

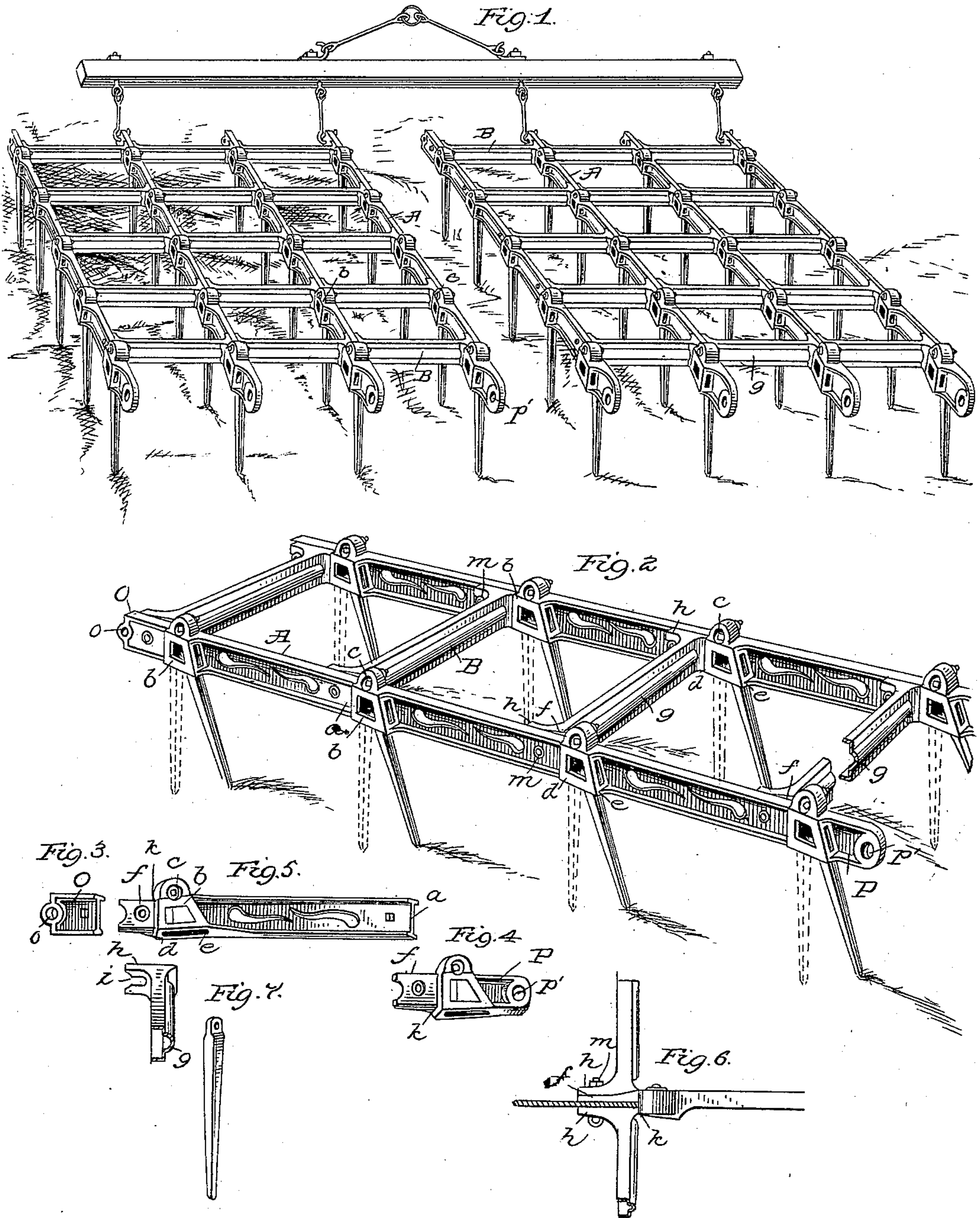
(No Model.)

H. H. SATER.

HARROW.

No. 300,017.

Patented June 10, 1884.



Attest:
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UNITED STATES PATENT OFFICE.

