(No Model.)

B. F. CHRIST.

HARROW.

No. 284,818. Patented Sept. 11, 1883.

Fig. 1.

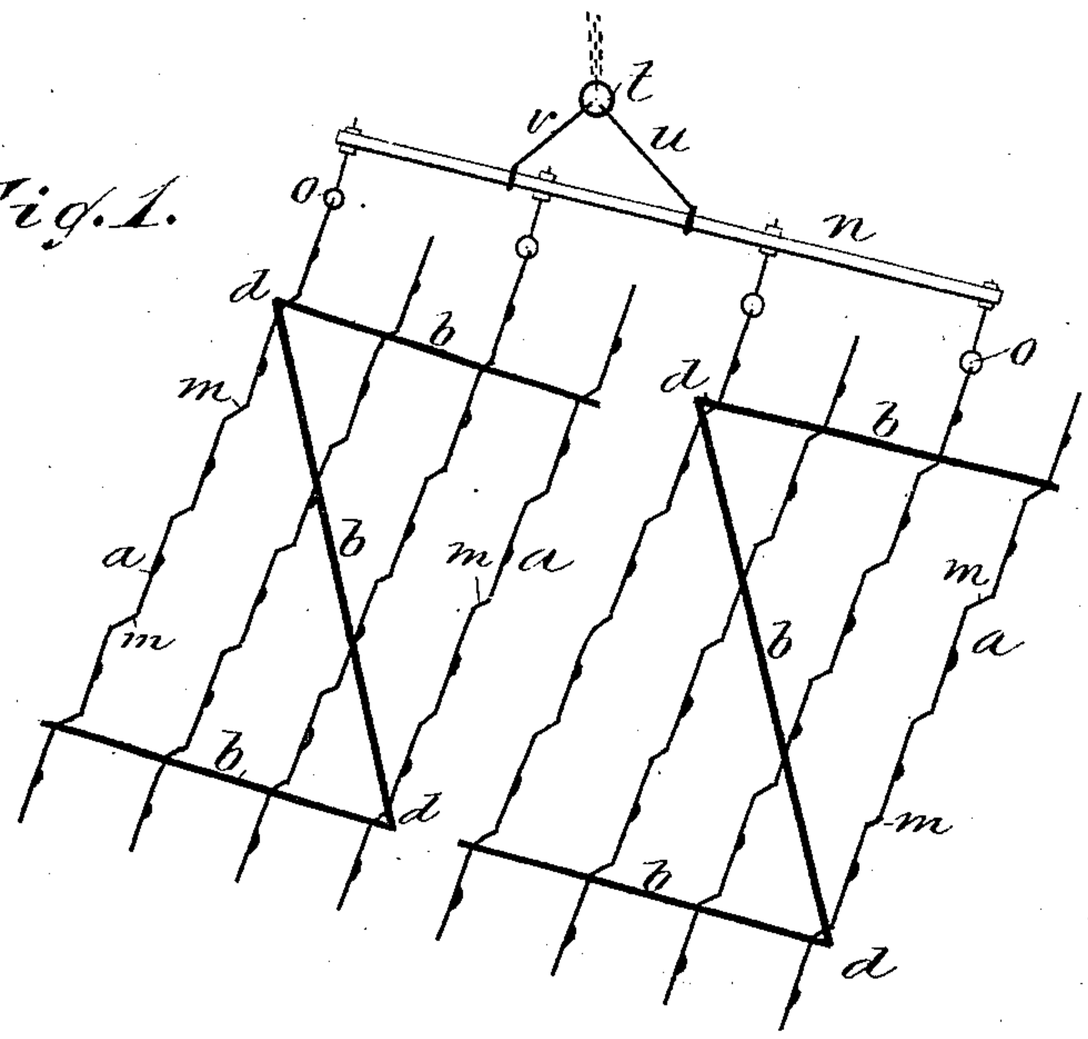


Fig. 2.

