

(No Model.)

2 Sheets—Sheet 1.

S. N. HENCH & W. A. DROMGOLD.
HARROW.

No. 555,699.

Patented Mar. 3, 1896.

Fig. 1.

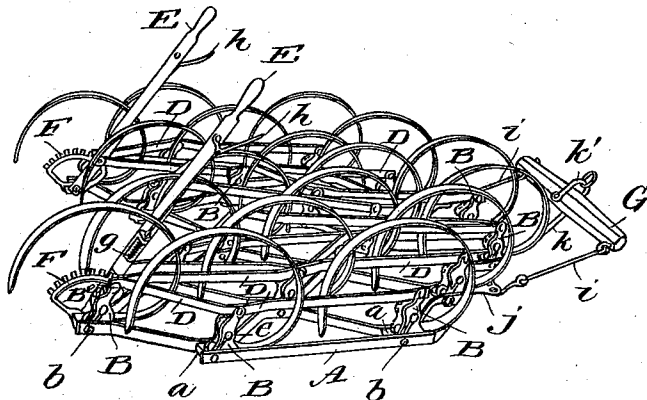


Fig. 2.

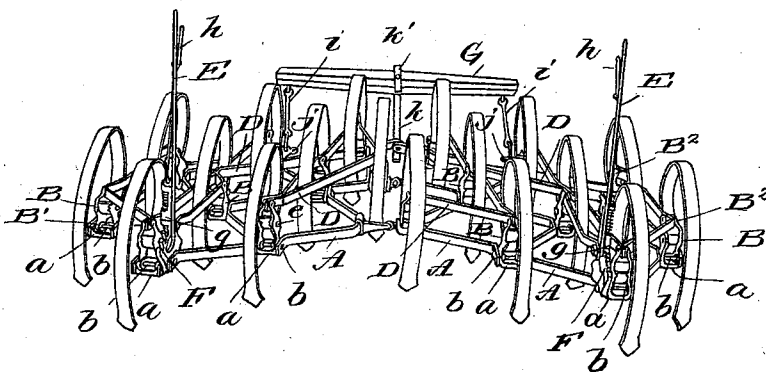
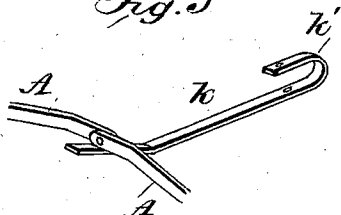


Fig. 5



Witnesses
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Inventors:
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

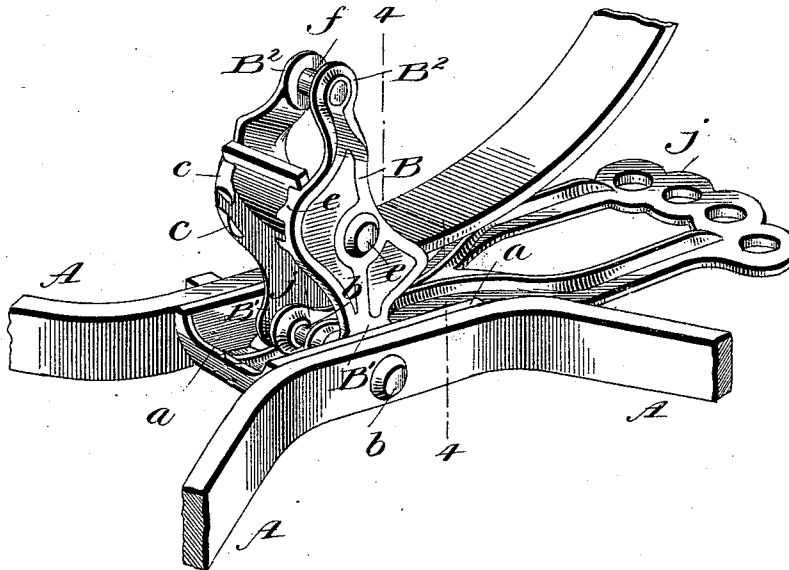
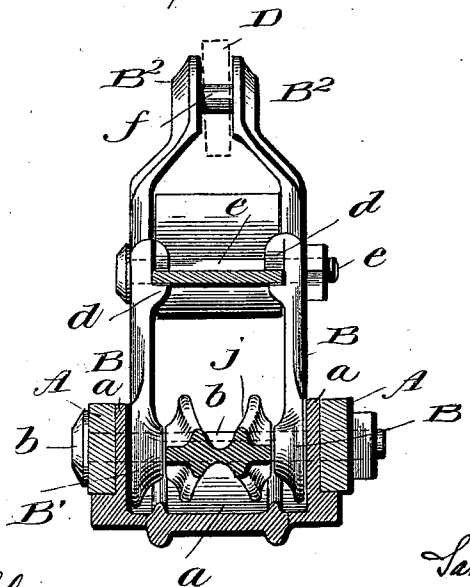