HANS H. SATER, OF DUBUQUE, IOWA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 300,017, dated June 10, 1934.

Application filed February 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, HANS H. SATER, of Dubuque, in the county of Dubuque and State of Iowa, have invented a new and useful Improvement in Harrows; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to improvements in the construction of harrows, and more particularly to the construction of the frame and the connection of the teeth, the object being to provide a sectional harrow-frame capable of being indefinitely increased or diminished in size, according to the amount and kind of work required of the harrow, and which shall at the same time be strong and rigid. Another object of this construction is to render the harrow, when taken apart, easy to transport, thus saving trouble and expense.

The invention consists, first, in the peculiar construction of the frame; further, in the manner of attaching the teeth; and, finally, in various details of construction.

In the drawings accompanying this application, Figure 1 is a perspective view of my improved harrow. Fig. 2 is a perspective view of a portion of the frame. Fig. 3 is a side view of one of the pulling-links to which the draft-beam is connected when the harrow is used as a smoother. Fig. 4 is a view of one of the pulling-links to which the draft-bar is attached when the device is used for harrowing. Fig. 5 is a view of one of the side bars. Fig. 6 is a plan view showing the connection of the side and cross beams. Fig. 7 represents one of the harrow-teeth.

Generally described, my harrow consists of sections composed of any suitable material, formed of side bars, A, and cross-bars B. At the joints of these bars are formed pockets or closed sockets for pivoted teeth, such pockets having an inclined and a straight face, against one of which the front of the tooth bears, according as the device is used for harrowing or smoothing. At either end of the harrow are devices for attaching the draft-bar, the harrow being drawn so that the teeth stand perpendicularly for harrowing and inclined for smoothing. The harrow may be composed of any desired number of sections.

The side bars, A, (shown in detail in Fig. 5,) are composed of iron of a double-T shape,

having top and bottom flanges and a connecting-tread. One end of the bar is formed with a plain face, *a*, and near the other is formed a pocket, *b*, having a pivot-hole, *c*, in the top, and straight and inclined ends *d e*. The end of the side bar is formed into a wedge-shaped projection, *f*. The cross-bars B are formed of channel-iron with a rounded rib, *g*. At each end of the bar is a foot, *h*, having a slot, *i*, and extending at right angles to the general direction of the cross-bar. I have called the bars A "side bars;" but it must not be understood from this that they form the sides of the harrow, but rather the sides of a section of the harrow, composed of two cross-bars, two side bars, and two teeth. The harrow itself may be made of any size by multiplying these sections and connecting them together, so that they are joined firmly and rigidly.

The manner of connecting the parts is shown in Fig. 6. Opposite ends of two side bars, A, are brought together, so that the projection *f* passes or laps into the space between the flanges of the adjoining bar. The end of such bar then bears on the shoulder *k*. Two cross-bars, B B, are then connected to opposite sides by a single bolt, *m*, which passes through the openings or slots in their feet, and through bolt-holes in the projection *f* and the bar A. The bars are thus held against both lateral and vertical strains.

The side bars, A, may be formed in one continuous piece with the necessary number of pockets and pull-links cast integral therewith.

O represents the pull end links, to which the draft-bar is attached when the device is used as a smoother. This link has an eye, *o*, by which it is connected to the bar. At the opposite end of the harrow are pull-links P, having an eye, *p'*. These links have the ordinary tooth-socket and projection, *f*, before described. One of these links is attached at each end of each row of side bars.

Having thus described my invention, I claim—

1. In a harrow, pockets or closed sockets for the teeth, having a vertical and an inclined bearing-surface, said pockets being formed integral with the side bars, substantially as described.

2. In a harrow, pockets or closed sockets formed integral with the side bars, and having

a vertical and an inclined bearing-surface, teeth pivoted in the upper part of such pockets, and adapted to operate substantially as described.

- 5 3. The combination of the double-flanged side bars having pockets and projections formed integral therewith, the cross-bars, and securing-bolts, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HANS H. SATER.

Witnesses:

ALEX. SUNPLOT,

FRANK H. WEIHE.