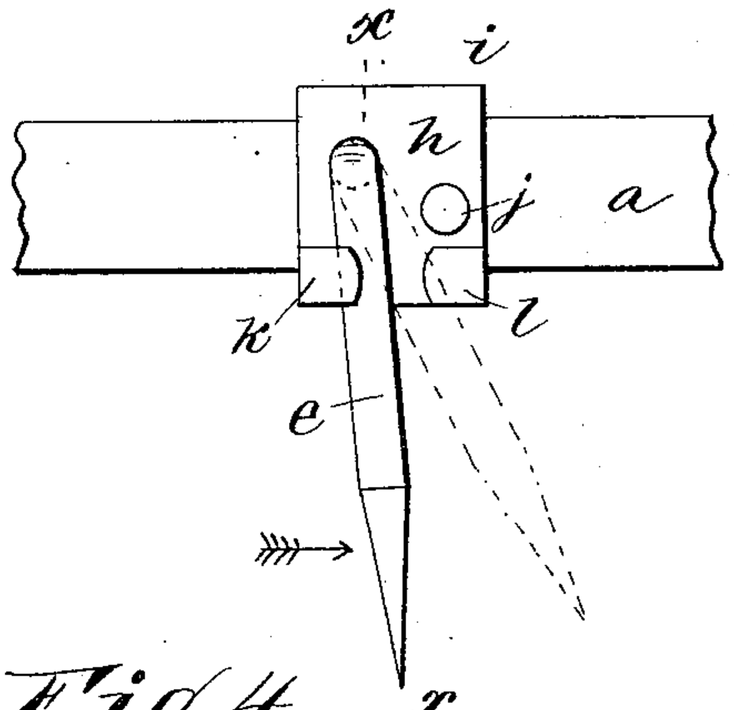


Fig. 3.

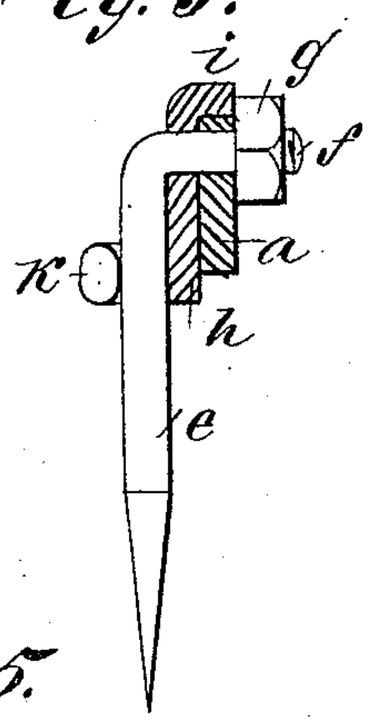


Fig. 4.

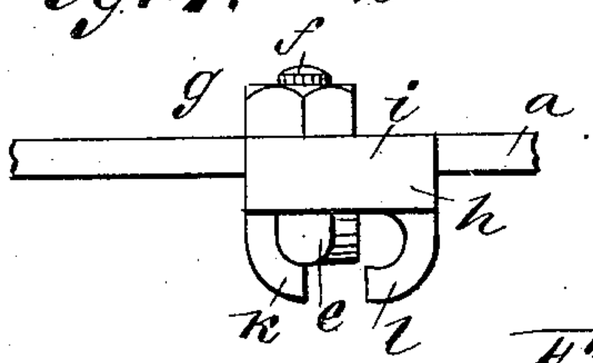


Fig. 5.

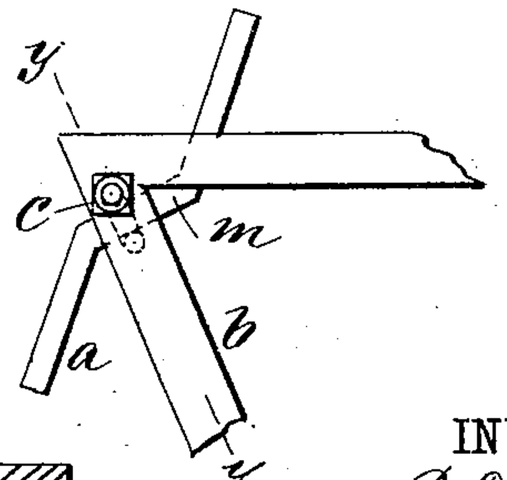
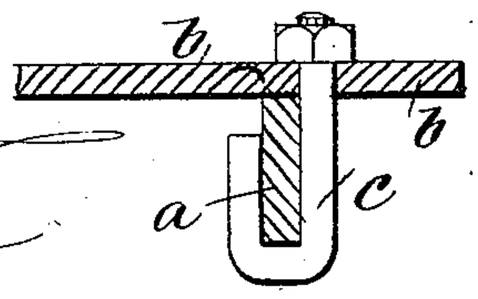


