E. L. HAGAR.

HARROW

No. 12,059. Patented Dec. 12, 1854.

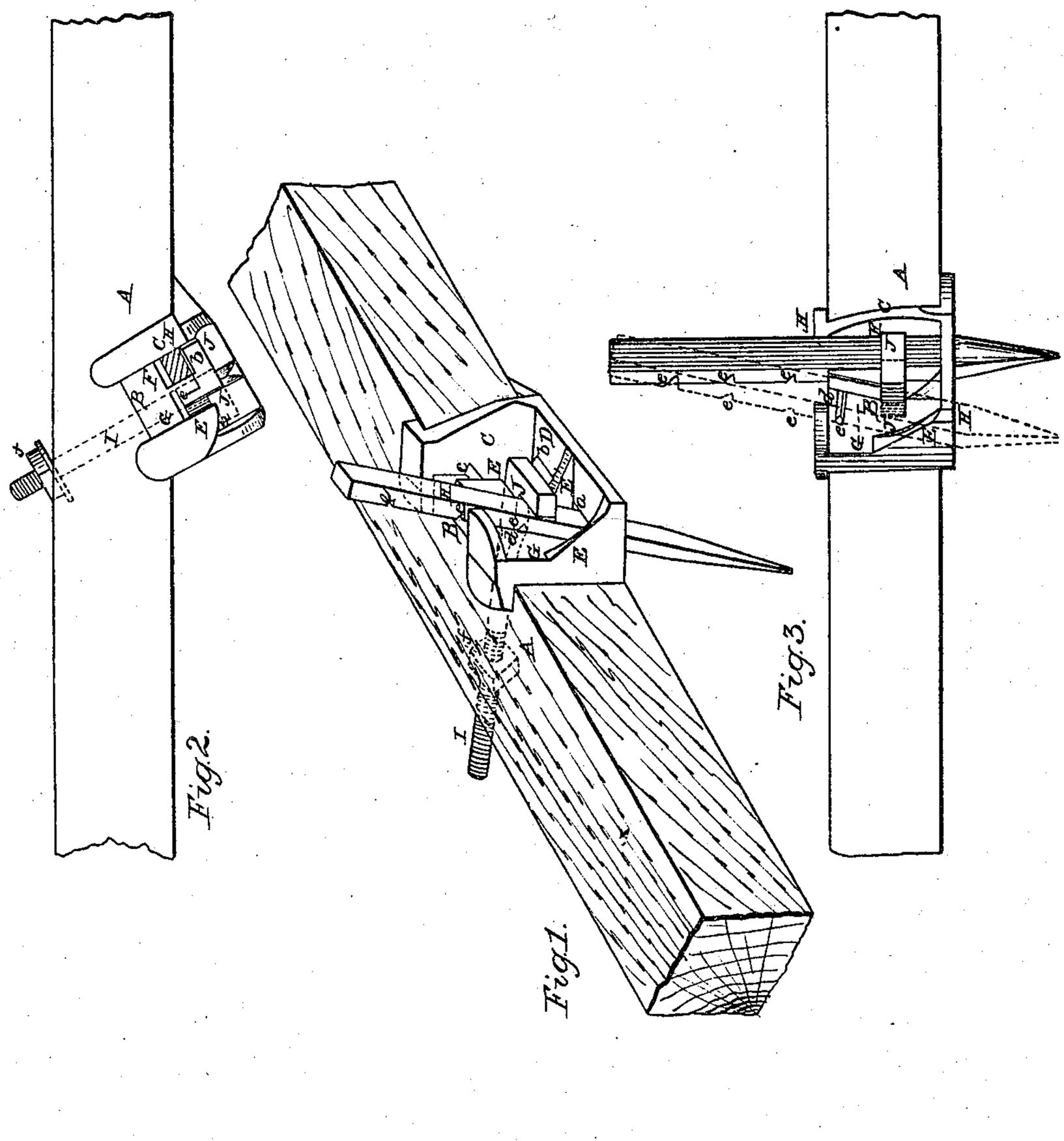

Fig.2. Fig.1. Fig.3.

