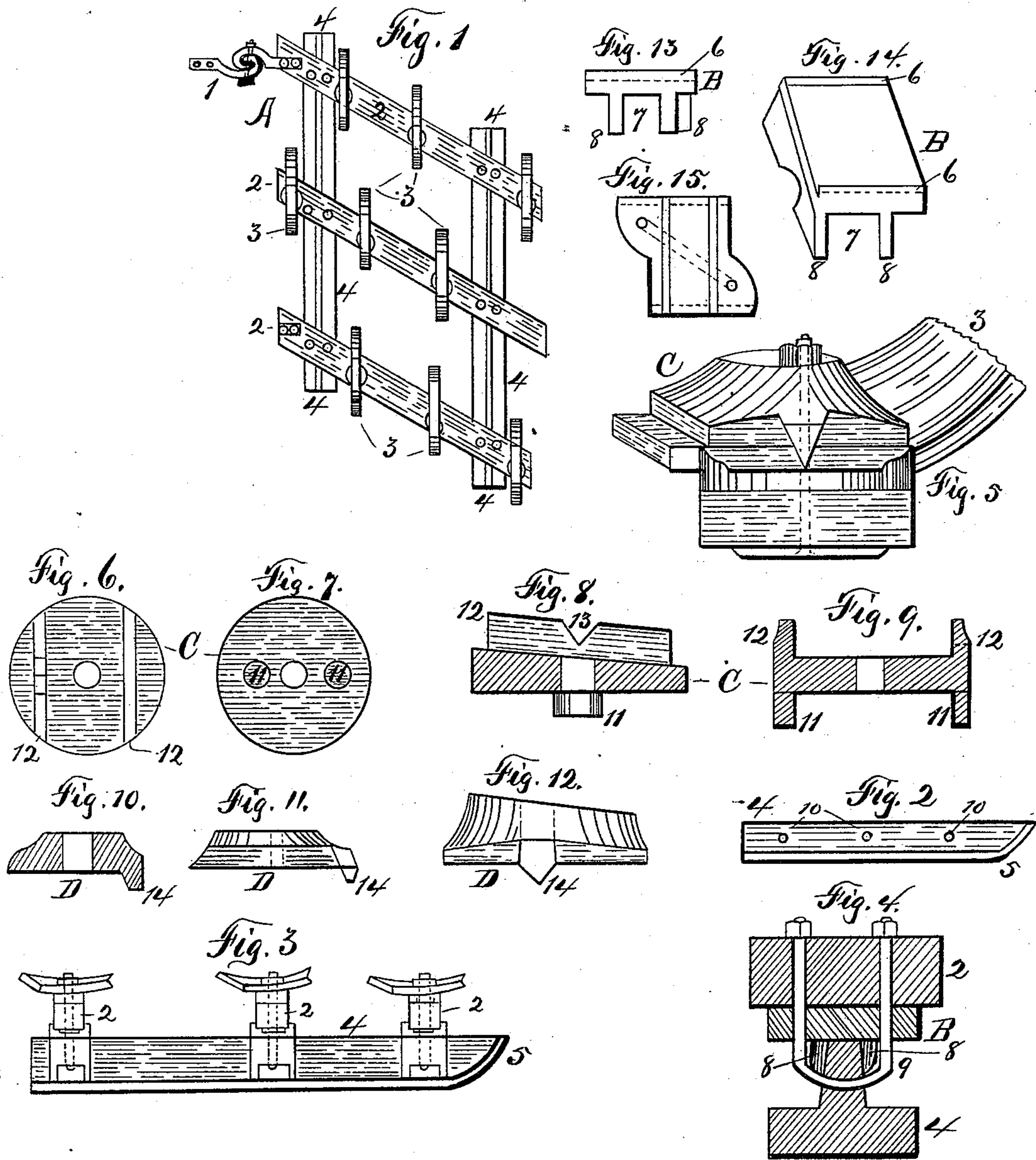


(No Model.)

W. V. WALKER.  
HARROW.

No. 426,695.

Patented Apr. 29, 1890.



Witnesses

H. P. Demson

Frank A. Halliburton

Inventor

William V. Walker

Per Smith & Demison  
his Attorneys



# UNITED STATES PATENT OFFICE.

WILLIAM V. WALKER, OF MORAVIA, NEW YORK.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 426,695, dated April 29, 1890.

