

(No Model.)

S. RILEY & W. EVANS.
HARROW.

No. 493,116.

Patented Mar. 7, 1893.

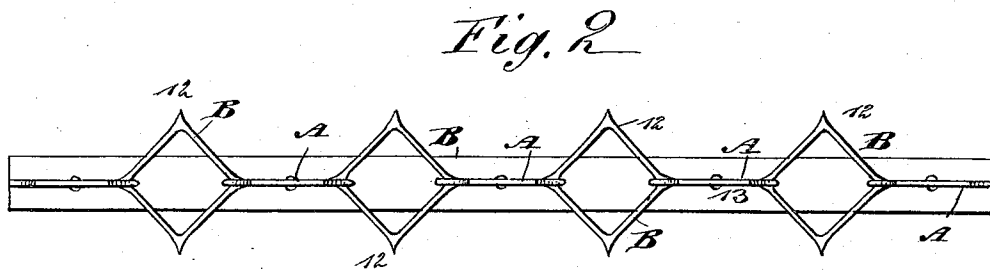
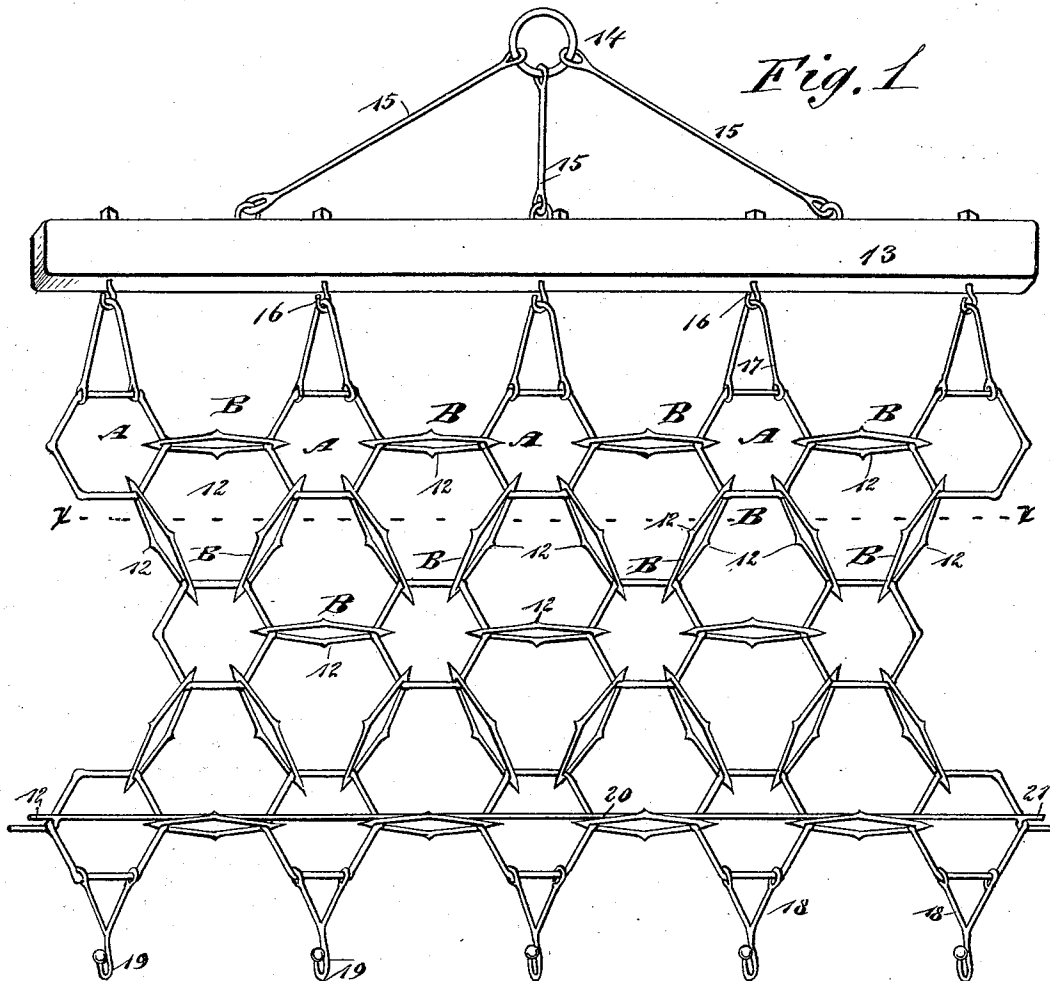


Fig. 3

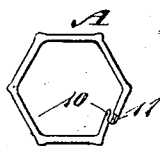
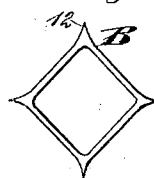


Fig. 4



WITNESSES:

C. Neveu
C. Sedgwick

INVENTORS

S. Riley
W. Evans
By *Munn & Co*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

SAMUEL RILEY AND WILLIAM EVANS, OF HURON, KANSAS.

HARROW.

SPECIFICATION forming part of Letters Patent No. 493,116, dated March 7, 1893.

Application filed April 30, 1892. Serial No. 431,359. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL RILEY and WILLIAM EVANS, of Huron, in the county of Atchison and State of Kansas, have invented
5 a new and useful Improvement in Harrows, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in harrows and has for its object to provide a
10 harrow of exceedingly simple and economic construction, capable of being readily and conveniently carried to and from a field, and which when stored will take up but little room.

