(No Model.)

H. L. MACK.

HARROW.

No. 400,697. Patented Apr. 2, 1889.

Fig. 1.

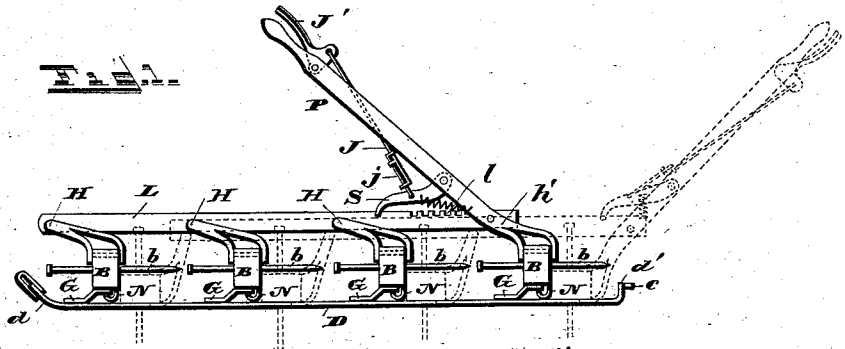
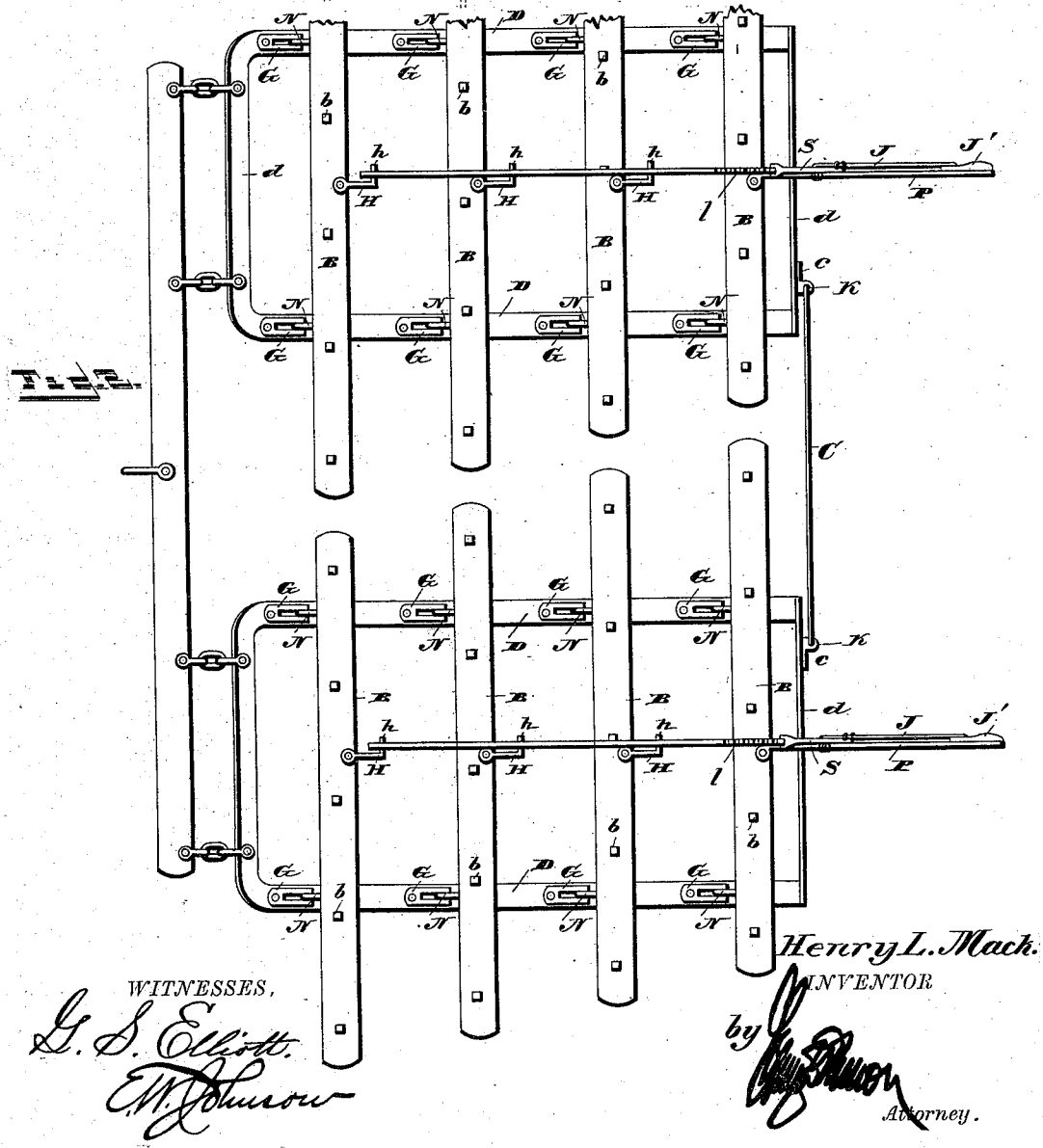


Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY L. MACK, OF SUMMIT, CLOUD COUNTY, KANSAS.