Application filed March 11, 1889. Serial No. 302,849. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM V. WALKER, of Moravia, county of Cayuga, in the State of New York, a citizen of the United States, have invented certain new and useful Improvements in Harrows, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of one section of the harrow. Fig. 2 is a side elevation of a part of a lower frame-bar. Fig. 3 is a side elevation of the lower frame-bar with the upper frame-bars and teeth in position thereon. Fig. 4 is an end view, partially sectional, of the lower frame-bar and upper frame-bar and the fastening mechanism. Fig. 5 is an enlarged detail of the tooth-fastening. Fig. 6 is a top plan view of the plate under the tooth. Fig. 7 is the bottom plan view of the same. Fig. 8 is a side elevation of the same. Fig. 9 is a vertical section of the same. Figs. 10, 11, and 12 are details of the top washer. Figs. 13, 14, and 15 are details of the plate used in the connection between the upper and lower frame-bars.

My invention relates to the construction of spring-tooth harrows; and my object is to improve the construction of the harrow, in the mode of attaching or securing the teeth adjustably, and in the construction of the frame upon which the teeth are mounted.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims annexed.

It is constructed as follows:

A represents a section of a harrow, which is connected to the other section by a double-hook hinge-joint 1, and in which 2 2 are the frame-bars, usually of wood, 3 3 are the teeth, of ordinary spring-tooth construction, and 4 4 are lower frame-bars, constructed of angle-iron and bent upward or scarfed off on a curve or bevel, as at 5, upon their front ends.

B is a clamp-piece, provided with ribs 6 upon its upper side, between which the bars 2 fit, and upon its lower side is provided with a slotway 7, created by the ribs 8, running in opposite direction to the ribs 6, and the vertical part of the angle-iron 4 fits into the slotway 7, and 9 is a clip or bent bolt fitting

through holes 10 in the angle-iron and upward through the frame-bar 2, and thus securing the angle-iron shoes or lower frame-bars to the upper frame-bars, and, the front ends of the bars 4 being beveled, the harrow, when in use, will ride upon the ground upon the angle-iron shoes. It will thus be seen that my harrow-frame consists, simply, of the bars 2 and shoes 4, secured together.

To secure the teeth in position upon the top of the bars 2, I first place upon the bar a washer C, provided on its lower face with studs 11, fitting in holes or recesses in the top of the bar, to prevent it from twisting, and the upper face is provided with two parallel ribs 12, between which the tooth fits, and one of them is provided with a notch 13, and the upper face between these ribs is inclined, as shown in the drawings, for reasons hereinafter specified.

D is the top washer, fitting upon the top of the tooth and partially at least between the flanges 12, and it is provided on one side with a downwardly-projecting stud 14, of a shape corresponding to the notch 13, in which it fits and prevents any twisting of this washer, and the top face of this washer is beveled to correspond with the bevel of the plate C. A bolt 15 is inserted through the frame-timber 2, upward through the plate C, through a hole in the tooth, and through the washer D, and when screwed up locks all these parts securely together. It will be observed that when the bevels of the plate and washer slant forward the point of the tooth will be correspondingly raised, and that when the plate and washer are reversed so as to slant backward the point of the tooth will dig correspondingly deeper into the soil, thus adjusting the depth to which the tooth will cut.

What I claim is—

1. A harrow-frame consisting of upper frame-bars resting upon a plate, a plate provided with parallel ribs across its lower surface, and angle-iron lower frame-bars fitting between the sides of the slot in the plate, and a bolt passing through the upper frame-bar, the ribs on the lower face of the plate, and the rib of the angle-iron, as set forth.

2. The combination, with the tooth and the upper frame-bar of the harrow, of a plate fit-

ting upon top of the frame-bar and provided  
with an inclined upper face, and parallel ribs,  
notched as shown, and a washer provided  
with a stud fitting into the notches in the ribs  
5 of the plate and having an inclined top, and  
a bolt passing through the frame-bar, the  
plate, the tooth, and the washer, as set forth.

3. A harrow-frame consisting of parallel  
lower frame-bars of angle-iron scarfed off upon  
10 their front ends, a clamp having longitudinal  
ribs across its lower face fitting over the rib  
of the angle-iron and having transverse up-

ward flanges, between which the upper frame-  
bar fits, and an upper frame-bar, and a bolt  
passing through the rib of the lower frame- 15  
bar, the clamp, and the upper frame-bar, as  
set forth.

In witness whereof I have hereunto set my  
hand this 5th day of March, 1889.

WILLIAM V. WALKER.

In presence of—

WILLIAM FITTS,  
JAMES MACKIE.