Another object of the invention is to provide a harrow the teeth of which may be adjusted to bring different surfaces to the ground, and also to construct a harrow in a manner which will render it possible for many sections to be added and also to quickly and
20 conveniently disengage any of the sections.

One object of the invention is to so form the component parts of a harrow that it may be set up by any person of ordinary intelligence.

25 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claim.

Reference is to be had to the accompanying
30 drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a section of the harrow. Fig. 2 is an end view of one row of teeth and the supports therefor, it being practically a section taken on the line $x-x$ of Fig. 1. Fig. 3 is a detail view of one of the tooth supports; and Fig. 4 is a detail view of
40 a tooth.

The harrow may be properly termed a chain harrow, as the teeth and the supports therefor partake of the character of links. The tooth supports A, consist of links polygonal in general contour, those shown in the drawings being hexagonal, which is the preferred shape. Each of the teeth supporting links A, is cut, and the ends 10 and 11, are recessed so that the ends may fit together with a rabbet connection and be welded or bolted when it is
50 desired to unite the ends and render the links practically endless.

The teeth B, consist of links rectangular in general contour, and in each corner of each link a spur 12, is made, the spurs being adapted to enter the ground. Thus it will be observed that each harrow tooth has four surfaces capable of entering the ground and performing effective service as a tooth. The spurs 12, are quite sharp, and there is more
60 metal at the corners of each tooth than at any other portion thereof, as at these points the strain and wear is the most severe.

In making up a harrow, a draft beam 13, is employed, to which any form of clevis may be attached; or the beam may be connected with a ring 14, held in front of the draft beam by links or bars 15 connected with the ring and with the beam, as shown in Fig. 1. At the rear side of the beam a number of eyes or hooks 16, is located, and in further making up the harrow the teeth are held in a vertical position and properly spaced by their supports A. The first row of supports is provided with pivotally connected yokes 17, which yokes are made to engage with the eyes or hooks on the draft beam. Before the teeth are placed in position the supports are opened, that is, their ends are carried a sufficient distance apart to admit of the link-like teeth being passed between the ends of the supports so that the supports may be passed through the link teeth. The first row of teeth is preferably placed parallel with the draft beam, one of the spurs or points of each tooth pointing downward in position to enter the ground, and each tooth is held by two supports; that is, two supports pass through each link tooth. The next row of teeth is placed somewhat zigzag; that is, they are arranged in V-shape, standing diagonally with respect to a line drawn horizontally through the harrow. The forward portions of the second row of teeth are held in position by the first row of supports, and the rear portions of the second row of teeth are maintained in position by a second row of supports, which second row of supports likewise maintain a row of teeth parallel with the first row and with the draft beam, and in this manner teeth and supports are added until a section of desired dimensions is formed. The last row of supports have yokes 18 pivotally connected therewith, terminating in hooks 19, and these hook-carry-

ing yokes are adapted as a medium for connecting a second section to the first if so desired.

In addition to the teeth and their supports
5 a tension bar 20, is provided. This tension bar extends transversely across the last row of supports, and against the forward faces of the last row of teeth, which are transversely arranged; and the said tension bar is bifurcated at its ends, as illustrated at 21 in the
10 drawings, as the extremities of the bar are adapted to receive between their members the outer portions of the outer supports of the last row, as shown in Fig. 1. By this means
15 lateral tension is exerted upon all the teeth and supports, and the chain-like body of the harrow is kept in an extended position ready for work.

It is evident that when the tension bar is
20 removed the body of the harrow may be folded up in a small compass enabling it to be readily carried to and from the field. It will be understood that after the teeth have been engaged by their supports the ends of the supports are welded together or are otherwise secured.
25 It is also obvious that if any of the spurs or prongs 12 of the teeth should become worn, by removing the tension bar and slackening the body of the structure, another of the
30 points, spurs or prongs may be brought downward in position to engage with the ground.

This harrow is exceedingly simple; it can be put together by any one of ordinary intelligence, and it is exceedingly economic in its
35 construction. The harrow is exceedingly pliable, yet is at the same time effective and durable. The harrow can be used with good results on listed corn, and will conform to the

shape of the ridges and furrows without rolling the clods down upon the corn. The harrow can also be used where any service required of a harrow is demanded, and the harrow being made in sections, and the sections being readily detachable one from the other the implement can be readily loaded for transportation. The manner in which the teeth are set, that is, alternately parallel with the draft beam and diagonally with respect thereto, insures the ground being stirred and pulverized in a very efficient way, and the surface of the field is left exceedingly smooth.

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

A harrow consisting of a draft bar, link-like supports polygonal in general contour, horizontally located and attached to the draft bar, teeth vertically located between the supports, said teeth being of link shape of rectangular contour and provided with spurs at the corners, the supports passing through the teeth, the teeth being arranged between the supports, one row parallel with the draft bar and the next diagonally with respect to said bar, and a tension bar resting upon the supports, the outer face of the bar being bifurcated, the members of the bifurcated portions receiving between them the outer edges of the outer supports of the harrow as and for the purpose specified.

SAMUEL RILEY.
WILLIAM EVANS.

Witnesses:

EDWARD PERDUE,
JAMES BILLINGSLEA.