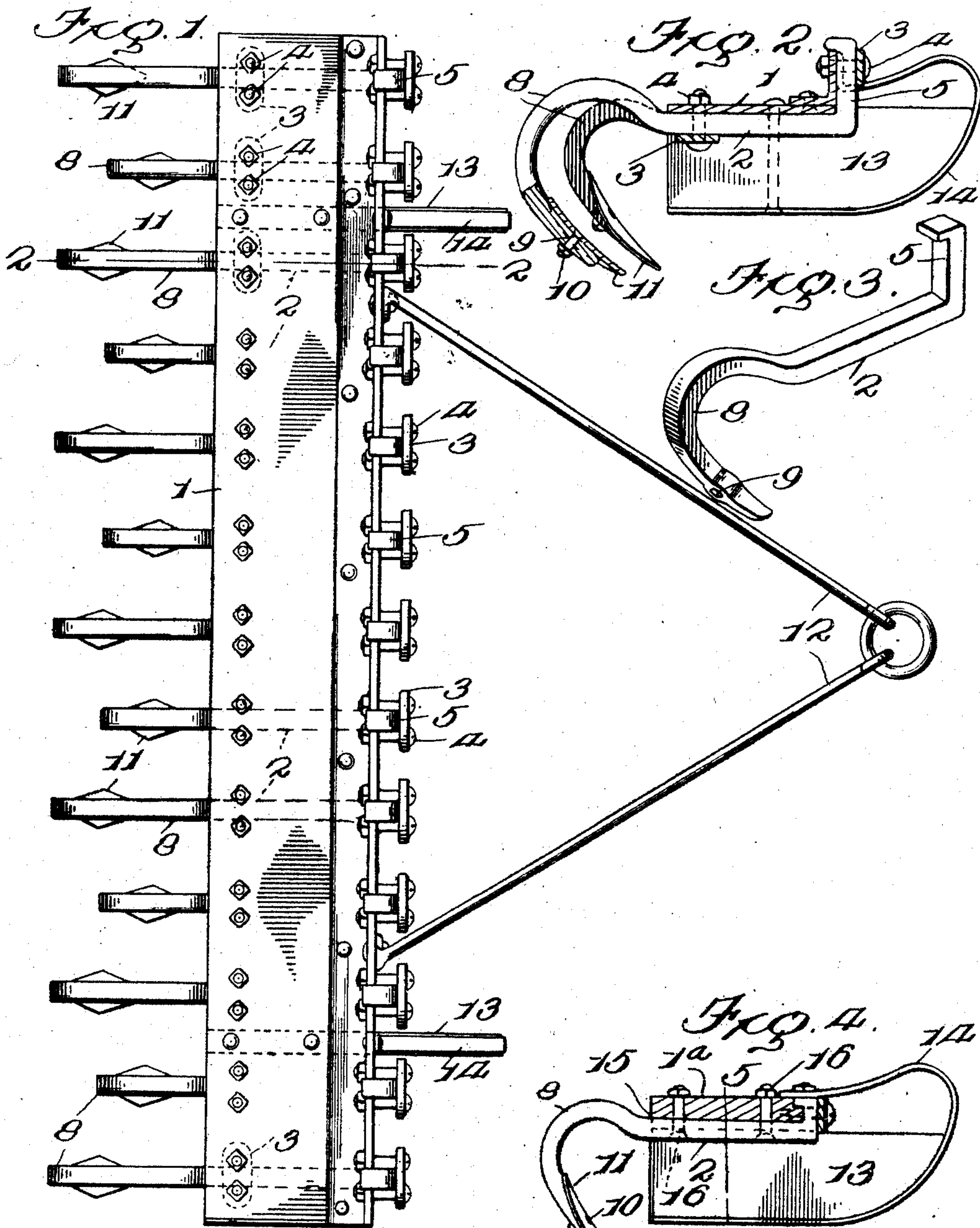


J. C. & H. O. WILLIAMS.
CULTIVATOR.

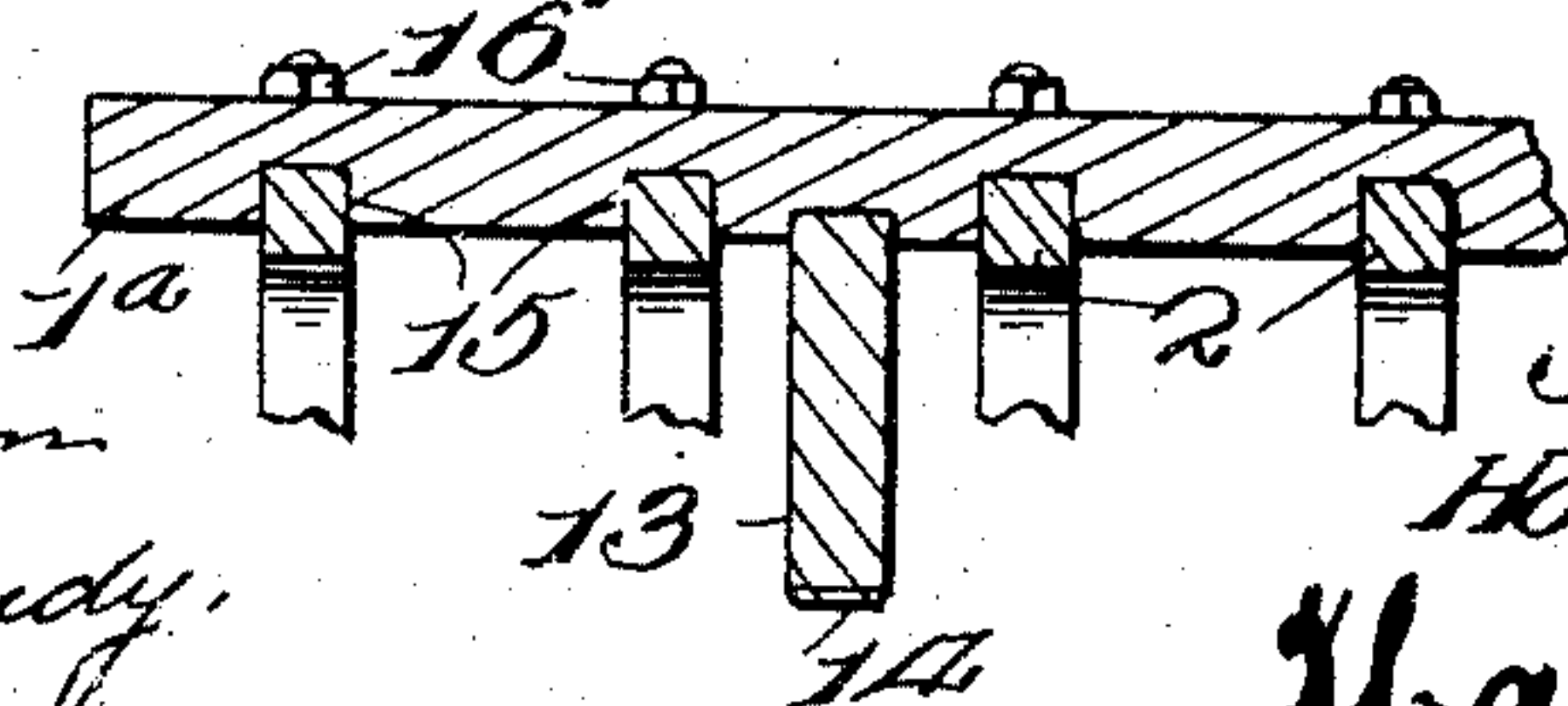
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Witnesses
W. J. Woodson
Cora N. Handy.



Inventors

John C. Williams
Howard Williams

W. A. Macy, Attorneys

UNITED STATES PATENT OFFICE.

JOHN C. WILLIAMS AND HOWARD O. WILLIAMS, OF ORANGE, CALIFORNIA.

CULTIVATOR.

No. 928,487.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN C. WILLIAMS and HOWARD O. WILLIAMS, citizens of the United States, both residing at Orange, in the county of Orange and State of California, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

This invention comprehends certain new and useful improvements in agricultural implements, relating more particularly to an improved cultivator, and the invention has for its object a simple, durable and efficient construction of device of this character which is particularly susceptible of use in citrus orchards or the like, and which admits of the cultivation being carried on beneath the trees, close up to the trunks thereof, without the liability of injuring the limbs or the fruit, the device possessing certain other advantages that will at once become apparent as the invention is hereinafter disclosed, over the cultivators in general use.

With this and other objects in view that will more fully appear as the description proceeds, the invention consists in certain constructions and arrangements of the parts that we shall hereinafter fully describe and then point out the novel features thereof in the appended claims.