(No Model.)

S. N. HENCH & W. A. DR0MGOLD.

SPRING TOOTH HARROW.

No. 402,079. Patented Apr. 23, 1889.

Fig. 1.

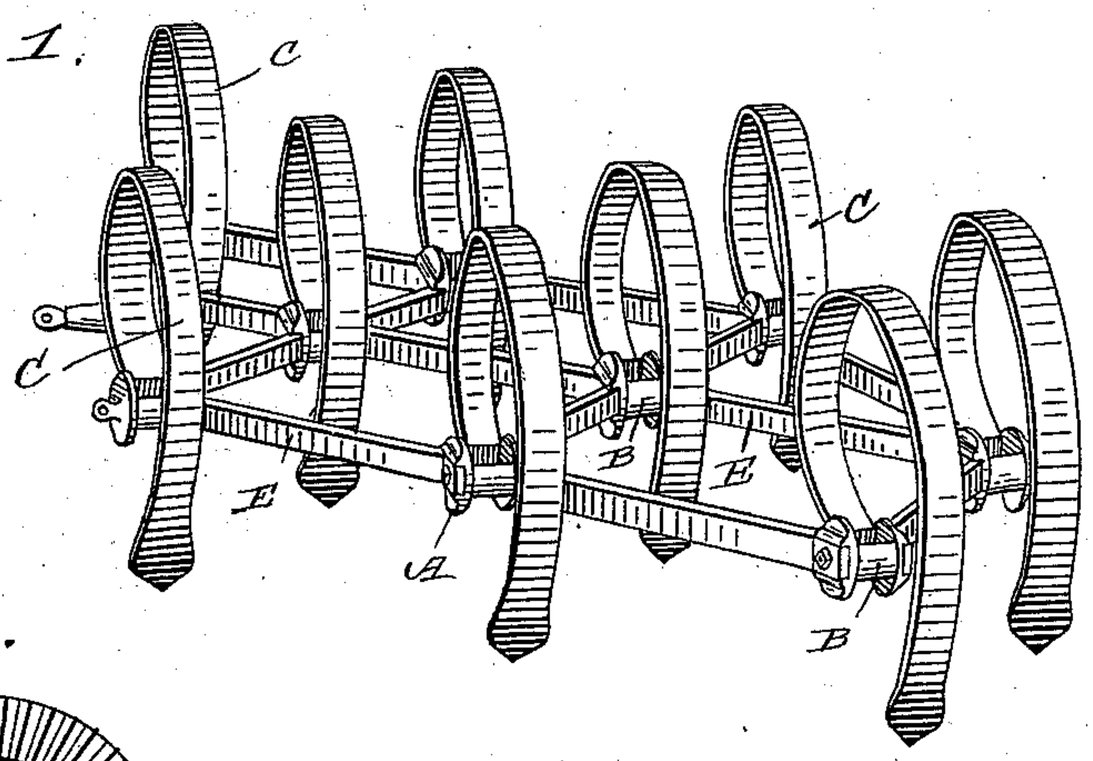


Fig. 3.

