

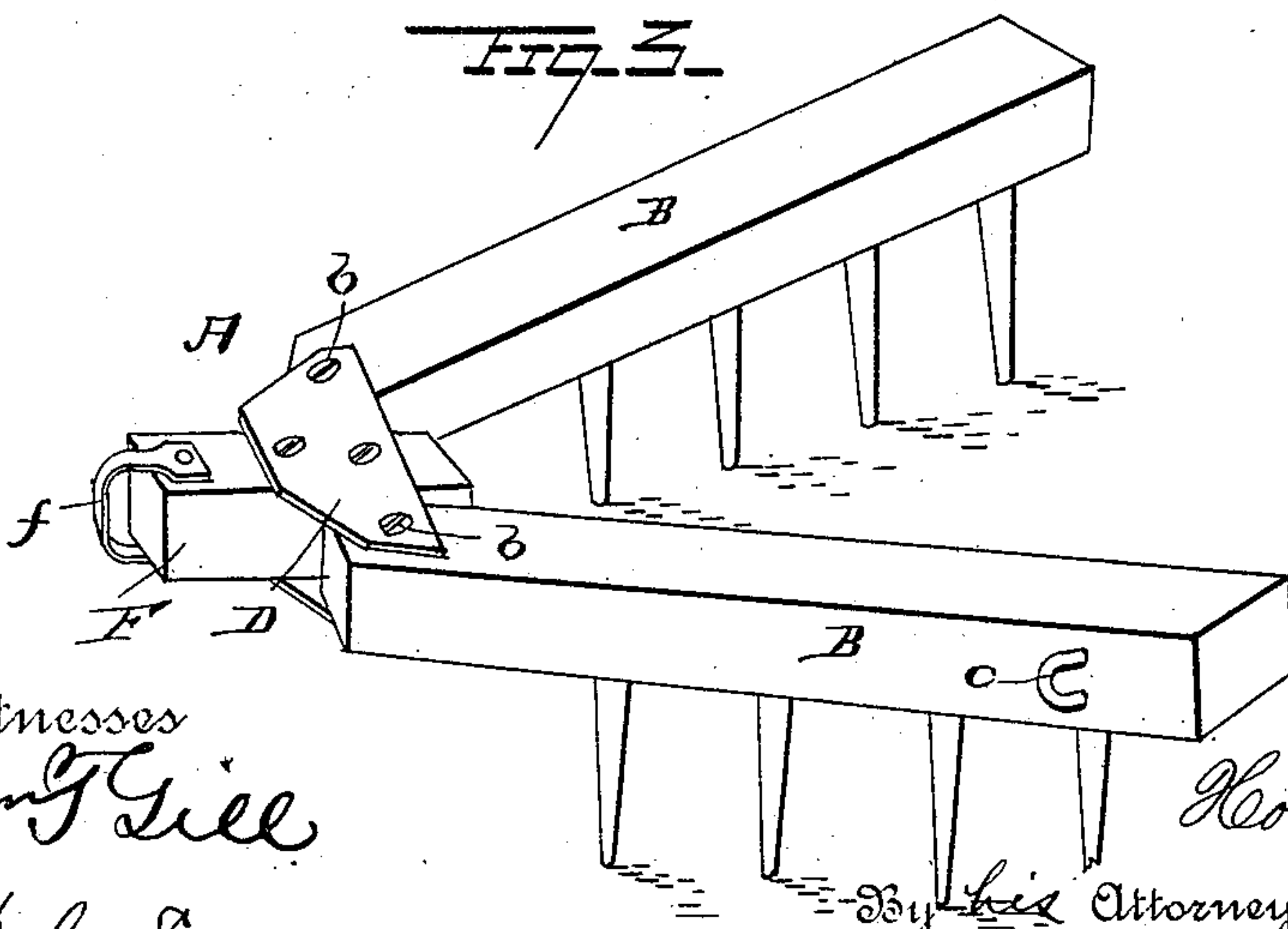
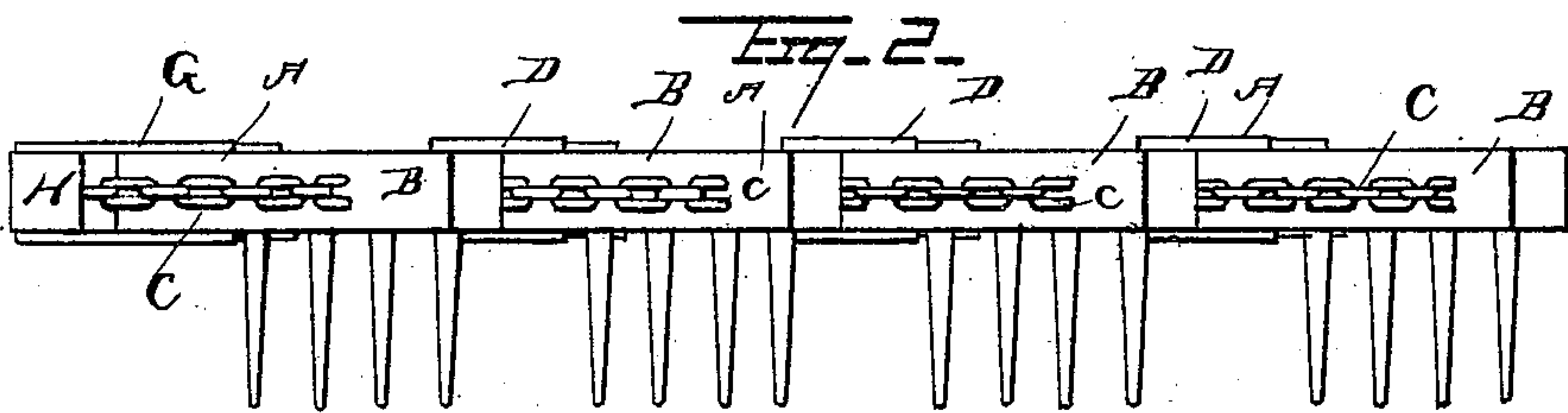