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is a top plan view of a cultivator embodying the improvements of my invention; Fig. 2 is a longitudinal section thereof, the section being taken on the line 2—2 of Fig. 1; Fig. 3 is a perspective view of one of the tooth-carrying members; Fig. 4 is a longitudinal section illustrating a modification hereinafter described; and, Fig. 5 is a transverse section of the modified form, the section being taken on the line 5—5 of Fig. 4.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

A cultivator constructed in accordance with our invention embodies a cross beam 1, which is provided at its forward edge with a vertically upwardly disposed flange. In the present instance the flange is constituted by

one member of an angle iron that is secured to the horizontal plate; however, it is to be understood that we do not limit ourselves to such an arrangement, but may form the flange integral with the plate, if desired. The cross beam carries a plurality of longitudinally disposed tooth-carrying members which are cast or otherwise formed of inflexible material, the tooth-carrying members each embodying a shank 2 that is arranged beneath the horizontal plate with its ends projecting beyond the edges thereof, as shown. The forward ends of the shanks are returned upwardly and constitute rearwardly facing hooks 5 that take over the vertical flange of the cross beam to assist in supporting the tooth-carrying members and to maintain the same against rearward displacement. The respective tooth-carrying members are further attached to the cross beam through the instrumentality of a plurality of clips which embrace the shanks 2 and the hooks 5, and which in the present instance embody yokes 3 and bolts 4, the latter being passed through the adjacent horizontal plate and the flange and being detachably fastened on the opposite side thereof by nuts or the like.