Fig. 6



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BENJAMIN F. CHRIST, OF PEABODY, KANSAS.

HARROW.

SPECIFICATION forming part of Letters Patent No. 284,818, dated September 11, 1883.

Application filed May 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. CHRIST, of Peabody, in the county of Marion and State of Kansas, have invented a new and Improved Harrow, of which the following is a full, clear, and exact description.

My invention relates to improvements in harrows, having for its object to readily and firmly connect together the tooth-beams and the braces, to permit the adjustment of the teeth from a perpendicular to an inclined position, and to cause the teeth to arrange themselves parallel to the plane of draft while their beams range obliquely thereto; and it consists of the combination and arrangement of parts, substantially as hereinafter fully set forth and claimed.

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

Figure 1 is a plan view of my improved harrow. Fig. 2 is a detail on an enlarged scale, showing the manner of connecting the teeth to the beam. Fig. 3 is a section of Fig. 2 on the line *x x*. Fig. 4 is a plan view of the device represented in Fig. 2. Fig. 5 is a detail in plan view, showing the manner of connecting the braces to the beams; and Fig. 6 is a section of Fig. 5 on line *y y*.

I use flat iron bars for the beams *a*, setting them up edgewise and connecting them to the braces or cross-beams *b* by means of hook-bolts *c*, which makes a simple construction, and for the cross-beams *b*, I use metal bars, which I bend in the Z shape represented in the drawings, by suitably bending the bars at the angles *d*, thus making a very simple contrivance for the said braces or cross-beams.

To connect the teeth *e* to the bars *a*, I first construct the teeth with a right-angle shank, *f*, having a nut, *g*, screwed on the end, then attach a bracket, *h*, for each tooth to the bar *a*, by a lip or flanges *i* at the top and a rivet, *j*, in the side, said bracket having two hook-studs, *k* and *l*, projecting from its side at the lower end, said hook-studs pointing toward each other, but being sufficiently wide apart for the teeth to enter between them. Through a hole on the upper part of the bracket, and also through the beam, I connect the tooth by its shank *f*, the hole for said shank being so located with relation to the hooks *k l* that when the harrow is drawn in the direction indicated by the arrow in Fig. 2 the tooth will bear against hook *k* and be held upright, and said tooth will bear against hook *l* when going the other way to be inclined, as indicated by the dotted lines in said figure, for smoothing.

In order that the teeth *e* will swing back and work parallel to the line of draft, or thereabout, when smoothing, the bars *a* being oblique to said line, as shown in Fig. 1, the bars are bent and offset at *m*, so that between said offsets they are parallel to the line of draft, or approximately so. For hitching to the harrow a bar, *n*, is used, connecting to the ends of some of the beams by hooks and rings *o*, which are to be adapted to connect readily with either end, the bar having a hitching-ring, *t*, connected by links *u* and *v* of different lengths, to make the beam draw obliquely.

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

1. The Z-shaped metal cross-beam or brace *b*, in combination with metal tooth-bars *a*, having obliquely-bent portions or offsets *m*, said bar and brace being connected by hook-bolts *c*, adapted to embrace the bent portions *m* of bars *a*, substantially as described.

2. In a harrow, the pivoted tooth *e* and its holding hooked projections *k l*, in combination with the beam or bar *a*, having obliquely-bent portions *m*, and disposed to range obliquely to the line of draft, to enable the tooth to swing parallel thereto, essentially as shown and described, and for the purpose set forth.

BENJAMIN F. CHRIST.

Witnesses:
D. F. RHODES,
M. W. HOOVER.