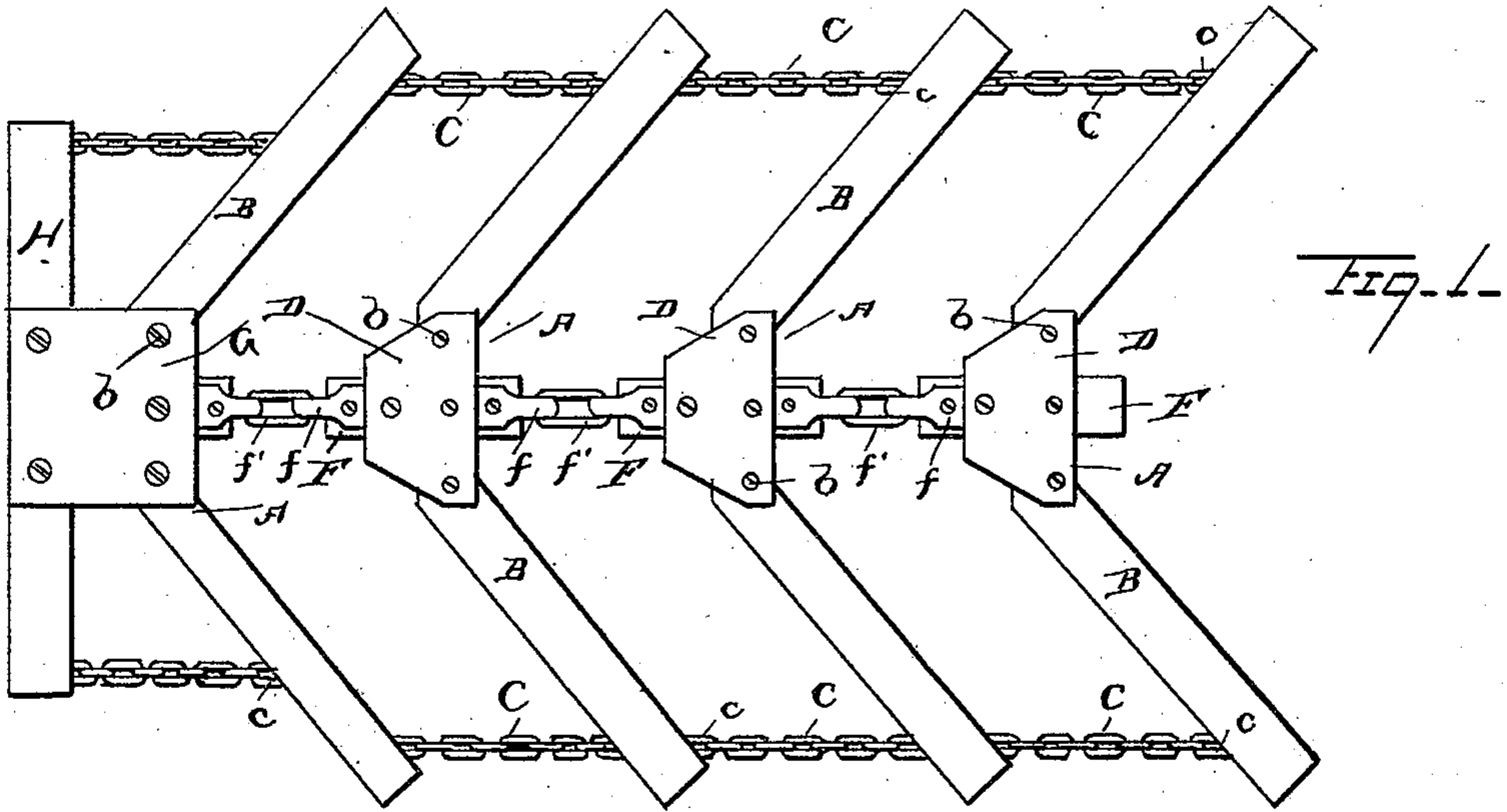
(No Model.)

