(Model.)

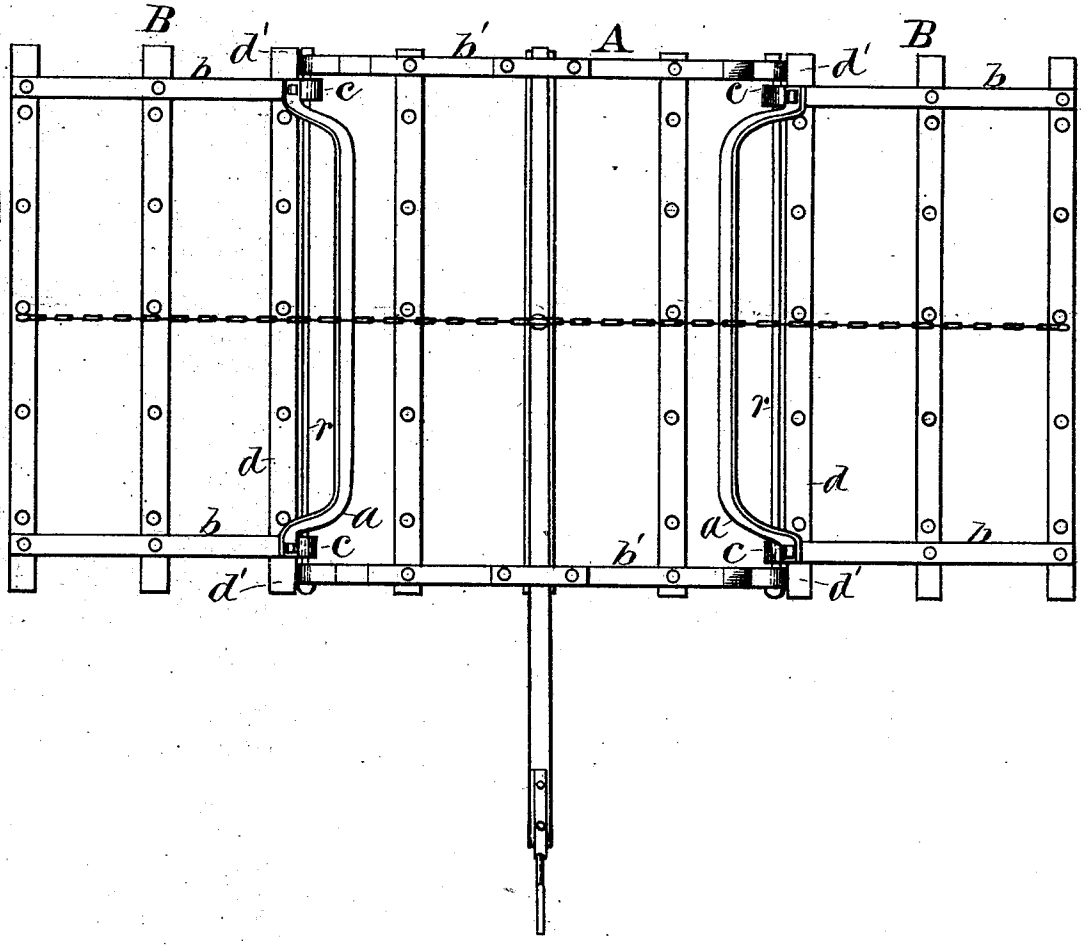
2 Sheets—Sheet 1.

A. C. EVANS.

Harrow.

No. 236,793. Patented Jan. 18, 1881.

Fig. 1.



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(Model.) 2 Sheets—Sheet 2.

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Fig. 2.

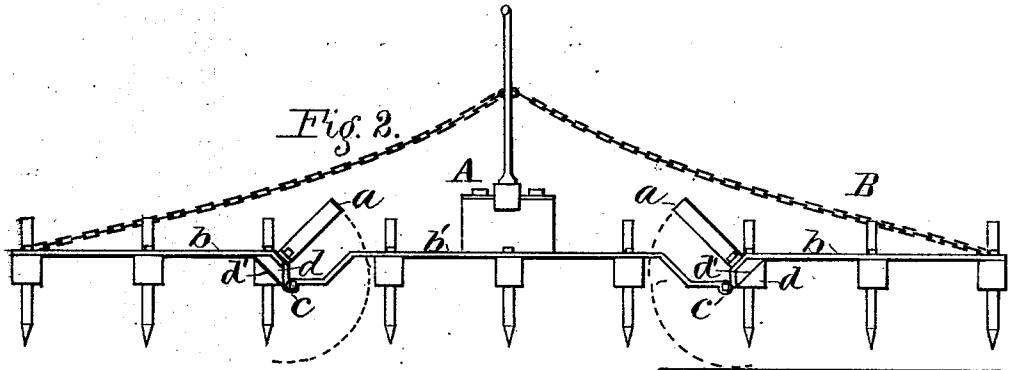


Fig. 3.