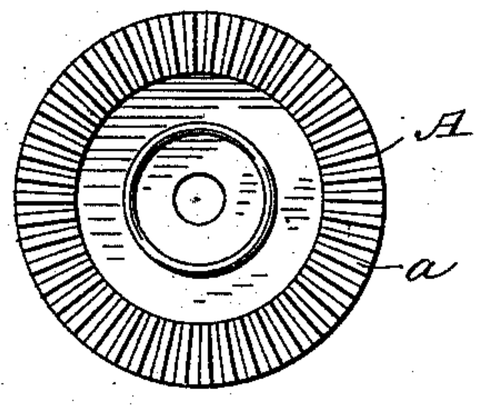


Fig. 2

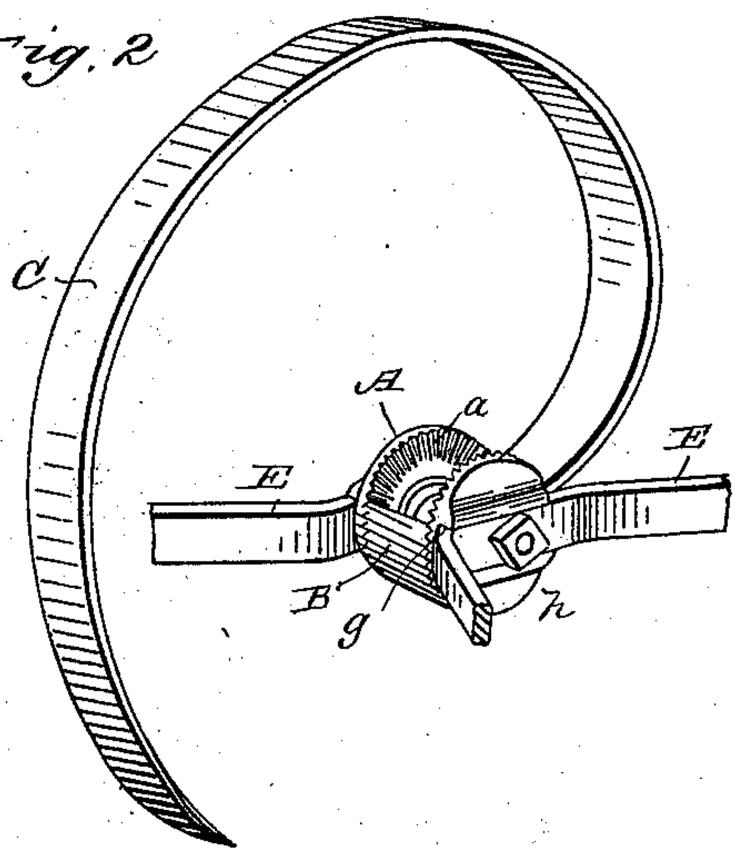


Fig. 4.

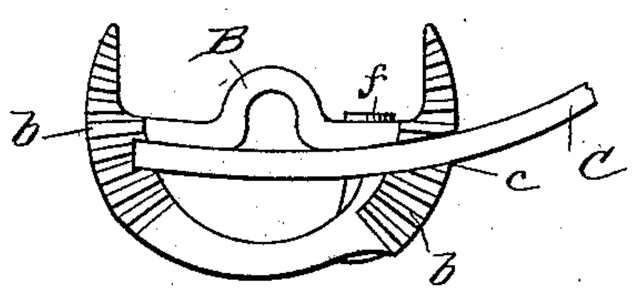


Fig. 5.

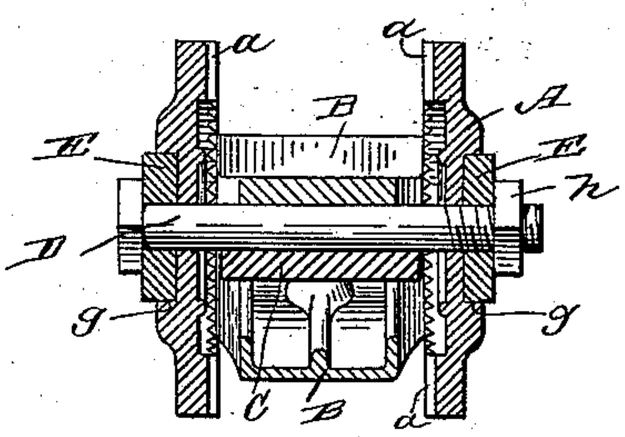


Fig. 6.

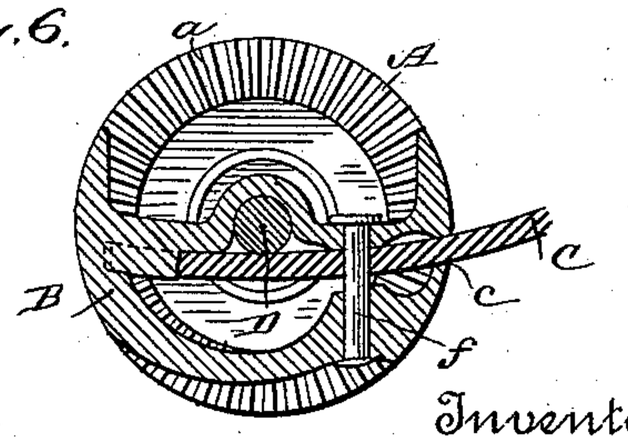
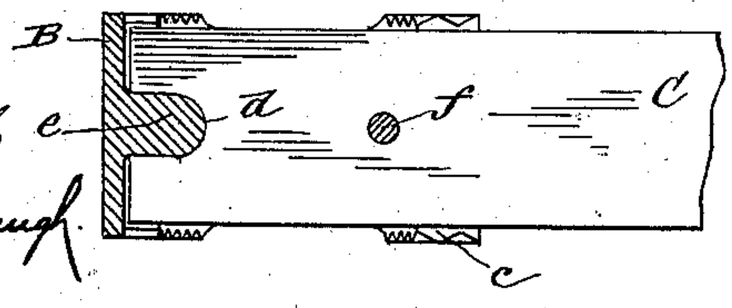


Fig. 7.



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their Attorney.

UNITED STATES PATENT OFFICE.

SAMUEL NEVIN HENCH AND WALKER A. DROMGOLD, OF YORK, PENNSYLVANIA.

SPRING-TOOTH HARROW.

SPECIFICATION forming part of Letters Patent No. 402,079, dated April 23, 1889.

