

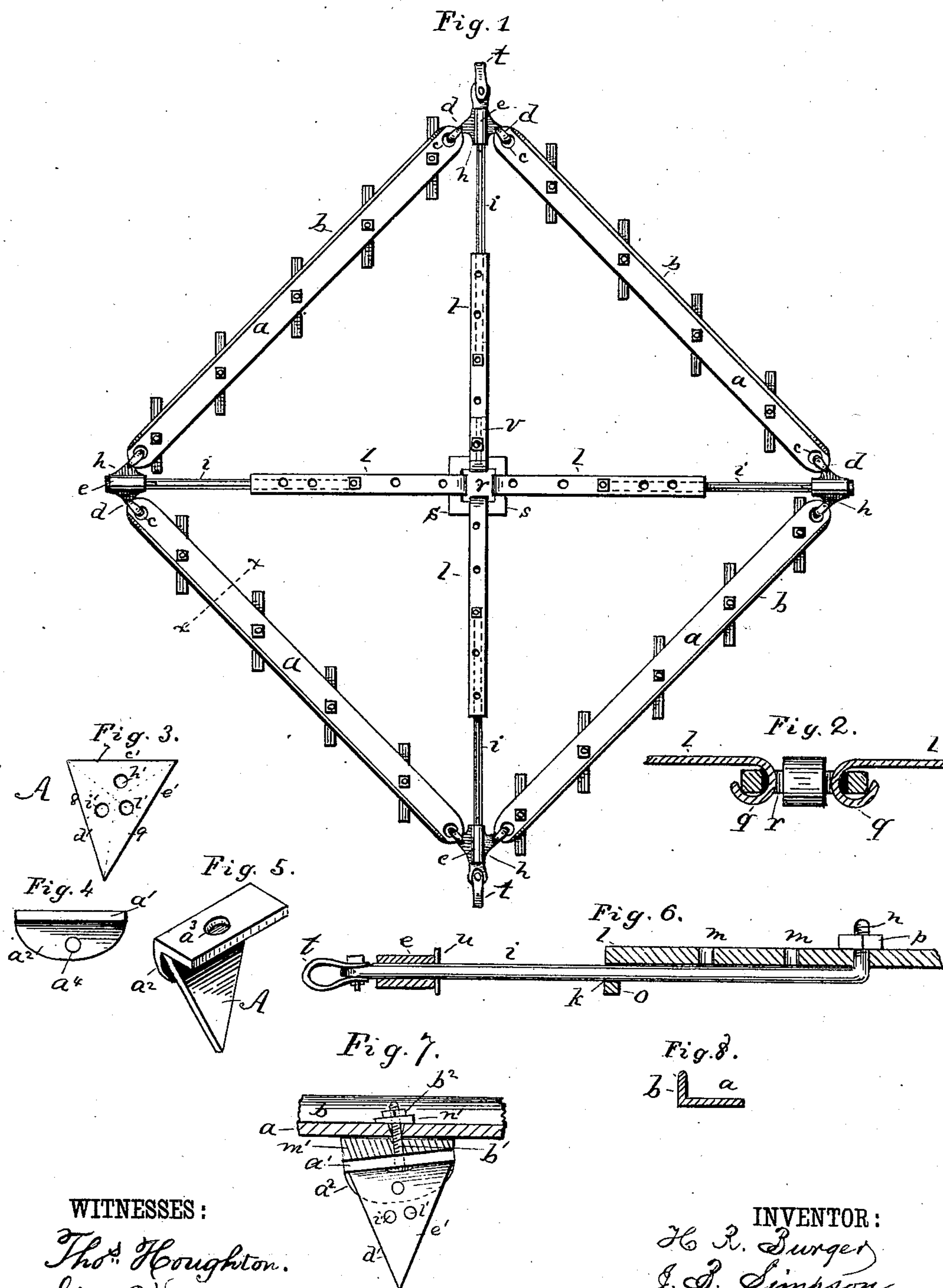
(No Model.)

H. R. BURGER & J. B. SIMPSON.

HARROW.

No. 255,934

Patented Apr. 4, 1882.



**WITNESSES :**

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# UNITED STATES PATENT OFFICE.

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## HARROW.

SPECIFICATION forming part of Letters Patent No. 255,934, dated April 4, 1882.

Application filed January 31, 1882. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY R. BURGER and JOSEPH B. SIMPSON, of Fincastle, in the county of Botetourt and State of Virginia, have  
5 invented a new and Improved Harrow; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in  
10 which—

Figure 1 is a plan view of our improved harrow. Figs. 2 to 8, inclusive, are detail views of the same.

Our invention relates to improvements in  
15 harrows; and it consists in the peculiar construction and arrangement of the parts, as hereinafter more fully set forth.

In the accompanying drawings, *a a* represent the outer harrow-beams of our square form of  
20 harrow, to which the harrow-teeth are secured. There are four such harrow-beams, *a a*, in our construction, of the same length, and each beam is formed of angle-iron, with the flange *b* of the angle-iron projecting upwardly on the outer  
25 edge of each beam, as shown clearly in Figs. 1 and 8, whereby the harrow-beams are rendered stronger and lighter than in the ordinary construction of harrow-beam. The ends of each harrow-beam *a* are provided with holes *c*, adapted  
30 to receive the hooks *d*, projecting upwardly from the opposite corners of the triangular metallic blocks, each provided with a central longitudinal socket or tube, *e*, extending its entire length, into which is inserted an  
35 adjustable rod, *i*, which passes thence through a hole, *k*, in a flange, *o*, projecting downwardly from the metallic plate *l*, provided with a series of adjusting-holes, *m m*, into any one of which the threaded bent inner end, *n*, of the rod *i*  
40 may be inserted and secured in place by the nut *p*. The inner end of each plate *l* is formed into a downwardly-projecting hook, *q*, each of which engages with the side of a central hole, *r*, made in a metallic block, *s*, arranged at the  
45 center of the harrow.