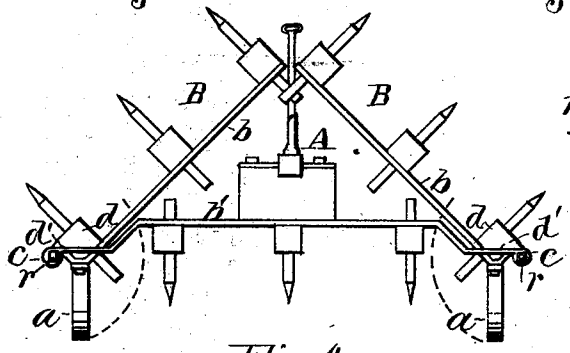


Fig. 5.

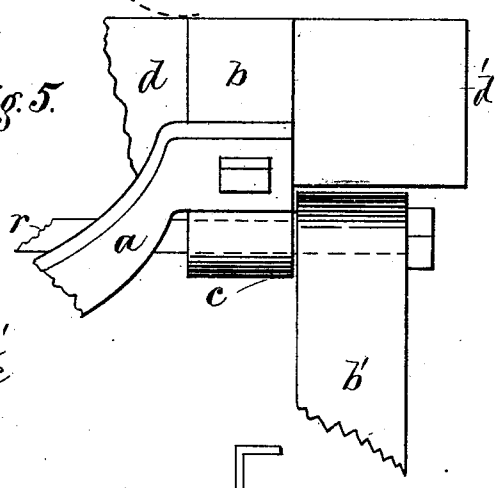


Fig. 4.

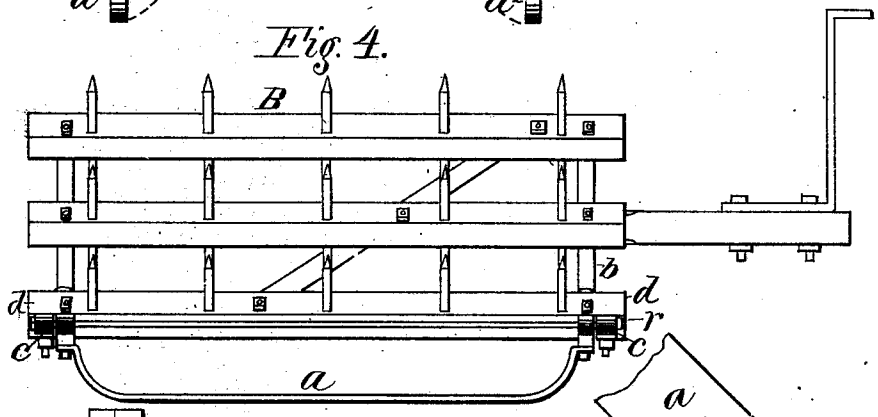
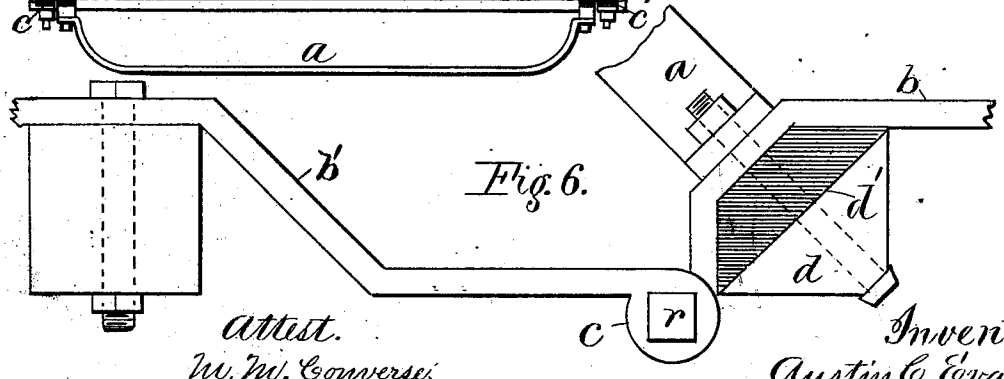


Fig. 6.



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UNITED STATES PATENT OFFICE.

AUSTIN C. EVANS, OF SPRINGFIELD, OHIO.

HARROW.

SPECIFICATION forming part of Letters Patent No. 236,793, dated January 18, 1881.

Application filed September 27, 1880. (Model.)

To all whom it may concern:

Be it known that I, AUSTIN C. EVANS, of the city of Springfield, in the county of Clarke and State of Ohio, have invented a new and useful Improvement in Harrows, of which the following is a specification.

