(No Model.)

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

HARROW.

No. 259,089. Patented June 6, 1882.

Fig. 1.

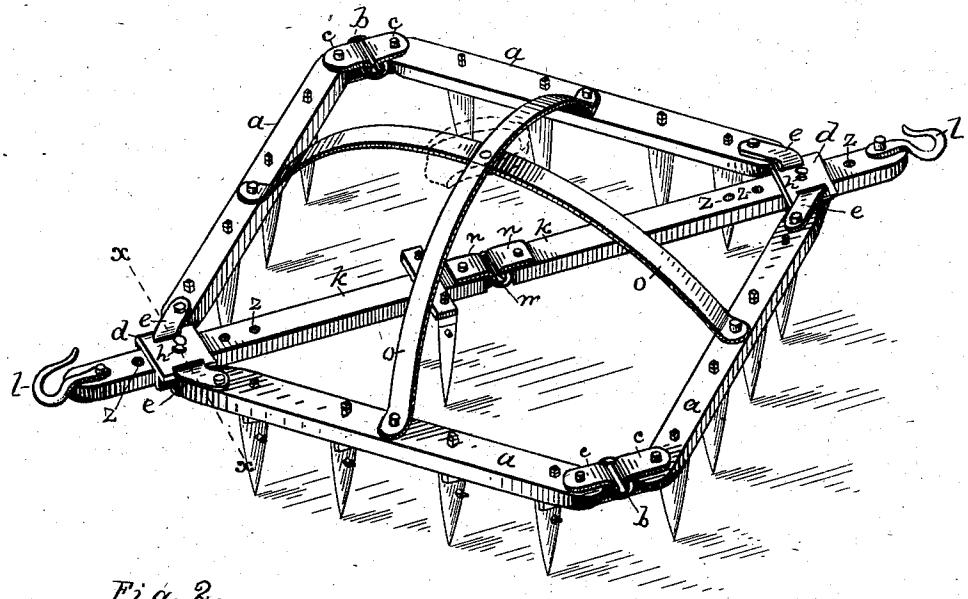

Fig. 2.

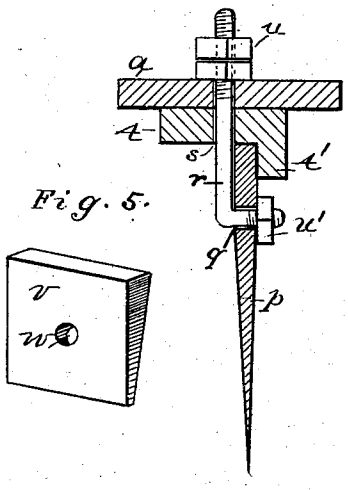

Fig. 3.

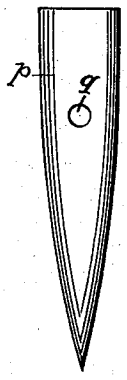

Fig. 4.

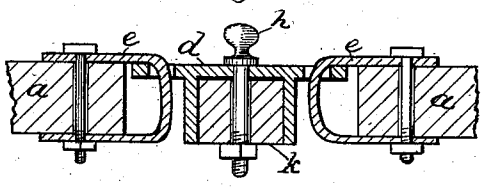

Fig. 5.

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UNITED STATES PATENT OFFICE.

HENRY R. BURGER AND JOSEPH B. SIMPSON, OF FINCASTLE, VIRGINIA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 259,089, dated June 6, 1882.

Application filed April 4, 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 made a new and useful Improvement in Harrows; 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 which—

Figure 1 is a perspective view of our improved harrow. Figs. 2, 3, and 5 are detail views of the same; and Fig. 4 is a sectional view in the line *x x*, Fig. 1.

Our invention relates to harrows; and it consists in certain improvements in a harrow for which Letters Patent No. 255,934, bearing date April 4, 1882, were granted to us.