*t t* represent clevises, each secured to the outer ends of two of the rods *i*, lying in line with each other and parallel to the planes of the harrow-teeth, hereinafter described.

*u* represents pins passing through holes in  
50 the rods *i* to hold the metallic blocks *h* in place thereon, and *v* represents a harrow-tooth inserted in one of the plates *l*, near the center of the harrow, to prevent it from sagging down at the center.

In the normal condition of the harrow the  
55 four beams *a* form a square, all the sides being equal and all the angles right angles, and the central arms, *i i*, intersect each other at the center of the harrow, and are at right angles  
60 to each other and equal.

If it be desired to widen the harrow in one direction, it can readily be accomplished by  
adjusting the inner ends of the rods *i* along  
the line in which the harrow is to be widened  
65 and placing them in holes *m* nearer the outer ends of the plates *l*. As the beams *a* are constant or of the same length, this adjustment will require a shortening or corresponding  
decrease in the length of the central beams, *l*  
70 *i*, at right angles to those lengthened.

By the above-described construction it will be seen that the outer harrow-beams are pivoted to each other at their ends, and that the  
central adjustable beams are also, in effect,  
75 pivoted to each other at the center of the harrow, and also to the outer beams, by which construction all the parts of the harrow in its movements in any direction will conform to the undulations of the ground.

*a'* represents a tooth-holder composed of a short piece of angle-iron having a flat upper  
plate, *a*, provided with a hole, *a*<sup>3</sup>, and a downwardly-projecting flange, *a*<sup>2</sup>, having a hole, *a*<sup>4</sup>. The tooth-holders *a'* are each secured to the  
85 under faces of the beams *a*, parallel to each other in the line of draft, by means of a bolt, *b'*, threaded at its upper end, which passes through the hole *a*<sup>3</sup> in the tooth-holder and a corresponding hole in the beam *a*, and is se-  
90 cured thereto by a nut, *b*<sup>2</sup>.

*A* represents our improved triangular metallic harrow-tooth, the triangle forming the tooth being a scalene one, or having its sides *c' d' e'*  
of unequal lengths, so that the angles of the  
95 triangle are different.

*h' i' l'* represent holes made in the harrow-tooth above the middle of each side of the



tooth. A bolt threaded at one end is inserted in any one of the holes  $h'$   $i'$   $l'$  desired in the tooth, which bolt passes thence through the hole  $a^4$  in the flange  $a^2$  of the tooth-holder, and is secured thereto by a nut. By this construction the triangular tooth can be turned around so as to present either of its unequal sides as a cutting-edge in harrowing, thus varying as desired the angle of the cutting-edge of the harrow-teeth. The angle of inclination of the cutting-edge of the triangular tooth A can be further increased or diminished by means of a wedge,  $m'$ , having a central opening for the passage of the bolt  $b'$ , inserted between the upper face of each tooth-holder and the beam  $a$ , and a wedge-shaped washer,  $n'$ , lying in an opposite direction from the other wedge, and having a central hole for the passage of the bolt  $b'$ , secured in place by the nut  $b^2$ . The function of the wedge-shaped washer  $n'$  is to give a firm bearing to the lower facing of the inclined nut  $b^2$ .

It will be observed that in narrowing or widening the harrow in a direction at right angles to the line of draft the harrow-teeth will be brought nearer together or farther apart, dependent on the character of the soil to be harrowed, and that by turning the tooth and securing it to the holder in a different hole in the tooth the angle of inclination of the cutting-edge is changed, which may be further varied by the wedge described.

What we claim, and desire to secure by Letters Patent, is—

1. The combination, with the harrow-beams  $a$ , provided with triangular teeth A, and blocks  $h$ , provided with hooks  $d$  and sockets  $e$ , of the

metallic plates  $l$ , having perforated flanges  $o$ , adjusting-holes  $m$ , and hooked inner end,  $q$ , block  $s$ , having a central orifice,  $r$ , and adjustable rods  $i$ , substantially as described, and for the purpose set forth.

2. As an improved article of manufacture, the scalene triangular harrow-tooth A, having its sides  $c'$   $d'$   $e'$  of different lengths and its angles different, and provided with the holes  $h'$   $i'$   $l'$  above the middle of each side of the tooth, as set forth.

3. The combination, with the triangular harrow-tooth A, constructed as set forth, of the tooth-holder  $a'$ , with hole  $a^3$ , and downwardly-projecting flange  $a^2$ , with hole  $a^4$ , to which the tooth is secured, and bolt  $b'$ , by which the holder is secured to the harrow-beam, substantially as described, and for the purpose set forth.

4. The combination, with the triangular harrow-tooth A, tooth-holder  $a'$ , both constructed as set forth, and beam  $a$ , of the wedge  $m'$ , wedge-shaped washer  $n'$ , bolt  $b'$ , and nut  $b^2$ , substantially as described, and for the purpose set forth.

5. The combination of the harrow-beam  $a$ , triangular harrow-tooth A, having its sides of unequal length and provided with holes  $i'$   $h'$   $l'$ , tooth-holder  $a'$ , having flange  $a^2$  and holes  $a^3$   $a^4$ , bolt  $b'$ , and nut  $b^2$ , substantially as described, and for the purpose set forth.

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Witnesses:

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