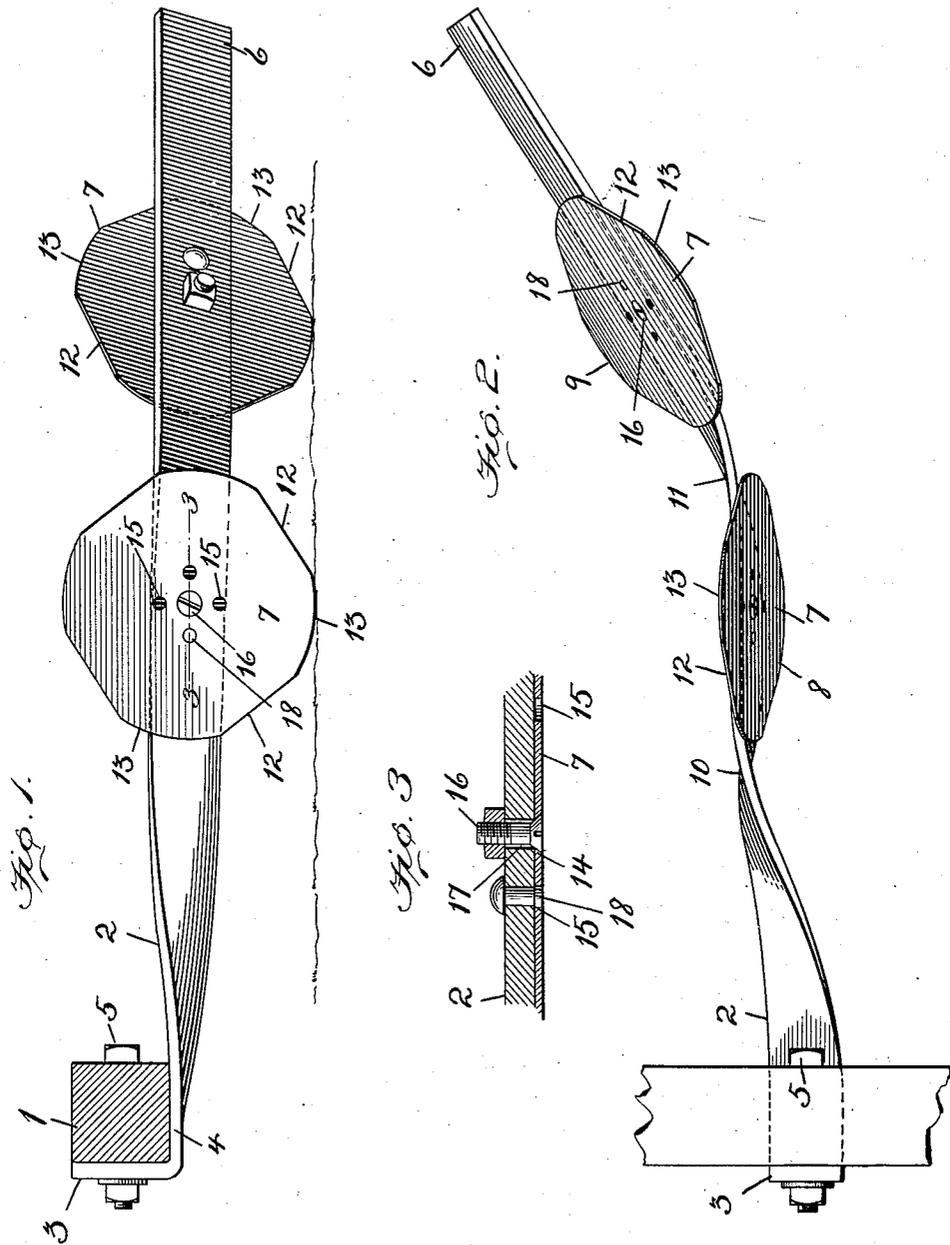


A. E. QUICKEL.
 HARROW TOOTH.
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1,007,604.

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Witnesses

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HARROW-TOOTH.

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To all whom it may concern:

Be it known that I, ALLEN E. QUICKEL, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Harrow-Teeth, of which the following is a specification.

This invention relates to improvements in harrow teeth and has particular reference to an improved arrangement of teeth and carrier therefor.

One object of the invention is to provide an improved construction of trailing carrier and teeth whereby the teeth may be readily detached when worn and new ones substituted.

Another object is to provide an improved construction of carrier which will not only serve as a support for the detachable teeth but will also serve to level the earth over which the teeth have traveled.

A further object is to provide an improved form of harrow tooth that will permit of adjustment with respect to the carrier whereby when one portion of the tooth edge has become worn the tooth may be turned to present an unworn edge thereby making it possible to utilize practically all edges of the tooth before it shall be necessary to throw it aside as useless.

Another object is to provide an improved construction of carrier and a plurality of independently-detachable teeth thereon and so related with respect to each other that one tooth may direct soil to one side while another may turn soil toward the other side.