Application filed February 11, 1889. Serial No. 299,396. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL NEVIN HENCH and WALKER A. DROMGOLD, of York, in the State of Pennsylvania, have invented a new and useful Improvement in Spring-Tooth Harrows, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of the harrow. Fig. 2 is an enlarged perspective view of a single tooth with its holder and short pieces of the harrow-frame attached. Fig. 3 is a face view of one of the stationary ratchet-plates of the holder. Fig. 4 is a view of the movable member of the ratchet-holder. Fig. 5 is a vertical section in the plane of the longitudinal axis of the holder. Fig. 6 is a vertical section in a plane transverse to the axis. Fig. 7 is a horizontal section of the movable member of the ratchet-holder in a plane just above that portion of the spring-tooth which is contained in said member.

The holder consists of two cheek disks or plates, A A, which are fixed to the frame and are provided on their interior opposite faces with ratchet-teeth *a*, these plates constituting the stationary member of the holder, and of the slotted hub B, provided at each end with ratchet-teeth *b*, to engage teeth *a*, this hub constituting the movable member of the holder.

The spring-tooth C may be applied and held to the hub B in any suitable way. As illustrated in the drawings, the shank of the tooth C is inserted in the horizontal slot *c* of the hub. At its extreme inner end it is notched, as at *d*, so as to engage a lug, *e*, in the interior of the hub, and when in position it is secured by a pin or rivet, *f*, which passes through the hub and the shank of the tooth and has its ends upset or headed. In this way the tooth is secured most firmly to the hub and is prevented from all lateral play or wabbling therein.

The hub B is placed between the cheek-plates A, and axially through these parts passes the pivot-bolt D, upon which the hub or movable member can rotate.

In order to conveniently attach the cheek-plates to the frame E, (which latter, as shown, can be conveniently made of iron strips,) each plate has on its outer face a horizontal groove, *g*, in which the iron-frame strip or strap is received. The pivot-bolt passes through these parts of the frame, and by a nut, *h*, on said bolt all of the parts after the hub is adjusted can be drawn together, so as to secure and hold the hub rigidly in position.

The iron strips or straps of which the frame is composed are bent each into zigzag shape, so that each strap may extend diagonally across between each two adjoining spring-teeth in contiguous rows, as seen. In this way a strong and well-braced frame is obtained. The pivot-bolts D in this connection serve not only to hold the teeth in place, but also to bind together the straps of which the frame is composed, thus having a double function. By this mode of construction the harrow is simplified and the cost of production is lessened.

Whenever it becomes necessary to adjust the spring-tooth either to set it to a different depth or to compensate for its wear, this can readily be accomplished by loosening the nut *h* to such an extent as to permit the parts to open sufficiently to disengage the movable from the stationary member of the ratchet-holder. As soon as this is done the movable member or hub B can be rotated upon its pivoted bolt to the extent required to obtain the desired adjustment of the tooth, after which, by tightening the nut *h*, the parts are again bound and held rigidly together. In this way we obtain a spring-tooth harrow having spring-teeth which are hinged or pivoted so as to be individually rotatable or adjustable, and are combined with fasteners by which they are held in their adjusted position.

Having described our invention and the best way known to us of carrying the same into effect, we desire it to be understood, in conclusion, that we do not restrict ourselves to the particular details of construction hereinbefore set forth in explanation of the manner in which our improvements may be carried into effect, for manifestly the same can be considerably varied without departure from the principle of the invention; but

What we claim as new, and desire to secure by Letters Patent, is as follows:

1. The slotted ratchet-hub and the spring-

tooth inserted and held therein, in combination with the stationary ratchet-plates and the pivot-bolt, substantially as and for the purposes hereinbefore set forth.

2. The slotted ratchet-hub having lug *e*, in combination with the spring-tooth inserted in the slot and notched to engage lug *e*, the pin or rivet *f*, by which the tooth is secured to the hub, the stationary ratchet-plates, and the pivot-bolt, substantially as and for the purposes hereinbefore set forth.

3. The harrow-frame composed of straps of zigzag form, in combination with individually hinged or pivoted spring-teeth located between the contiguous angles of adjoining straps, and pivot-bolts whereby both the teeth are held in place and the straps between which the teeth come are bound together, substantially as set forth.

4. The combination of the harrow-frame E, composed of straps bent into zigzag form, as described, the stationary ratchet-plates, the ratchet-hubs, the spring-teeth attached to said hubs, and the pivot-bolts by which both the hubs and stationary plates are held in place and the frame-straps are bound together, substantially as and for the purposes hereinbefore set forth.

In testimony whereof we have hereunto set our hands.

S. NEVIN HENCH.
WALKER A. DROMGOLD.

Witnesses:
DAVID O. PRINCE,
ARTHUR N. GREEN.