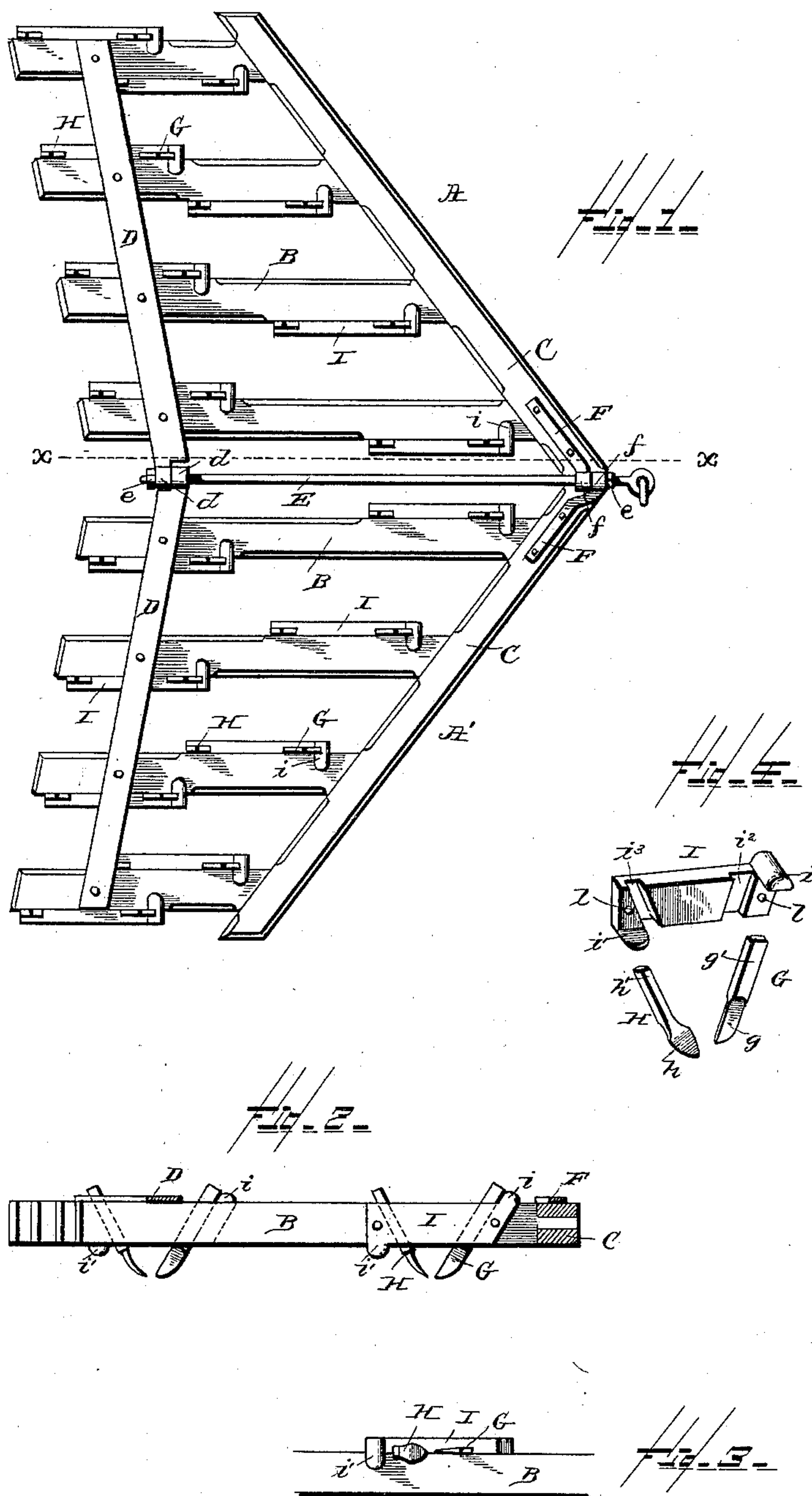


(No Model.)

M. J. FRANK.
HARROW.

No. 409,953.

Patented Aug. 27, 1889.



Witnesses

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MARCUS J. FRANK, OF EMMETT, OHIO.

HARROW.

SPECIFICATION forming part of Letters Patent No. 409,953, dated August 27, 1889.

