(No Model.)

P. HENSE.

HARROW.

No. 308,668. Patented Dec. 2, 1884.

Fig: 1.

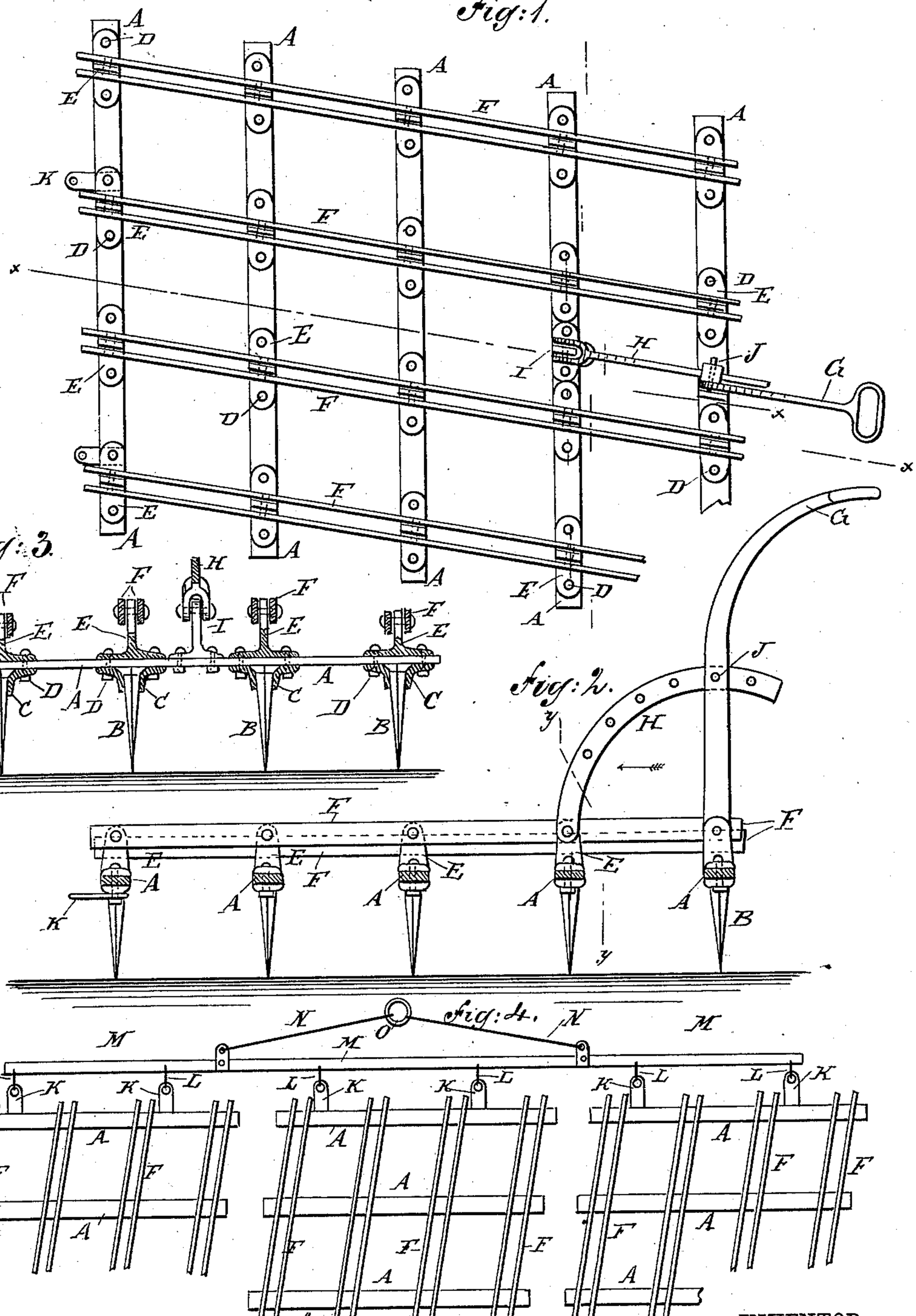

Fig: 3.

