C. B. TOMPKINS.

Harrow.

No. 209,945. Patented Nov. 12, 1878.

Fig. 1.

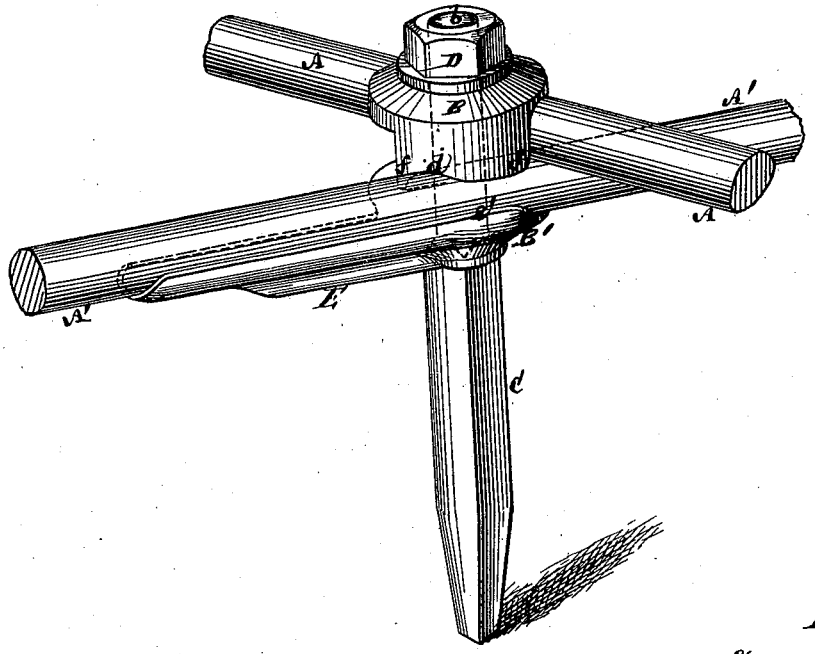


Fig. 2.

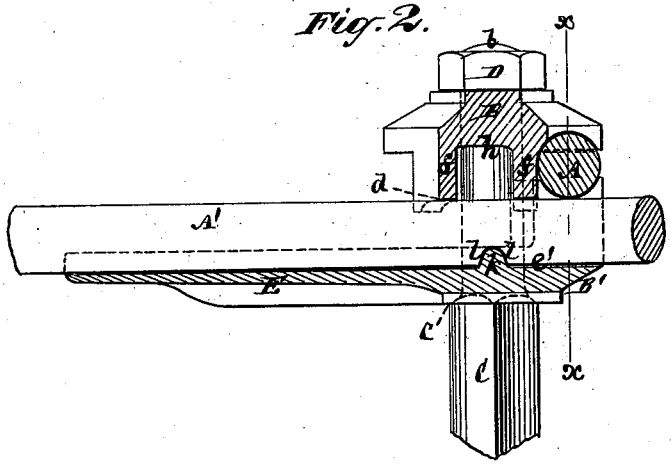
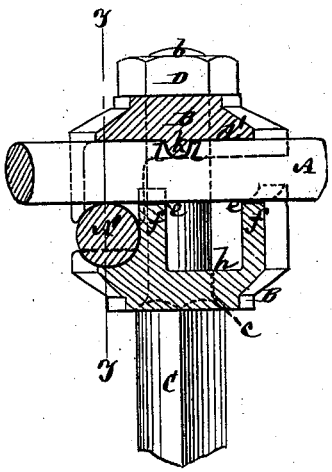


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

CORNELIUS B. TOMPKINS, OF ELMIRA, NEW YORK.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **209,945,** dated November 12, 1878; application filed October 21, 1878.