Our invention further consists in improvements in the means of securing the harrow-teeth to the harrow-frame and adjusting the inclination of the teeth, as hereinafter more fully set forth.

In the accompanying drawings, *a a* represent the outer harrow-beams to which the harrow-teeth are secured. There are four such beams, each pair lying on opposite sides of the line of draft, being pivoted together at their outer ends by means of the links *b* and clevises *c*, and pivoted at their inner ends to the slotted plates *d* by the clevises *e*, pivoted to the inner ends of the harrow-beams *a*, and passing through the slots in the plates *d*, which are each provided with a central hole for the passage of a bolt, *h*, which passes thence into one of a series of adjusting-holes, *z*, in draft-bars *k*, having draft-hooks *l* at their outer ends, and pivoted together at their inner ends by means of the link *m* and clevises *n n*.

o o are curved springs, the ends of each of which are secured to the middle points of the opposite sides of the square harrow-frame. The curved springs *o o* cross each other at their highest points or middles, and are each provided at its top with a hole through which passes a bolt, which also passes through the driver's seat, the spring serving as an elastic seat-support for the driver.

By this construction it will be seen that we materially simplify the construction shown in our Letters Patent No. 255,934, on which this invention is an improvement, by dispensing with the diagonal rods and perforated central plates, while at the same time the harrow-teeth, from the hinged connection of their outer beams and draft-bars, will conform to the undulations of the ground, a spring-seat will be furnished the driver, and his weight will force the teeth down to the ground in passing over undulations.

The harrow-frame is widened or narrowed by adjusting the plates *d* on the draft-bars *k*, as desired.

p represents a harrow-tooth having opposite cutting-edges, and thicker in the middle than at its edges.

q represents a hole made through the tooth *p* near its upper end for the passage of the lower end of an angular bolt, *r*, the opposite end of which passes through a hole, *s*, in the plate *t*, having a flange, *t'*, and thence through a hole in the harrow-frame. The ends of the angular bolt *r* are threaded to receive nuts *u u'*, whereby the tooth is secured to the harrow-frame and held between the flange *t'* and angular bolt *r*.

v represents a wedge, provided with a hole, *w*, near its middle for the passage of the angular bolt when the wedge is used. The wedge is intended to vary the inclination of the cutting-edge of the tooth when desired, and is inserted from either edge of the tooth, as desired, to vary the angle between the flanged plate *t* and the harrow-frame. By inserting the wedge with its thickest part on one side the inclination of the tooth will be the reverse of that if inserted from the opposite direction.

We are aware that in a wheel-harrow the driver's seat has heretofore been mounted upon a spring-bar the ends of which rest in stirrups that are supported in brackets secured to the opposite beams of the frame; and we are also aware that a driver's seat has heretofore been suspended from spring-bars secured to frames by means of links secured to the driver's seat, and we therefore lay no claim to such inventions.

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

1. The combination, with the harrow-beams *a*, hinged together at their outer ends and hinged to the draft-bars at their inner ends, and the diagonal draft-bars *k*, hinged together at their inner ends, of the curved spring seat-supports *o o*, each secured at its ends to the middle of the opposite harrow-beams, and crossing

each other at their highest points for the support of the seat, substantially as described, and for the purpose set forth.

2. The combination of the harrow-beams *a*, provided with the clevises *c e*, links *b*, slotted adjusting-plates *d d*, draft-bars *k k*, provided with draft-hooks *l*, adjusting-holes *z*, and clevises *n*, link *m*, and curved spring seat-supports *o*, all substantially as described, and for the purpose set forth.

3. The combination, with the harrow-beam *a*, and harrow-tooth *p*, provided with the hole *q*, of the plate *t*, provided with the downwardly-projecting flange *t'* and hole *s*, and angular bolt *r*, threaded at both ends and provided with the nuts *u w'*, whereby the harrow-tooth is firmly clamped between the flange of the plate and the angular bolt, substantially as described.

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Witnesses:
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