My invention relates to that class of harrows which are made in sections and hinged or flexibly connected together, so as to allow of their being folded for transportation.

My invention consists in a novel manner of attaching the runners to the harrow-sections, so that they will automatically assume their proper position for supporting the harrow by folding the latter.

Heretofore, in order to allow of the transportation of a sectional harrow upon its own runners, the latter have been generally placed in a reverse position upon the top of the beams of the middle section, and this section was required to be reversed or turned with the points of its teeth upward, in order to get it upon its runners. The outside sections were then piled upon it. Modifications have been made by placing the runners upon the top of one of the outside sections; but in these different forms of attaching the runners it was required to reverse the section (bottom up) on which the runners were placed to get them into the proper position, and, moreover, the sections required detaching from each other to pile or fold them.

In my improvement I attach the runners in such a position that by folding the harrow the runners are brought into a vertical position at once, supporting the folded sections. In order to accomplish this I bolt the runner-bar on at an angle of about forty-five degrees to the plane of the harrow, upon the inside beam of each outside section, the improvement being applied, in this instance, to a three-section harrow.

Figure 1 is a plan or top view of a three-section hinged harrow having my improvement applied thereto. Fig. 2 is a rear elevation of the same. Fig. 3 shows the harrow folded, the view being taken from the rear. In this figure the chains are dispensed with, and the crank is broken off to give a better view of the position of the parts. Fig. 4 shows a side elevation of the folded harrow. Fig. 5 is an enlarged top view of one of the hinges, and an end view of the attached runner. Fig. 6 is an enlarged end view of the hinge, runner-bar, and the end of the beam to which it is bolted.

A is the harrow, B B the two outside sections. These latter are hinged to the middle section by hinges *c*, the hinges being formed by the iron bars *b'* of the middle section and *b* of the two outside sections, the ends being formed into eyes, and a rod connecting them. These straps or bars have been before used with hinges formed upon them; but it will be noticed that in order to bring the harrow into the folded position shown in Figs. 3 and 4, and allow the weight of the two sections when folded to be partially supported upon the ends of the hinge-bars of the middle section, these bars are bent down at an angle of forty-five degrees, and extended to the eye end horizontally on a line with the bottom of the beams. The eye ends of the hinge-bars *b*, which are pivoted in connection with those of *b'* upon the rod *r*, have their ends bent down the side of beam *d*, so as to bring them in line with the hinge end of *b'*. By placing this hinge-connection low down, as thus shown, and cutting away one-half of the end of beam *d*, as shown in the dark lines, Fig. 6, it allows the diagonal surface *d'* to rest upon the lower hinge end of *b'*, and brings the runners *a*, attached to the upper corner of the beam *d*, to a vertical position.

Fig. 6 shows the manner in which the ends of the runners are bolted to the beam. In this figure, (which represents the left wing-section attached to the middle one,) the beam *d* has its left upper corner taken off and the hinge-bar *b* bent over it, and the end of runner *a* bolted upon the top of the bar *b*, the bolt extending through the beam diagonally, as seen in the dotted lines. This makes a very firm fastening. In folding the ring-sections to the positions shown in Figs. 3 and 4, the runners describe the circular movement shown by the dotted lines Figs. 2 and 3.

This invention is an improvement on my former patent for folding harrow, dated March 23, 1880. In that improvement both the runners were placed on the top of one of the outside sections. This caused that section to weigh more than the other outside section, making the harrow of uneven balance and more difficult to manipulate.

I claim as my improvement—

1. In a three-section harrow having its sections flexibly connected together, the combination, with each outside section, of a runner attached thereto at an angle of about forty-five degrees inclination toward the middle section, so that when the said outside sections are folded, substantially as shown, said runners will assume a vertical position and support the entire harrow, as and for the purpose set forth.

2. In a hinged harrow having its sections flexibly connected together, a runner for supporting it attached to the top of the section to be folded, at an angle of about forty-five degrees to the plane of the harrow, so that said runner shall assume an upright or vertical position automatically in folding the harrow, substantially as and for the purpose hereinbefore set forth.

3. The combination, in a three-section folding harrow, of the angular bent hinge-bars *b* and *b'*, forming the low-down hinge *c*, and the scarfed or notched bar *d*, with sections A B B, as and for the purpose hereinbefore set forth.

4. In a sectional hinged harrow, runners attached upon the sections at an angle of about forty-five degrees to the plane of the same, whereby they are automatically brought into position for supporting the entire harrow when said side sections are folded upon the central section, substantially as shown and described, for the purpose hereinbefore specified.

5. In a hinged harrow, the combination, with the sections B, of the inclined runners *a*, for supporting the central section, A, and the sections hinged thereto, when said hinged sections are folded down upon the central section, substantially as shown and specified.

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