HARROW.

SPECIFICATION forming part of Letters Patent No. 400,697, dated April 2, 1889.

Application filed June 21, 1888. Serial No. 277,814. (No model.)

To all whom it may concern:

Be it known that I, HENRY L. MACK, a citizen of the United States, residing in Summit township, in the county of Cloud and State of Kansas, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to that class of harrows in which the tooth-bars are pivoted to longitudinal frame-bars, which, by the proper manipulation or adjustment of the parts, serve as runners to support the tooth-bars when not in use.

The object of my invention, generally stated, is to cheapen and simplify both the construction and operation of harrows of this class; and to this end the invention consists in novel features of construction and combinations, which will be described and claimed hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of a harrow embodying my improvements. Fig. 2 is a plan view of the same.

The frame of a harrow-section is composed of two flat longitudinal bars, D, connected at their front and rear ends by cross-pieces *d d'*, as shown, these frames, by preference, being constructed each of a single length of flat metal bent at the front and rear to form the cross-pieces *d* and *d'*, the meeting ends of the metal strip being welded or bolted together. The front and rear ends of the longitudinal or side bars, D, are slightly upturned at their ends, as is usual.

Secured to the upper side of the side bars, D, are a number of bent metal plates, G, the rear or free ends of which are provided with slots to receive the eyes of eyebolts N, secured to the tooth-bars B. These tooth-bars B are preferably square or rectangular in cross-section, and carry harrow-teeth *b*, arranged at right angles with the stems of eyebolts N, the forked ends of brackets H being also secured thereto in a longitudinal series about midway between the side bars, D, by bolts passing through the tooth-bars parallel with the teeth *b*, and through the ends of the fork, as shown. These brackets H are provided at their upper ends with laterally-projecting studs or wrist-pins *h*, which are journaled in transverse openings in a longitudinal coupling-bar, L, the upper edge of which is near its rear end provided with notches *l*, to receive the end of a spring-latch, S, pivoted on the operating-lever P. I prefer to construct and arrange this operating-lever P as shown in the drawings—that is, the shank *h'* of the rearmost bracket H of each longitudinal series is extended to form a handle, said bracket, with its extended shank, thus constituting the lever. The latch S is connected to its operating hand-grip J' by a connecting-rod, J, having a slip-joint, *j*, constructed in any well-known or approved manner, and provided for a purpose to be hereinafter explained.

In practical operation the lever P is drawn rearward until the latch S engages one or the other of the notches *l* in lever L, according as it is desired that the harrow-teeth shall work in a vertical position or at a greater or less angle to the surface of the ground. This operation rocks the tooth-bars to throw the points of the teeth below the side bars, D, of the frames, as indicated by dotted lines in Fig. 1 of the drawings.

When it is desired, for any reason, to throw the harrow-teeth out of the operative position, the latch S, through the connecting-rod J and hand-grip J', is disengaged from the notch *l* of the coupling-bar L and the lever P moved forward to rock the tooth-bars on their pivots until the point of the latch S has passed the front notch of the coupling-bar, when, owing to the provision of the slip-joint *j* of the connecting-rod J during the further forward movement of the lever, the point of said latch will move freely upon the upper edge of the coupling-bar until the lever reaches the limit of its forward movement and the harrow-teeth assume a horizontal position. To further facilitate this operation, the point of the latch is flattened and forked, as shown, in order that it may straddle the top of the coupling-bar, thus avoiding accidental disengagement.

Suitable draft devices are connected to the front cross-pieces of the frames, the rear cross-pieces of two or more frames being connected together by a rigid rod or link, C, provided

at its ends with eyes, which engage with the eyes of bolts or straps *c*, secured to said rear cross-pieces of the frames.

I am aware that it not new to arrange the tooth-bars of a harrow in such relation to the frame that the side bars of the frame serve as runners when the tooth-bars are rocked thereon to throw the harrow-teeth out of operative position; and I am also aware that a horizontal coupling-bar has been used, having notches on its upper edge to engage the end of a locking-pawl pivoted to the operating-lever, and these features I do not claim, broadly.

Having thus described my invention, I claim—

In a harrow of the character described, the combination, substantially as set forth, of the continuous rectangular frame, the side bars of which are provided on the upper side with bent plates, the tooth-beams connected therewith by means of eyebolts, the coupling-bar provided at intervals with transverse circular openings and at its rear end having notches in its upper edge, the brackets rigidly secured at their lower forked ends to the tooth-beams and provided at their upper ends with laterally-projecting studs to engage the circular openings in the coupling-bar, the rearmost of said brackets having an extended shank constituting an operating-lever, a spring-pressed pawl pivoted to the lever above the coupling-bar and forked at its free end to straddle said bar, and a connecting-rod composed of two sections adapted to slide one upon the other.

Done at Scottsville, Mitchell county, Kansas, this the 18th day of June, 1888.

HENRY L. MACK.

Witnesses:
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