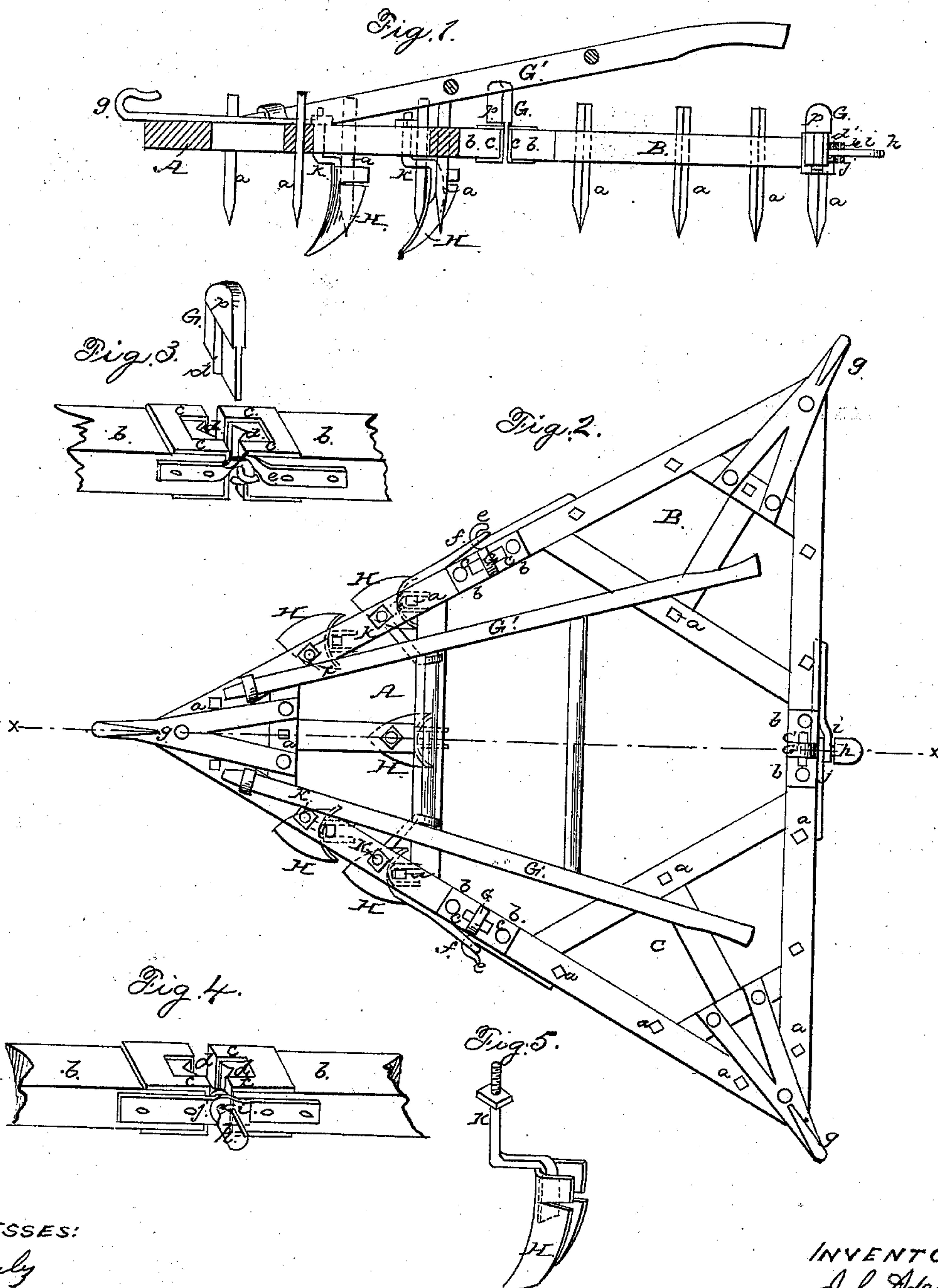


J ADAMS.

Harrow.

No. { 2,323, {
33,327. }

Patented Sept. 24, 1861.



WITNESSES:

J. W. Coombs
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UNITED STATES PATENT OFFICE.

JOHN ADAMS, OF MONROE, MICHIGAN.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. 33,327, dated September 24, 1861.

