks are held more firmly in position, and on the sides of the blocks are the flanges or shoulders 2 2, against which rest the teeth B, as shown in Fig. 5, and which receive the thrust of the teeth, the bolts not doing much more than to hold the teeth in position. The double bars thus formed are rigidly secured together at their longitudinal centers by means of metal tie-plate *b*, with its ends bent down at right angles and fitting between the faces of the inner bars, and the tie-plate *b'*, with its ends bent upward at right angles and fitting against the outer faces of the outside bars, as shown in Fig. 5. The bolts *b''* hold the several parts firmly and rigidly in position, as shown in Figs. 1 and 2. The tie-plate *b'* has its forward end bent into a curved arm, C,

which is perforated at *c*, and to which is pivoted the toggle-joint D of the bell-crank lever D', for a purpose hereinafter explained. The outer ends of the bars A A are rigidly tied together by the straps E, which are securely bolted to the blocks A'', and which are arranged beneath the horizontal flange *e*, formed on the top of the blocks, these particular blocks rising above the bars A A sufficiently high to receive the straps E, as shown in Fig. 4. On the harrow-frame thus formed and secured together we mount the pole-stub F, to which is bolted the seat-support F' and the pole F'', in a manner we will now proceed to explain. Between rear bars, A A, we secure the rocker-shaft G, having its bearings in the blocks *f*, secured between the bars A A, and rising slightly above the upper face of the bars and provided with lips or flanges to embrace the bars. To this rocker-shaft G is secured the rear end of the pole-stub F, by means of a metal plate secured to each, or by any other well-known means. To the outer end of the rocker-shaft is bolted the pole-frame *g g'*, as shown in Fig. 4, and on this frame rests the pole-stub F and pole F'', over which passes the plate *g''*, the whole being perforated to receive the bolts *g'''*. It will be observed that the frame *g g'* and tie-plate *g''* have perforations, with a view to securing lateral adjustability to the pole toward and from the pole-stub. To the outer end of the frame-bar *g'* is attached a draft-bar, H, having its opposite end extending beyond the side of the pole-stub sufficiently to provide for the accommodation of a third horse when it is desired to use three horses. When this extension is to be used, the lower draw-bar, H', (see Fig. 3,) is swung around until its forward end is directly under the outer perforation in the bar H, when the equalizer is attached for the third horse.

In front of the driver's seat is secured a dog, I, on which is held the notched bar *i*, attached to the lever D'. It is evident that as the lever is pushed forward or drawn back the harrow-frame, with its teeth, can be adjusted as desired. For instance, if the lever D' be drawn back the full limit of its play, the forward portion of the harrow will be so raised and the



rear portion so depressed that the weight of the harrow will be principally thrown on the rear teeth, thus causing the front teeth to do only surface work and prepare the ground for the deeper cutting of the rear teeth. On the contrary, if the lever *D'* be pushed forward to the full extent of its play, the forward teeth will be depressed and the rear ones correspondingly raised, which would necessarily throw the weight on the front teeth, which would be compelled to do the deep cutting, while the rear teeth following would only be carried on to level and smooth the surface of the soil, ready for the seed. This simple and ready adjustment of our harrow to the work to be performed is one of its essential advantages.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A rigid harrow-frame constructed as described, and consisting of the bars *A A* and blocks *A'*, provided with downward and rearward projections *a'*, in combination with the

tie-plates *E*, blocks *A''*, provided with the flanges *e*, and the tie-plates *b* and *b'*, all constructed to operate substantially as and for the purpose set forth.

2. The bars *A A* and blocks *A'*, provided with the downward and rearward projections *a'*, and the lips or flanges 1 and 2, in combination with the teeth *B*, substantially as and for the purpose set forth.

3. A harrow-frame constructed as described, and provided with a rock-shaft, *G*, and blocks *f f*, in combination with the frame-work *g g'*, pole-stub *F*, pole *F''*, and seat-support *F'*, all constructed to operate substantially as and for the purpose set forth.

EDMUND DUNBAR REYNOLDS.

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