H. M. STRANGE.

HARROW.

No. 346,959.

Patented Aug. 10, 1886.



Witnesses

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# UNITED STATES PATENT OFFICE.

HOWELL MARSHALL STRANGE, OF BEAVER VALLEY, ALABAMA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 346,959, dated August 10, 1886.

Application filed May 26, 1886. Serial No. 203,321. (No model.)

*To all whom it may concern:*

Be it known that I, HOWELL MARSHALL STRANGE, a citizen of the United States, residing at Beaver Valley, in the county of St. Clair and State of Alabama, have invented a new and useful Improvement in Harrows, of which the following is a specification.

My invention relates to improvements in harrows; and it consists of the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

The object of my invention is to provide an improved harrow which shall be capable of movement so that its teeth can act upon or scrape the soil, whether it is level or uneven, and thus more effectually and thoroughly harrow the ground; to provide means by which the beams of the harrow can be extended or spread laterally, to adapt them to act upon a greater surface or area of soil; to provide novel and effective means for connecting the beams of each section of the harrow together, and, finally, to provide effective means for connecting the harrow-sections together.

In the accompanying drawings, Figure 1 is a top plan view of a harrow embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged perspective view of one of the sections of the harrow.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the sections of my improved harrow, which are preferably four in number, although the number can be varied without departing from the principle of my invention. Each of these sections A of the harrow comprise two beams or bars, B, which are arranged at an angle with relation to each other, so that they approximate the shape of the letter V, and the sections are connected or arranged with relation to each other so that their apices extend in one direction only, the said apices being arranged a short distance from and out of contact with the sections adjacent thereto, as will be clearly seen by reference to Fig. 1 of the drawings.

At their contiguous ends the beams B of the harrow-sections are connected to coupling-plates D by means of through-bolts b, which pivotally connect the beams to the coupling-

plates, so that they can move freely with respect to each other and the said plates. The outer ends of the beams of each section are flexibly connected to the ends of the beams adjacent thereto by chains, ropes, or other like means, c, which are connected to eyes, staples, or the like, e, which are rigidly secured in place on the beams of the sections.

The coupling-plates E are bolted rigidly to and carried by short bars or beams F, which are arranged between the contiguous ends of the inclined beams, and the said short beams are arranged in line with each other throughout the length of the harrow. The ends of the short beams F are provided with loops, eyes, rings, or the like, as at f, and these loops are connected by means of a link or short chain or rope, f', which is secured to two adjacent eyes, f, throughout the length of the harrow. It will thus be seen that the short beams F are connected flexibly together, so that they can move with the harrow-sections, that the contiguous ends of the beams of each section are pivotally connected to the coupling-plate between the said beams of the sections, and, further, that the outer ends of the beams of each section are flexibly connected to the sections adjacent thereto. By thus constructing the harrow of the independent sections and flexibly connecting the same together the harrow will accommodate itself to any unevenness in the soil or ground and cause the teeth of the sections to act upon all parts of the ground over which the harrow traverses, and more effectually prepare the land.

The front section of the harrow is connected by a plate, G, with a draft bar or beam, H, the plate G being rigidly and immovably connected to the draft-beam, and the contiguous ends of the inclined beams of the front section being pivotally connected to the said plate, so that the beams can move freely, for the purpose set forth.

A draft-pole and the whiffletrees are connected to the draft bar or beam, as will be readily understood.

The free ends of the inclined beams of the harrow-sections can be extended or separated farther apart by lengthening the cords or chains that connect them together, so that they will act upon a greater area or surface of



the ground, and they can be readily drawn together or toward each other by shortening the chains or ropes.

5 The harrow is simple and strong in its construction, thoroughly effective in operation, and cheap and inexpensive of manufacture.

Slight changes in the form and proportion of parts can be made without departing from the principle of my invention.

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

1. The combination of the inclined beams of the harrow-section, a short bar intermediate  
15 of the contiguous ends of the beams, a coupling-plate carried by the bar, and having the inner ends of the beams pivoted thereto, and means for connecting the ends of the short beam to the harrow-sections adjacent thereto,  
20 substantially as described.

2. The combination of the harrow-sections arranged in series, and each comprising the inclined beams, a short beam intermediate of the inner ends of the beams of the sections, a

coupling-plate rigidly secured to the short intermediate beam, and having the inner ends  
25 of inclined beams pivoted thereto, links intermediate of the ends of the short beams, and an adjustable cord or chain connecting the outer  
ends of the inclined beams together, the short  
30 intermediate beams being arranged longitudinally of the harrow and in line with each other, substantially as described.

3. In a harrow, the combination of the sections, each comprising the inclined beams and  
35 the short beams intermediate of the inner ends of the inclined beams, the short intermediate beams being arranged in line and connected with each other, and connections between the free ends of the inclined beams, sub-  
40 stantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HOWELL MARSHALL STRANGE.

Witnesses:

JOHN W. INGER,  
JAMES T. GREENE.