Application filed April 29, 1889. Serial No. 308,940. (No model.)

To all whom it may concern:

Be it known that I, MARCUS J. FRANK, a citizen of the United States of America, residing at Emmett, in the county of Paulding and State of Ohio, have invented certain new and useful Improvements in Harrows; of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvement in harrows peculiarly adapted for use in sod ground; and it consists in the construction and combination of parts, which will first be described in connection with the accompanying drawings, and then pointed out in the claims.

Figure 1 is a plan view of my harrow. Fig. 2 is a sectional view of the same, taken on the line $x x$ of Fig. 1, showing the form of the colters and the harrow-teeth and their positions relatively to each other. Fig. 3 is an under side plan view of one of the parallel beams, showing the relative positions of the points of the colters and teeth. Fig. 4 is a detail perspective view of the clamping-bracket, a colter, and a tooth.

I prefer to construct the harrow-frame in two sections $A A'$, hinged together, so that one section may pass an obstruction or over uneven ground without interfering with the successful operation of the other. Each section is composed of any number of parallel beams B , which gradually increase in length toward the center of the frame, a front beam C , into which the front ends of the parallel beams B are framed, and a metallic cross-piece D , bolted to and uniting the beams B near their rear ends, the inner end of each cross-piece being formed with a loop d . The sections are hinged together on the draft-rod E , which passes through loops d and also through similar loops f , formed on the meeting ends of two metallic straps F , secured to the upper side of the front beams C , nuts e on the draft-rod serving to secure it in place. As thus constructed, it will be observed that the front of the frame is given a V shape, and also that the beams B are parallel in the line of travel of the harrow.

G represents a colter the blade g of which is comparatively thin and sharp, while its

shank g' is of sufficient thickness to give it the required strength, and of a shape to neatly fit the recess formed for its reception in the clamping-bracket.

H represents a harrow-tooth whose blade h is flattened and pointed and also slightly curved forward. In other words, for the purpose of concise description, it may be said to be trowel-shaped. Its shank h' , like the shank of the colter, is made of a size and shape to withstand strain and to fit the recess formed for it in the clamping-bracket.

I is a metallic clamping-bracket for securing the colter and the tooth to the parallel beam. On its upper edge, at its front end, it is provided with an integral inwardly-projecting lug i , designed to rest on the top of the beam, and on its lower edge, at the opposite or rear end, it is provided with a similar lug i' , for resting against the under side of the beam. As the leverage exerted by the colter and tooth when in use would tend to throw the front end of the bracket downward, and thus wrench the fastening-bolts of the bracket, these lugs serve a very useful purpose in holding the bracket in its proper horizontal position. In the inner side of the bracket are formed recesses $i^2 i^3$, the former being for the reception of the colter-shank and the latter for the reception of the tooth-shank. These recesses slope downward toward each other in such a manner that when the colter and tooth are in place their points will be but a short distance apart, as seen in Figs. 2 and 3, and are of such size that the shanks will fit neatly therein, their depth being nearly equal to the thickness of the shanks. Holes l are formed in the bracket, through which it may be bolted to the beam to secure the colter and tooth in place.

As will be seen in Fig. 1, I attach a colter and a tooth to each end (but on opposite sides) of each of the parallel beams B , whereby the cutting-edges of the colters are in the line of draft of the harrow; but the teeth, being flat and pointed, as above stated, are set transversely of the line of cut of the colters, with their points in that line, as shown in Fig. 3.

My harrow constructed as above described is admirably adapted for use in plowed sod-land, as it will thoroughly cut and disinte-

grate the soil without throwing the sod back into its original position.

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

1. In combination with a harrow-frame, a colter, a tooth, and a bracket for securing the colter and tooth to the frame, said bracket having a laterally-projecting lug on its upper edge at its front end, a similar lug on its under edge at its rear end, recesses on its inner side for the reception of the shanks of the colter and tooth, and bolt-holes through which to pass the bolts for securing it to a beam of the frame, substantially as described.

2. A harrow having a number of beams which are parallel in the line of its travel, to each of which, on opposite sides, are secured a colter and a tooth, which are so positioned that the tooth will follow in the line of cut made by the colter, the tooth and colter being secured by a single bracket, substantially as described.

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

MARCUS J. FRANK.

Witnesses:

IDA E. STOKY,
W. D. HILL.