

No. 640,089.

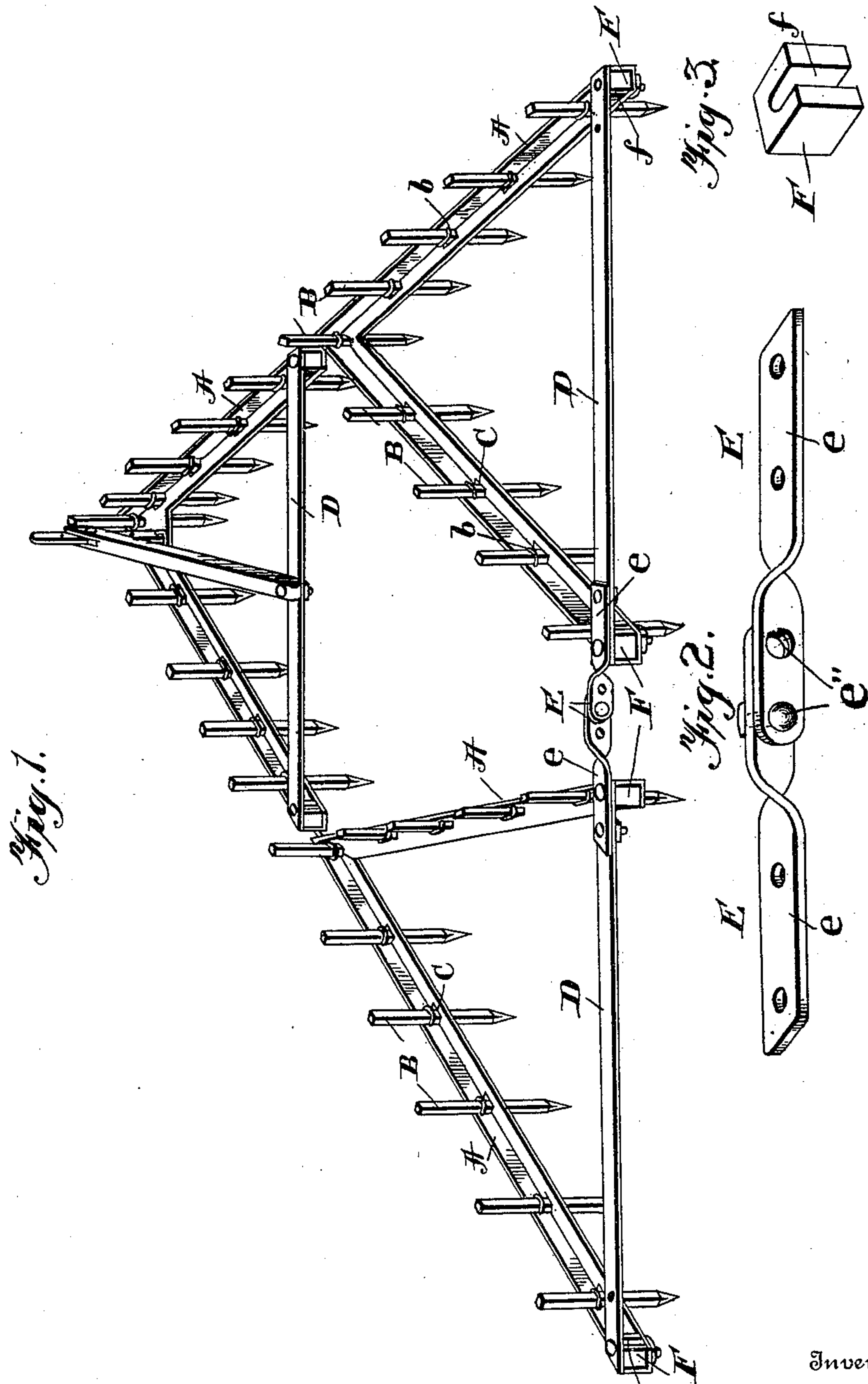
Patented Dec. 26, 1899.