With these and other objects in view the invention is illustrated in the accompanying drawing, wherein,

Figure 1 is a side elevation of one of the improved carriers with the teeth secured thereto. Fig. 2, is a top plan view of the same, and Fig. 3, an enlarged sectional detail through a portion of the carrier and a portion of a tooth showing the securing means,—the section being taken on the line 3—3 of Fig. 1.

Referring to the drawing the numeral, 1, designates what might be termed the gang-bar of a harrow which usually carries a plurality of trailing teeth or rotary disks, but which, in the present instance serves to sustain a plurality of rearwardly-projecting carrier bars, 2. These bars may be rigidly

secured in any suitable manner to the gang-bar, 1, but in the present instance they are shown as having up-turned front ends, 3, and a rearwardly-extending horizontal portion, 4, which embrace the front and bottom sides respectively of the gang bar. A bolt, 5, is passed through the up-turned front end, 3, of the carrier bar and also through the gang bar and serves to rigidly connect the two.

The carrier bar, in the present instance, is of uniform width between its attached end and its trailing free end, 6, and between said ends the bar carries a plurality of removable tooth plates, 7. These tooth plates are so attached to the carrier bar that the lower edge, 8, of one will extend below the said bar and incline laterally to one side while the lower edge, 9, of the next rearward tooth plate will also project below the said carrier bar and incline laterally in a reverse direction or toward the opposite side. To effect this inclination of the tooth plates, the carrier bar is provided with a plurality of twists or bends, 10, and, 11, respectively and the tooth plates are attached to the bar adjacent said twists or bends.

In practice it is preferred that the tooth plates have a disk form with a circumferential edge that has a plurality of straight portions, 12, and a plurality of curved portions, 13,—each curved portion being interposed between and connecting two straight portions whereby to form a plurality of available cutting edges around the entire edge of each tooth plate. Preferably the tooth plates have a central perforation, 14, and a plurality of perforations, 15, about said central perforation so that a bolt, 16, may be passed through the central perforation, 14, in the tooth plate, then through a perforation, 17, in the carrier bar and thus hold the tooth plate at the side of the carrier bar. In order to prevent rotation of the tooth plate during operation I provide the carrier bar with a stud or side projection, 18, which is so positioned with respect to the perforation 17, that it will enter one of the perforations, 15, in the tooth plate and thus lock the same in position after it has been adjusted.

It will be noted that the rear free end, 6, of the carrier bar projects beyond the rearward-most tooth plate and also extends

laterally to one side thereof. This end serves a useful function in that it will ride over the soil and serve to level the same.

By means of the construction shown the carrier bar will last indefinitely and the tooth plates alone may be readily removed when worn and new ones substituted at very little expense. If the tooth plates employed are of the disk form illustrated it will only be necessary to loosen the bolt, 16, give the plate a partial rotation to bring another perforation, 15, into register with the stud or projection, 18, and tighten the bolt again, whereupon an unworn and perfectly good edge will be presented for use.

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

1. The combination with a gang bar, of a carrying bar having one end secured to the gang bar and its other end free and at the rear of the gang bar,—said carrying bar having a plurality of twists therein and a tooth plate secured at the side of said carrying bar adjacent said twists.

2. The combination with a gang bar, of a carrying bar having its front end secured to the gang bar and projecting rearwardly therefrom; a plurality of tooth plates at the side of the carrying bar and the rear end of the carrying bar projecting rearwardly and beyond the rearward-most tooth plate.

3. The combination with a gang bar, of a carrying bar having its front end secured to the gang bar and projecting rearwardly therefrom; a plurality of tooth plates at the side of said carrying bar,—one tooth plate being at the rear of another and means for adjustably securing the tooth plates with respect to the carrying bar.

4. The combination with a gang bar, of a carrying bar having its front end secured to

the gang bar and projecting rearwardly therefrom; a plurality of flat tooth plates having perforations therein,—said plates having position one at the rear of another and at the side of the carrying bar, and means for securing the plates through said perforations.

5. The combination with a gang bar, of a carrying bar having its front end secured to the gang bar and projecting rearwardly therefrom; a plurality of tooth plates at the side of said carrying bar,—said tooth plates having a disk form with a central perforation and perforations at the side of said central perforation, and means coacting between the carrying bar and the central and side perforations of the tooth plates to rigidly secure the latter with respect to the carrying bar.

6. The combination with a gang bar, of a carrying bar of substantially uniform width from end to end and having a plurality of twists therein; a tooth plate rigidly and detachably secured to the carrying bar between the said twists and the end of the carrying bar projecting beyond and laterally from the tooth plate.

7. The combination with a gang bar, of a carrying bar having its front end secured to the gang bar and projecting rearwardly therefrom; a plurality of tooth plates at the side of said carrying bar,—said tooth plates having a circumferential edge with alternate straight and curved portions and means for adjustably and detachably securing the tooth plates to the carrying bar.

In testimony whereof I affix my signature in presence of two witnesses.

ALLEN E. QUICKEL.

Witnesses:

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EDWARD P. STAIR.