

(No Model.)

G. MELSON & R. H. HARPER.

HARROW.

No. 386,598.

Patented July 24, 1888.

Fig. 1.

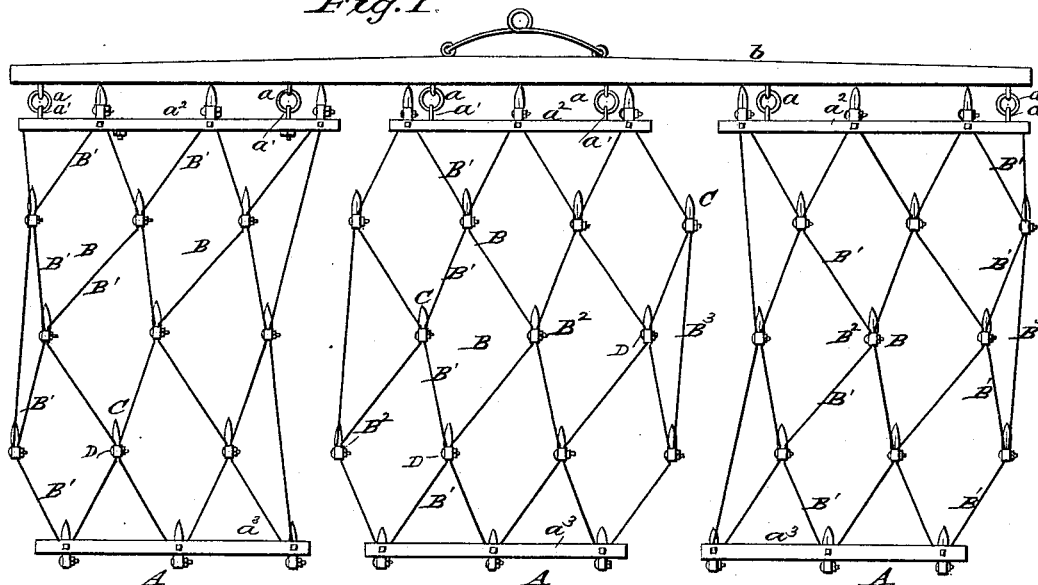


Fig. 2.

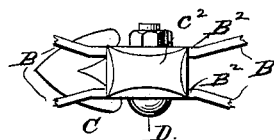
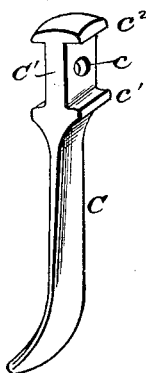


Fig. 3.



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HARROW.

SPECIFICATION forming part of Letters Patent No. 386,598, dated July 24, 1888.

Application filed March 5, 1888. Serial No. 266,270. (No model.)

To all whom it may concern:

Be it known that we, GEORGE MELSON and ROBERT HENRY HARPER, of Eugene City, in the county of Lane and State of Oregon, have
5 invented a new and useful Improvement in Harrows, of which the following is a specification.

This invention pertains to certain improvements in harrows, having for its object to promote lightness, strength, durability, and efficiency; and it consists of the construction and
10 assemblage of the constituent parts of the harrow-frame or beams, together with the construction of the headed ends of the teeth shanks
15 or standards, as also of the individual construction of the teeth, substantially as herein-after more fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a general plan view of our improved harrow. Fig. 2 is an enlarged detailed plan view of the same, portions being broken away; and Fig. 3
20 is a perspective view of one of the harrow-teeth.

In the embodiment of our invention we employ a number of harrow-sections, A A, connected by suitable hooks and eyes or links, a
25 a' , to a common draft-bar, b , having means for the application centrally thereto of the draft, as usual. Each harrow-section consists of a series of edgewise-disposed plate-like bars or beams, B B, each plate-like bar or beam
30 running the entire length of the section and having its ends passed through a front and a rear end piece, a^2 a^3 . Each plate-like bar or beam B is also formed in a zigzag-like manner, or into a series of short angular or diagonal
35 portions or arms, B' B', each diagonal or angular portion connecting with its fellow by a straight portion, B². These beams or bars
40 B are put together so that the angular portions or arms B' will stand opposite to each other, the union thus formed producing an intermediate diamond-shaped space, while the straight
45 portions B² of opposite beams or bars will stand parallel to each other, and between which are left spaces for the reception of the tooth
shanks or standards.