J. H. BROWN.  
HARROW.

(Application filed Apr. 21, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses  
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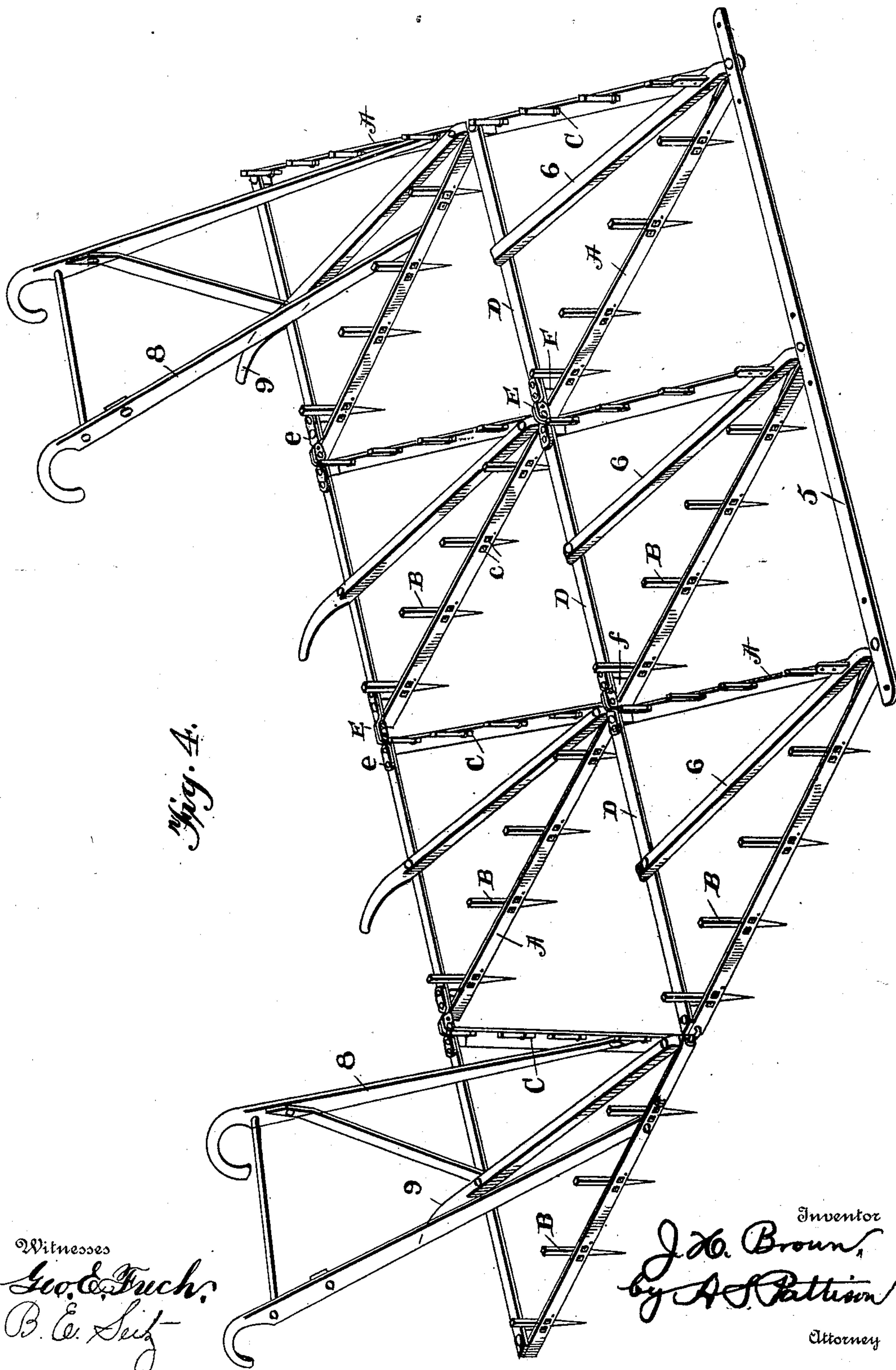
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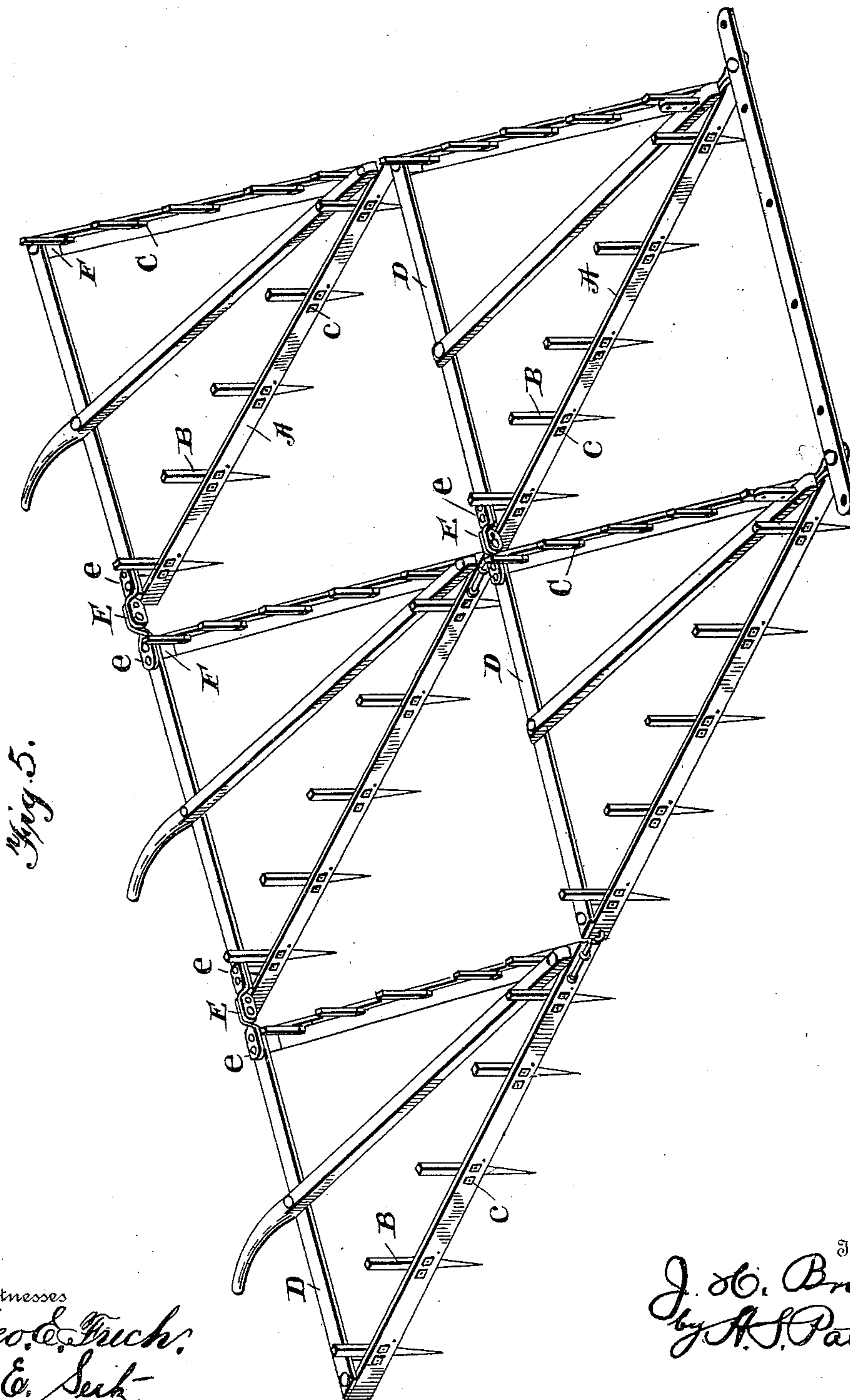
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