To all whom it may concern:

Be it known that I, JOHN ADAMS, of Monroe, in the county of Monroe and State of Michigan, have invented a new and Improved Harrow; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a section through the improved harrow in the vertical plane indicated by red line *x x* in Fig. 2. Fig. 2 is a plan view of a compound triangular harrow. Fig. 3 shows the manner of joining the hooked ends of the harrow-frames together, and also the key which is used to stiffen the joints of these ends. Fig. 4 shows another manner of securing together the ends of the harrow-frame. Fig. 5 is a perspective view of a cultivator-tooth, which is used as shown in Figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention is an improvement in triangular harrows, which are made up of three triangular frames, jointed together in such a manner that they will rise and fall and accommodate themselves to inequalities in the surface of the ground over which they are dragged.

The improvement consists in forming the ends of the triangular frames at the joints in such a manner that retaining wedges or keys may be used for fixing the joints rigidly when it is desired to use the harrow on level ground, all as will be hereinafter fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, B, and C are three triangular frames, each of which is furnished with a suitable number of spiked teeth, *a a a*, which teeth are secured to the timbers of the frames in the usual manner of constructing harrows. These three frames are of the same size and shape, and when they are put together, as represented in Fig. 2 of the drawings, I have a good harrow, which is in form an equilateral triangle. The ends of the beams of each frame A B C project out from the ends of the beam connecting the said ends together, as shown in Fig. 2 of the drawings and lettered *b b*. On these ends *b b* plates *c c* are bolted, which serve merely to protect the ends *b b* from rapidly wearing out

and to keep these ends square. In each end a vertical V-shaped groove, *d*, is cut, as shown in Figs. 3 and 4 of the drawings, which grooves receive corresponding tenons formed on key-blocks G G G G, which are inserted between the ends *b b b* of the three frames A B C when these frames are all put together, as will be hereinafter described. Each frame A B C has a hitching-hook, *g*, attached at one corner, so that the team can be hitched to either corner of the harrow when the three frames thereof are put together. The object of the three hooks *g g g*, for hitching the teams to the harrow, is to keep the edges of teeth *a a a* sharp a much longer time than if the harrow was drawn from one hook altogether. With a hook at each corner of the harrow the team can be hitched to another corner when one of the edges of the teeth becomes dull. Two hooks, *e e*, hooking into eyes *f f*, attach one of the corners of frames B and C to the rear corners of frame A, and the two frames B and C are attached together by a pivot-joint forward by the screw *h* passing through plates *i, i* and *j*, as shown in Figs. 1, 2, and 4 of the drawings. The hooked joints, as well as the pivot-joint connecting these frames A B C, do not draw the ends of the frames closely together; but a space is left which allows the frames a free play about their joints, so that in dragging the harrow over ununiform or uneven land the frames will accommodate themselves to its surface, like any common flexible harrow.

Now, for many purposes it is desired that the harrow should be stiff and inflexible, and in order to render the joints rigid I employ the keys G G G. (Shown in Figs. 1, 2, and 3 of the drawings.) These keys G are made flat and of a suitable thickness to fit tightly between the ends *b b* of the frames A B C at the joints, and V-shaped tenons *d' d'* are formed on each side of each key G, which tenons prevent the keys from slipping laterally out of their places, and also strengthening the keys. A head, *p*, is formed on each key, which prevents it from working down when inserted in its place. When such keys are driven hard between the jointed ends of the harrow-frames A B C, they stiffen the harrow and effectually prevent the flexibility above described. These keys G G G can be removed at pleasure when a flexible harrow is desired.

The frame A has handles G' G' attached to it, which are used to control this front frame.

The shoes or cultivator-teeth H H may be attached in front of the spiked harrow-teeth *a a a* on the frame A, and used to advantage in stirring the soil. These teeth H H are attached to the harrow-frame A by passing the vertical ends of the bent stocks *k* up through the frame A and securing them by nuts, as shown in Figs. 1, 2, and 5 of the drawings. By removing the nuts which secure the teeth H to the frame A these teeth can be removed and the spiked teeth *a a a* used instead.

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

The employment of keys G G G, constructed substantially as described, in combination with a triangular harrow made up of frames A B C, jointed together and otherwise constructed, as and for the purposes herein described.

JOHN ADAMS.

Witnesses:

WALTER W. PRENTICE;
T. S. CLARK.