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL N. HENCH AND WALKER A. DROMGOLD, OF YORK, PENNSYLVANIA, ASSIGNORS TO THE NATIONAL HARROW COMPANY, OF NEW JERSEY.

HARROW.

SPECIFICATION forming part of Letters Patent No. 555,699, dated March 3, 1896.

Application filed November 19, 1892. Renewed March 27, 1894. Serial No. 505,348. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL N. HENCH and WALKER A. DROMGOLD, of York, in the State of Pennsylvania, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

In the harrow which we have invented we combine with a main-frame and an adjusting-frame a set of harrow-tooth holders consisting each of a pair of clips inserted between the main-frame bars and provided at that point with a spacing-block, said clips clamping between them the tooth and being individually hinged at one point to the main frame and at another point to the adjusting-frame, the parts being connected in some sort like the parts of a parallel ruler, the main and adjusting frames answering in a general way to the two parallel portions of the ruler and the individually-hinged tooth-holders to the individually-hinged straps which connect the two parts of the ruler. It is this feature which mainly characterizes our invention.

By "adjusting-frame," we intend and mean any rods, bars, or the like extending between and connecting the holders, so that the latter shall have unity of action and shall move or swing together. The individually-hinged tooth-holders are thus caused to swing back and forth in the arc of a circle upon the pivots which connect them to the main frame, with the effect of lifting the points of the teeth or depressing them, according to the direction of the movement, and for the purpose of thus actuating the connected set of tooth-holders a single lever is used in connection with a notched sector or quadrant on the main frame which is engaged by a sliding bolt on the lever, so as to hold the whole set of tooth-holders in their adjusted position.

The harrow-frame which we in practice use is one which is longitudinally divided into two parts hinged together at the center. Harrows of this kind when in practical use are very apt to drop down too deep in the center, and to obviate this difficulty, as well as to prevent the nose or point of the harrow from striking and bringing up against any obstructions, we form the clevis-iron usually employed with harrows of the kind with an

extension or arm which extends rearward and downward in a slanting direction under the nose or point of the harrow. The draft of the team which drags the harrow when it is in use upon the clevis is sufficient to cause the extension to uphold the center of the harrow, the nose of the harrow being at the same time shielded from directly striking against any obstruction which may come into its path.

The nature of our improvements and the manner in which the same are or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the harrow with the teeth raised or swung up so that their points are above the main frame. Fig. 2 is a rear elevation of the harrow with the teeth lowered or set for harrowing. Fig. 3 is a view on enlarged scale of one of the tooth-holders, with the spacing-block and adjacent portions of the main frame, and with a coupler-iron *j* hung on the same cross-bolt *b* on which the tooth-holder is mounted. Fig. 4 is a section on line 4 4, Fig. 3. Fig. 5 is a detail in perspective of the shoe or runner.

The main frame *A* of the harrow is one (old in the art) consisting of straps bent into zig-zag shape and bolted together at contiguous angles or bends where they have short parallel contiguous faces. The lower ends of the tooth-holders are held and pivoted between these contiguous faces of the main-frame straps. To this end we fit between these portions of the main-frame straps dished castings or spacing-blocks *a*, which by cross-bolts *b* are bolted solidly to the main frame, and between the side walls of these castings and upon the cross-bolts *b* we mount the lower ends of the tooth-holders. These dished castings being below the lower ends of the tooth-holders prevent the tooth-holders from coming in contact with the soil even when the frame comes in contact with the ground. These holders which may be of any suitable construction, consist in this instance each of a pair of clips *B* provided upon their interior opposite faces with two sets of lugs *c d* placed so as to come above and below the inserted