At the rear ends of the shanks, the material forming the tooth-carrying members, is curved upwardly above the plane of the horizontal plate, as shown, and is then returned downwardly and oppositely to the hooks 5 to constitute "goose neck" standards 8 which are apertured at their extremities, as indicated at 9, the alternate standards preferably terminating in advance of the others, whereby to support the teeth in transversely staggered relation.

Accommodated in the apertures 9 in the standards, are attaching bolts 10 that are designed to pass through intermediate portions of the teeth 11 which, in the present instance, are double-ended and which have their rear faces concave, as shown, so as to partially embrace the standards when the attaching bolt 10 is tightened, thereby preventing said teeth from turning about such bolt as a pivot, and maintaining the teeth securely in position without the necessity of employing a plurality of bolts for each tooth, as would manifestly weaken both the latter and the standard.

Attention is particularly directed to the fact that by virtue of employing the peculiar "goose neck" standards, the teeth 11 are

supported in rearwardly inclined relation to the ground, so that the points of the teeth will enter the same obliquely, as has been found advantageous in that the draft is materially decreased. Furthermore, since the standards curve upwardly above the plane of the horizontal plate, it is to be observed that space is afforded for trash that may have accumulated upon the surface of the ground, the trash being adapted to escape readily between the standards because of the staggered disposition thereof.

The device is designed to be drawn over the ground to be cultivated, by horses or other animals, the draft being applied to the cross beam 1 through the instrumentality of any suitable draft appliances such as hounds 12 which are connected together at their forward ends, as shown, and at their rear ends to the opposite ends of the cross beam 1. The cross beam is supported upon runners 13 provided near the opposite ends thereof, as shown, and protected from abrasive contact with the soil by metal shoes 14, the forward ends of which are extended upwardly and rearwardly beyond the runners and connected to the cross beam 1.

In another embodiment of the invention, illustrated in Figs. 4 and 5, the cross beam 1^a is constructed of a plank of suitable wood which is formed in its lower face and in its forward edge with grooves 15 for the accommodation of the shanks 2 and the hooks 5, the shanks being connected to the plank by means of bolts 16 passing therethrough, while the hooks 5 are retained in the grooves preferably through the instrumentality of glands or other suitable fastening means.

From the foregoing description, in connection with the accompanying drawing, it will be apparent that we have provided an improved cultivator which is particularly adapted for use in orchards or the like, and requires comparatively light draft, so as to be susceptible of being drawn by two horses; which embodies a plurality of tooth-carrying members that are rigidly connected to the cross beam in such a manner as to be susceptible of being readily detached when desired; which embodies to a marked degree, the characteristics of simplicity, durability and efficiency of construction and operation, and which consists of comparatively few parts that may be easily and cheaply manufactured and readily assembled.

Having thus described the invention, what we claim is:

1. In a cultivator, the combination of a cross beam consisting of a flat plate provided at its forward edge with an upturned flange, and a longitudinally disposed tooth-carrying member constructed of inflexible material and embodying a shank arranged below the flat plate and projecting forwardly therebeyond, the rear end of the shank being curved downwardly to constitute a tooth-carrying standard, and the forward end of the shank being returned upwardly and hooked over the flange of the cross beam to assist in supporting the member and to maintain the same against rearward displacement.

2. In a cultivator, the combination of a cross beam consisting of a flat plate provided at its forward edge with an upturned flange, a longitudinally disposed tooth-carrying member formed of inflexible material and embodying a shank arranged below the flat plate and projecting forwardly therebeyond, the rear end of the shank being curved downwardly to constitute a standard and the forward end of the shank being returned upwardly and hooked over the flange, and clips embracing the hook and shank and passed through the adjacent flange and plate and detachably fastened on the opposite side thereof.

3. In a cultivator, the combination of a cross beam, runners connected to the cross beam to support the same in proximity to the ground, a plurality of longitudinally disposed tooth-carrying members formed of inflexible material and embodying shanks arranged below and attached to the cross beam, the material forming the members being extended rearwardly beyond the cross beam and curved upwardly and then returned downwardly and obliquely forwardly to constitute standards, and teeth attached to the extremities of the standards, alternate standards terminating in advance of the others, whereby to support the teeth in transversely staggered relation.

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

JOHN C. WILLIAMS. [L. s.]
HOWARD O. WILLIAMS. [L. s.]

Witnesses:

FRANK W. BUTLER,
CHARLES DUFFORD.