It will be noticed that the angle of deflection
50 of each successive diagonal portion or arm B' of the outside right-hand beam and each al-

ternate beam or bar B varies or diminishes passing rearward until the third angle is formed, or next to the last tooth is reached, while the angle of deflection of the rearmost
55 or last diagonal portion or arm is about the same as that of the first or foremost diagonal portion, whereby no one tooth travels in the same path of the other, and the harrowing or
60 pulverizing of the ground is thoroughly and uniformly effected. This order or arrangement of the teeth is observed throughout. The beams or bars B disposed intermediately
of the outside right-hand beam or bar, B, and each alternate beam or bar are adapted to
65 unite with the latter to effect the aforesaid arrangement or disposition of the teeth.

The only additional or adjunctive parts used in connection with the beams or bars B are two side bars, B³ B³, bolted to and uniting with
70 the opposite or outside beams or bars in securing a number of the teeth in place, and extending from the front end bar, a^2 , to the next to the last teeth.

C C are the harrow-teeth, which are disposed and held at certain intervals apart
75 throughout the harrow-sections, and, as above intimated, between the straight portions B² of the bars or beams B B, as presently fully set forth. Each tooth proper is curved in the di-
80 rection of its length from its lower end rearward upon its lower or rear side, as also upon its forward side, and tapered at its lower end to a narrow terminal or point, while it is
85 formed centrally at its front side in the direction of its length with a cutting-edge, and flared upon each side thereof rearward, as shown.

This construction enables the tooth to readily enter and move through the soil, even in sticky
90 soil, without clogging, while any stray roots of grass or trash will be permitted to pass upward and drop behind the tooth. The shank of the tooth is formed with a flat oblong portion or web, C', having passing centrally
95 through it an aperture, c , and which is received in the space between the straight portions B² of the bars or beams B. The lower end of the flat oblong portion or web C' of the tooth-shank is formed with a shoulder, c' , and its upper end
100 with a shoulder or head, c^2 , which shoulders embrace the bars or beams B at their straight

portions B² B² upon their upper and lower edges, while through the aperture *c* in the flat portion or web C' of the tooth-shank and coincident apertures in the bars or beams B B is
5 passed a bolt, D. This method of fastening effects not only the securing in position of the teeth, but also the bracing and securing together of the beams or bars B, whereby lightness, strength, and durability are promoted.

10 Having thus described our invention, what we claim as new is—

1. The harrow comprising the series of zigzag beams, the angle of deflection of the successive diagonal or angular arms or portions
15 of which varies in the direction of their lengths and extends in oppositedirections, which beams are connected together, the shorter portions or arms of one beam bracing the longer arms or portions of the adjoining beam, substantially as set forth.

2. The harrow comprising the series of thin plate-like zigzag beams having apertured straight parallel portions intermediately of their angular or diagonal portions or arms, the
25 angle of deflection of the successive diagonal

or angular arms or portions of which varies in the direction of their lengths and extends in opposite directions, which beams are connected together, with the shorter portions or arms of one beam bracing the longer arms or portions
30 of the adjoining beam, substantially as set forth.

3. The harrow comprising the series of thin plate-like zigzag beams having apertured straight parallel portions intermediately of their angular or diagonal portions or arms, the
35 angle of deflection of the successive diagonal or angular arms of which varies in the direction of their lengths and extends in opposite directions, which beams are connected together, with the shorter portions or arms of
40 one beam bracing the longer arms or portions of the adjoining beam, and the teeth, the shanks of which are formed with an apertured web provided above and below the aperture with shoulders, substantially as set forth.

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