end of the spring-tooth C, as in the clips described and illustrated in our Letters Patent No. 419,990 of January 21, 1890, the two clips being drawn together and against the side-edges of the tooth by a cross-bolt *e*. Each of these clips (consisting of a single piece) is prolonged below into the end B', which pivots on the main-frame cross-bolt *b* and above into the end B², these ends B² of each pair of clips being caused to approach each other near enough to just receive between them the end of a bar or strap D, which is hung on a bolt *f* connecting these ends B², on which bolt the strap can move as a pivot.

The straps D form what we have hereinbefore termed the "adjusting-frame." They extend between and are jointed to the upper ends of the several tooth-holders composing the set, so that when one tooth-holder is swung all of them will swing together. This movement is imparted to them by means of an upwardly-extending lever E rigidly fastened to one of the tooth-holders and provided, as usual in this class of mechanism, with a locking-bolt *g* mounted to slide longitudinally on the lever and adapted to engage a notched quadrant or sector F rigidly fastened to the main frame, the bolt being spring-pressed in the direction to engage the quadrant and being retracted by a latch-lever *h*. The object of this mechanism, of course, is to lock the tooth-holders in whatever position they may be caused to assume by the operating-lever E. It will be noted in this illustration of our invention that the tooth-holding clips B are located between the main frame below and the adjusting frame above, and this arrangement we prefer; but we do not wish to be understood as limiting ourselves thereto.

The harrow, as shown, is a two-part harrow, divided longitudinally in the center into two sections, each of which is constructed in the manner hereinbefore described, each section having its own adjusting-frame and operating-lever. The whiffletree G is connected by link-rods *i* to a coupler-iron on each section. One of these coupler-irons is shown more clearly at *j*, Fig. 3, hung on the same cross-bolt *b* on which one of the tooth-holders is mounted.

At the center of the whiffletree in front of and opposite to the nose or point of the harrow is an arm *k*, which at its front end is fast to the whiffletree, and thence extends to the rear downward in a slanting direction to a point underneath the nose of the harrow. This arm *k* is conveniently provided by forming it on or as part of the clevis-iron *k'*, and such is the construction represented in the drawings. By the employment of this device,

as hereinbefore stated, the center of the harrow, when the latter is in use in the field, is prevented from dropping down too far, and the nose of the harrow is shielded from obstructions which may come into its path.

Having described our improvements and the best way now known to us of carrying the same into effect, what we claim herein as new and of our own invention is—

1. The combination with the main frame having spacing-blocks between adjacent portions of the frame and the adjusting-frame above the main frame, of a pair of tooth-holding clips having one end operatively connected with the adjusting-frame and the opposite end pivoted immediately above the spacing-blocks, and the tooth held by said clips above the main frame, substantially as described.

2. In a harrow the combination with the main-frame straps and the spacing-blocks, of the adjusting-frame, a pair of tooth-holding clips pivotally connected at one end to the main frame above the spacing-blocks by a bolt securing said blocks and main frame together, said clips having their opposite ends operatively connected to the adjusting-frame, and the tooth held by said clips above the main frame, substantially as described.

3. The combination with the main frame, of the spacing-blocks secured between the straps of the main frame of the tooth-holding clips, the teeth clamped intermediate the ends of the clips, the lower ends of said clips being pivoted above a part of said spacing-block extending between the straps of the main frame, the upper ends of said clips extending above the tooth to connect with an adjusting-frame, substantially as described.

4. In combination with the longitudinally divided hinged harrow-frame, the whiffletree, and the rearwardly-projecting arm secured to the same and extending back under the nose or point of the hinged frame, substantially as and for the purposes hereinbefore set forth.

5. The combination with the main frame, of a spacing-block having upward-extending flanges and a web connecting the flanges, of tooth-clips pivoted between the flanges of the spacing-block above the web, a bolt passing through the flanges, the clips and the frame-straps, the teeth secured in said clips and an adjusting-frame connected with said clips, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

SAMUEL N. HENCH.

WALKER A. DROMGOLD.

Witnesses:

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FREDK. L. FLINCHBAUGH.