Fig: 2.

Fig: 4.

WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

P. Hense

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

PHILLIP HENSE, OF DYERSVILLE, IOWA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 308,668, dated December 2, 1884.

Application filed February 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP HENSE, of Dyersville, in the county of Dubuque and State of Iowa, have invented a new and useful Improvement in Harrows, of which the following is a full, clear, and exact description.

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 a section of my improved harrow. Fig. 2 is a sectional side elevation of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a sectional rear elevation of the same, taken through the line *y y*, Fig. 2. Fig. 4 is a plan view of a three-section harrow.

The object of this invention is to facilitate the operating and controlling of harrows and promote durability in said harrows.

The invention consists of the combination of parts and their construction, substantially as hereinafter fully set forth, and pointed out in the claims.

A are the cross-bars of the harrow-frame, five of which are used. B are the teeth, which are made with flaring heads and with bodies tapered from the heads downward. C are cast-iron blocks, through which are formed holes or sockets of such a shape and size as to receive and fit upon the heads and the upper parts of the bodies of the said teeth, leaving the surface of the said heads flush with the upper surface of the said socket-block. The socket-blocks C fit upon the lower sides of the cross-bars A, and are secured to the said bars by bolts D, passing through the said blocks and bars and through the blocks E, placed upon the upper side of the said bars A, directly above the said socket-blocks C. Upon the centers of the blocks E are formed lugs, to the opposite sides of which are pivoted four pairs of bars, F, so as to hinge the cross-bars A to the pairs of bars F.

The lugs that carry the two center pairs of bars F are made longer than the lugs that carry the two side pairs of bars F, so that the pivotal points of the two sets of bars F will be at different levels, and the bars A and teeth B will thus be held firmly in place when adjusted.

To the center of the rear cross-bar A is rigidly attached the lower end of the lever G, through which, or through a keeper attached to it, passes the curved bar H. The forward end of the bar H is hinged to a lug, I, attached to the next cross-bar A. The lever G is secured to the curved bar H by a pin, J, passing through holes in the said lever and bar. Several holes are formed in the curved bar H to receive the pin J, so that the lever can be secured in any position into which it may be adjusted. The pin J is made of wood, and is designed to be of such strength as to support the draft-strain under ordinary circumstances, but which will break, should the teeth strike an obstruction, and allow the said teeth to swing to the rearward to prevent the said teeth or the frame of the harrow from being broken. The harrow can be formed of one, two, or three sections, as may be desired.

To the front cross-bar of each section of the harrow are attached eye-bars K, to which is connected by links L or other suitable connections the evener M. With the evener M, at equal distances from its ends, are connected the ends of two short rods or chains, N, the other ends of which are connected by a link or ring, O, to receive the double-tree clevis. With this construction, by withdrawing the pin J and operating the lever G a forward or a rearward inclination can be given to the teeth B, as the work to be done may require. With this construction, also, the teeth B can be inclined to the rearward to allow any rubbish that may collect upon them to slide off.

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

1. In a harrow, the cross-bars with the teeth connected by sockets to their under sides, in combination with the longitudinal bars arranged in parallel pairs, said cross-bars having connected to their upper sides lug-blocks pivoted between and to the pairs of longitudinal bars, substantially as and for the purpose set forth.

2. In a harrow, the cross-bars having teeth connected to their under sides by sockets,

bolted to lug-blocks upon the upper side of said bars, in combination with parallel pairs of longitudinal bars, between and to which said lug-blocks are pivoted, the intermediate pairs of longitudinal bars being connected to lug-blocks of greater length or height than the lug-blocks to which the side longitudinal bars are connected, and means to effect the adjustment of said cross-bars with their teeth, substantially as and for the purpose set forth.

PHILLIP HENSE.

Witnesses:
CHRISTEN CHRISTENSEN,
IGNAZ SUMMER.