UNITED STATES PATENT OFFICE.

E. L. HAGAR, OF FRANKFORT, NEW YORK.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **12,059**, dated December 10, 1854.

To all whom it may concern:

Be it known that I, E. L. HAGAR, of Frankfort, in the county of Herkimer and State of New York, have invented a new and useful Improvement in the Mode of Securing and Setting Harrow-Teeth; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a section of a harrow-frame with a tooth secured to it after my method. Fig. 2 is a plan or top view of the same. Fig. 3 is a side elevation.

Similar letters of reference in each of the several figures indicate corresponding parts.

This improvement relates to a new method of securing the teeth on harrow-frames, and also, in connection with the same, to a method of rendering them capable of being adjusted from a vertical to an oblique position, and of being set to any depth desired.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents a section of a harrow-frame.

B C D E E′ is a metal casting set in an inclined recess cut in the inner edge of section A, as shown. This casting is provided with two square holes, *a b*, in its lower horizontal portion, D, one running in a vertical and the other in an oblique direction. The projecting parts B C E of the casting form two grooves, F G, of similar shape and size as the holes *a b*, one of which runs in an oblique direction in line with the hole *a* and the other in a vertical direction in line with the hole *b*.

On the plate B, forming the back sides of the grooves F G, tongues *e d* are cast. The tongue *e* runs at right angles to the groove F and that *d* at right angles to the groove G. These tongues enter notches cut in the sides of the harrow-teeth and aid in keeping said teeth in place.

H is a harrow-tooth. It is made square or many-sided. *e e e* are the adjusting-notches or transverse grooves which are cast in one of the sides of the tooth. These notches receive the tongues, as represented. The tooth H, when it is to be set obliquely, is passed through the hole *a* and fitted, as shown in Figs. 1 and 3, in the groove G, and when it is to be set in a vertical position is passed through the hole *b* and fitted in the groove F, as shown in Fig. 3.

I J is a clamp or elbow-shaped screw-bolt, which passes through the plate B of the casting, and also through the harrow-frame, as represented in Figs. 1 and 2. This bolt, as it has a hook, J, on its inner end, serves for locking the harrow-tooth in either of the grooves of the casting, and also, as said screw passes entirely through the casting and frame A, it serves also for locking the casting firmly to the frame A.

f is a nut on the outer end of the screw-bolt. This nut, by being turned, causes the hook on the screw-bolt to bear against the tooth, and thereby causes the parts to be firmly clamped together, as will be evident from the drawings. The screw-bolt I J is so arranged in relation to the two grooves being between them that its hook J serves for locking the tooth H in both the positions described, it only being necessary to loosen the nut and turn the bolt sufficiently to bring the hook from the position shown in black in Figs. 1 and 3 to the position shown in red in same figures.

It is by providing the casting with two grooves—one oblique and the other straight—that the harrow-tooth can be adjusted from a vertical to an oblique position, and vice versa; and, also, it is by providing the tooth with a series of notches, *e e e*, that it can be set to any depth desired.

Making harrow-teeth adjustable as described is an important idea, for in case their points are broken off they can be sharpened and the teeth lowered so as to stand even with the others; and also, by securing the teeth to the frame as described, they can, in case they are broken so as to require to be replaced by new ones, be removed with ease and facility and others secured in their places with like ease and facility.

It is also an important idea, in connection with the adjusting arrangement, to have the teeth capable of being set straight or oblique, for in case it is desired to harrow shallow-plowed soil, then the teeth can be set straight, and in case it is desired to harrow soil which is plowed to a greater depth, then the teeth can be set obliquely, and also lowered to the

depth desired. By setting the teeth obliquely they enter the soil more readily.

What I claim as my invention, and desire to secure by Letters Patent, is—

The manner herein shown and described of securing harrow-teeth to the frame A, in combination with the means employed for making said teeth capable of being adjusted from a vertical to an oblique position, and of being set to any depth desired, for the purposes set forth.

E. L. HAGAR.

Witnesses:
ELY T. MARSH,
HENRY D. MARSHALL.