To all whom it may concern:

Be it known that I, CORNELIUS B. TOMPKINS, of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Harrows, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention relates to harrows having metallic frames composed of rods or bars, secured to their places or held in position where they cross each other by the same means which serve to hold the teeth of the harrow. These means, as described in Letters Patent No. 24,303, dated June 7, 1859, upon which invention this is an improvement, consist of upper and lower clamping-plates, perforated to receive the screw-shank of a tooth through hem, and formed with recesses on their contiguous faces to receive within or through them the bars of the frame, and so that on screwing up a nut on the outer end of the tooth-shank both the tooth and bars of the frame are secured in position.

The invention consists in a combination, with the harrow-teeth and with the clamping-plates, having recesses in them for reception of the rods or bars of the frame, of locking-stops or projections formed on or attached to said clamping-plates, and the rods or bars of the frame having corresponding locking recesses or stops for engagement with said stops or projections of the clamping-plates, to prevent endwise movement or rotation of the said rods or bars relatively to the said clamping-plates and teeth, whereby the entire frame is very materially strengthened, and the several parts are held in position in case of the nuts which secure the clamps, teeth, and bars becoming loose.

The invention also consists in a combination, with either or each of the clamping-plates, of a grooved projection or shoe, extending laterally from said plates, for strengthening and supporting the rods or bars of the harrow-frame.

In the accompanying drawing, Figure 1 represents a view, in perspective, of a harrow-frame, in part, and a harrow-tooth having my invention applied; and Figs. 2 and 3 are vertical sections of the same, in part, in planes at right angles with each other, as indicated by the lines *x x* and *y y*.

A A′ are the rods or bars of the harrow-frame, arranged to cross each other, and B B′ the upper and lower clamping-plates or devices by which said bars are held in position where they cross each other, and through each pair of which the screw-shank *b* of a harrow-tooth, C, passes, the lower clamp, B′, resting against a shoulder, *c*, at the foot of the shank, and the upper clamp, B, being forced down to its place by a nut, D, applied to the upper end of the tooth-shank.

The rods or bars A A′ are received within or through recesses *d d′* and *e e′* in the under face of the upper clamp, B, and upper face of the lower clamp, B′. The recesses *d* and *e* are formed in projecting portions *f* of said clamps, constituting bearings, for operation in connection with the recesses *d′ e′* to receive and hold the bars A A′ between and within them. These bearings are cut away intermediately of their length by means of recesses *h*, whereby each of said bearings becomes a divided one, which not only economizes metal, but admits of a steadier support for the rod or bar, and reduces the liability of the latter to tip or rock consequent on any irregularity of its surface as it comes from the rolls.

The grooves or recesses *d′ e′* in the clamps are constructed with locking stops or projections *k*, and the rods or bars A A′ with corresponding locking recesses or stops *l*, for engagement with the stops or projections of the clamps, to prevent slipping of the latter on the rods, or, which is the same thing, endwise movement or rotation of the rods or bars A A′ relatively to the clamps and teeth of the harrow, thus materially strengthening the frame and retaining the several parts in position in case of the nuts D, which secure the clamps, teeth, and bars, becoming loose. These several locking stops or recesses may be of any suitable form.

Either or each of the clamps B B′ is constructed with a grooved projection or shoe, E, extending laterally from said clamps and receiving the bar A or A′ within it. Such shoe-like projection, applied to the clamps, serves very materially to strengthen and support the rods or bars of the frame.

In the drawing only the lower clamp or clamping-plate, B, is represented as provided with said bar supporting or strengthening shoe; but the upper clamp, B, may also be similarly provided, or either clamp be thus constructed, as desired.

I claim—

1. The combination of harrow-teeth, the clamps B B′, having recesses for reception of the rods or bars A A′, locking stops or projections *k*, formed on or attached to said clamps, and rods or bars A A′, provided with recesses or stops *l*, arranged to engage with the stops or projections on said clamps, whereby the bars or rods are restrained from endwise movement or rotation relatively to the clamps and teeth, substantially as and for the purposes specified.

2. The combination, with either or each of the clamps B B′, of a grooved projection or shoe, E, arranged to extend laterally from one or each of said clamps, for strengthening or supporting the bars or rods of the harrow-frame, substantially as shown and described.

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Witnesses:

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