JOHN H. BROWN, OF RURAL RETREAT, VIRGINIA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 640,089, dated December 26, 1899.

Application filed April 21, 1898. Serial No. 678,389. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. BROWN, a citizen of the United States, residing at Rural Retreat, in the county of Wythe and State of Virginia, have invented new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to improvements in harrows, and pertains to means for adjusting the teeth thereof and for connecting the adjacent ends of separate sections, all of which will be fully described hereinafter and particularly referred to in the claims.

One object of my present invention is to provide an improved and simple means for changing the angle of or adjusting the teeth of a harrow.

Another object of my present invention is a specific means for connecting together the rear ends of sections of a harrow and more particularly that type of harrow consisting of a plurality of V-shaped sections.

In the accompanying drawings, Figure 1 is a perspective view of a harrow composed of a plurality of V-shaped sections, showing my invention applied thereto. Fig. 2 is an enlarged detached perspective view of the attaching-plate for the rear end of the sections. Fig. 3 is an enlarged detached perspective view of a casting for tilting up or supporting the rear cross-bar of the section. Fig. 4 is a perspective view of my harrow, showing a plurality of sections united so that they may have independent movement or be rigidly connected. Fig. 5 is a perspective view of a plurality of harrows and which is a modification of Fig. 4 in respect to the number of sections used.

Referring now to the drawings, A indicates an L-shaped angle-iron, of which the harrow-frame is constructed; B, the teeth, which are of the spike type; and C, openings in the horizontal portion of the angle-iron. The teeth pass through the openings C and are clamped to the angle-iron in any desired manner and which forms no part of the subject-matter of this application.

By reference to Fig. 1 it will be seen that the harrow consists of a plurality of V-shaped sections adapted to be connected together in a way to form a harrow, and in this instance each V-shaped harrow has a cross-bar D, con-

necting its rear ends and placed upon the angle-iron of which the frame is formed, and at the rear end thereof are the blocks F, provided at their inner sides with vertical openings *f*. The object of these blocks is to support the bar D above the top of the angle-iron to permit a free passage of the trash under these bars. I also provide a means for connecting the adjacent rear ends of these sections, which means is adapted to be disconnected therefrom and to leave each harrow free to be used as a single harrow. This means consists of the plates E, having openings registering with openings in the bar D, whereby they may be bolted in place, the inner ends of these plates E being turned at right angles and forming vertical portions, which are provided with registering transverse openings *e''* for the insertion of a bolt or bolts. The operation and purpose of this part of my invention is to enable the adjacent rear ends of the sections to be connected together either rigidly or pivoted to permit them to swing. For instance, by using a single bolt, as shown in Fig. 2, the rear ends of these sections of harrows are connected together to swing vertically in respect to each other to follow the inequalities of the ground over which they are passing. It is frequently advantageous to rigidly connect these sections, whereby their combined weight will operate to more thoroughly pulverize the surface which is not provided with ridges. In this instance two bolts will be passed through the openings *e''* of these plates E, which, as will be readily understood, will prevent the harrows from having any pivotal action, and thus hold them rigid and firmly together. When it is desired to use the harrows as single harrows, these plates E are entirely detached therefrom, which leaves the harrows without any projecting portions at their rear ends.

In Fig. 4 I show a harrow consisting of seven sections, the sections being V-shaped, the same as those shown in Fig. 1, and having four at the rear and three in front, the forward ends of the three front sections being rigidly connected by means of a draft-bar 5. By reference to this figure it will be noted that I use a central front V-shaped section 6, having its rear end connected with the rear ends of the adjacent front sections through



the medium of the detachable plates before described, and which enables me to either make the attachment rigid or flexible, as before described. The use of this central harrow makes the harrowing of the complete combination equal throughout, and the center of the harrow breaks up the ground as thoroughly as the side sections of the harrow. To enable the front sections to be cleared of trash, the outside rear sections are provided with the handles 8, like unto plow-handles, and also with the rearwardly-extending arms 9 between the plow-handles, so that by placing the foot upon the rear ends of the arms 9 and bearing down upon the handles 8 the front ends of these side sections are lifted, and through the draft upon the draft-bar the front portion of the whole harrow is lifted, owing to the teeth of the rear sections being forced into the ground, thus for the instant stopping the harrow and causing a draft which will lift the front sections, as will be readily understood, for clearing the harrow. This construction, which enables the several sections to be detached and used as separate single harrows, also enables me to make a variety of combinations. In Fig. 1 is shown a combination consisting of three V-shaped harrows, and in Fig. 5 a combination of five V-shaped harrows, and in Fig. 4 a combination consisting of seven V-shaped sections. The combination in Fig. 4 may also be changed by taking out the central harrow 6, if desired, which will leave a combination of six V-shaped harrows, like that shown and described in my patent of April 13, 1897, bearing number 580,835. The combination shown in Fig. 4, however, overcomes a defect in that shown in the patent. Where a combination of six harrows is used, like that shown in Fig. 1 of the said patent, the central portion of the harrow does not as thoroughly harrow the ground as the five sections. By putting in, however, the section 6, as shown in Fig. 4, and making a seven-section harrow the central portion of the harrow harrows the ground as thoroughly as a five-section harrow.

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

1. A harrow comprising a plurality of independent V-shaped sections arranged side by side, the separated rear ends of the sections having connecting-bars resting on their upper sides, connecting members having horizontal portions lapping the connecting-bars and projecting vertical perforated portions, the side bars of the section the connecting-bars and the horizontal portions of the connecting members having registering bolt-

openings, and a detachable bolt passing through said openings and thus clamping all said members in position, substantially as described.

2. A harrow consisting of L-shaped angle-irons, the said angle-irons formed in a V form, blocks situated at the rear ends of these V-shaped harrows, transverse connecting-bars secured on top of the blocks for the purpose described, and a perforated projecting connecting member overlapping said block and connecting-bar, and a clamping-bolt passing through said members and serving to unite them, substantially as described.

3. An improved harrow consisting of a plurality of V-shaped sections having transverse bars connecting their rear separated ends, the sections connected to form a continuous front and a continuous rear row of sections, the front and rear rows of sections provided with laterally-extending and engaging ears or members, the said ears or members provided with means for making the connections rigid whereby two parallel rigid connections are provided one through the center of the harrow and one at the rear end thereof, whereby the heft of the front row as well as the rear row can be obtained for breaking and cutting turfs or hard soil, substantially as described.

4. A harrow consisting of L-shaped angle-irons, the said angle-irons formed in a V form, blocks situated at the rear end of these V-harrows, transverse connecting-bars secured on top of the blocks for the purpose described, the blocks having bolt-openings, and bolts passing through the said transverse bars and the bolt-openings of the blocks, substantially as and for the purpose described.

5. A harrow consisting of a plurality of V-shaped harrows capable of independent use, the harrows being arranged in two parallel rows making a rear and a front row of V-shaped sections, the sections of the rear row having a flexible connection one with the other at their rear ends, and the harrows of the rear row having a flexible connection at their front ends with the rear ends of each of the corresponding front sections, each V-shaped section having a transverse bar, the transverse bars of the two rows extending in parallel lines across the harrow, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN H. BROWN.

Witnesses:

JNO. A. CRABB,  
W. H. MADDOX.