

(No Model.)

F. B. HARVEY.
COMBINED HARROW AND ROLLER.

No. 471,341.

Patented Mar. 22, 1892.

Fig. 1

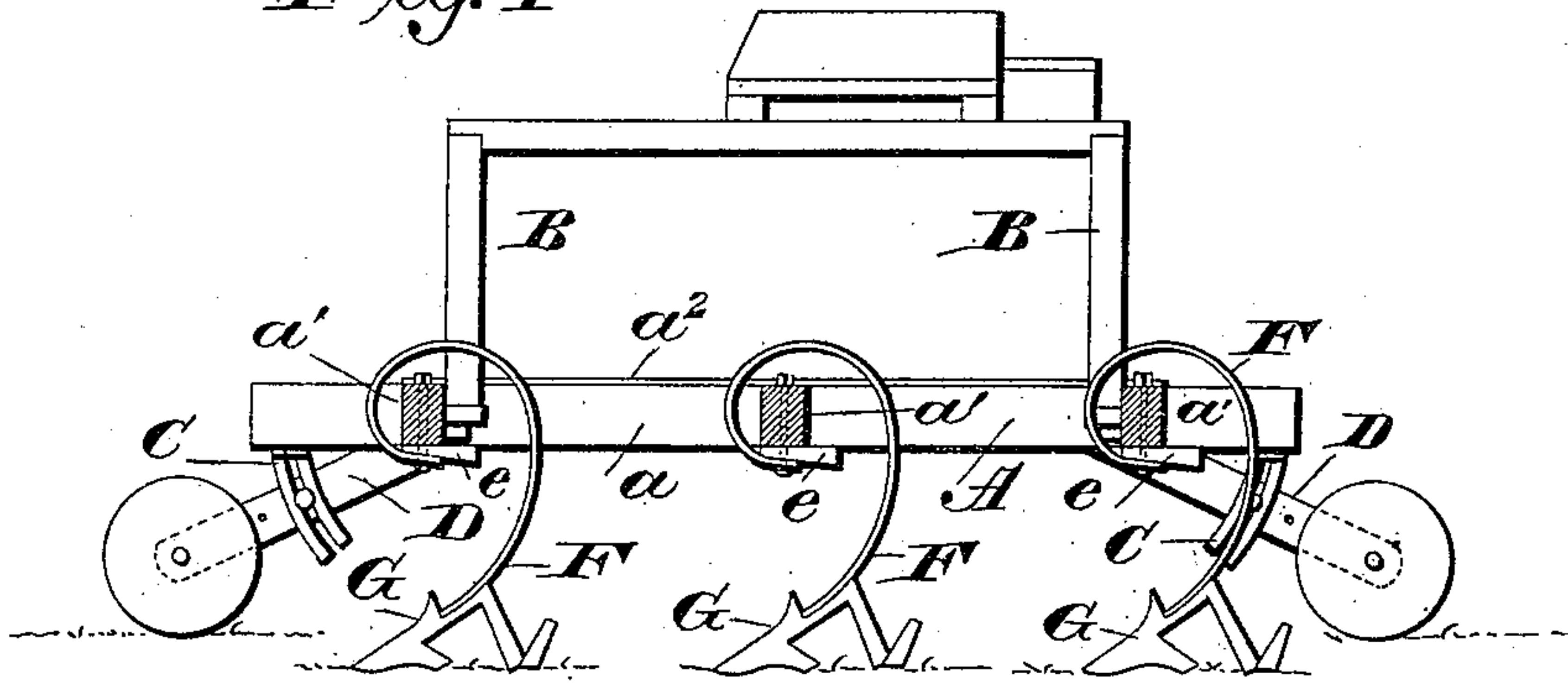


Fig. 2.

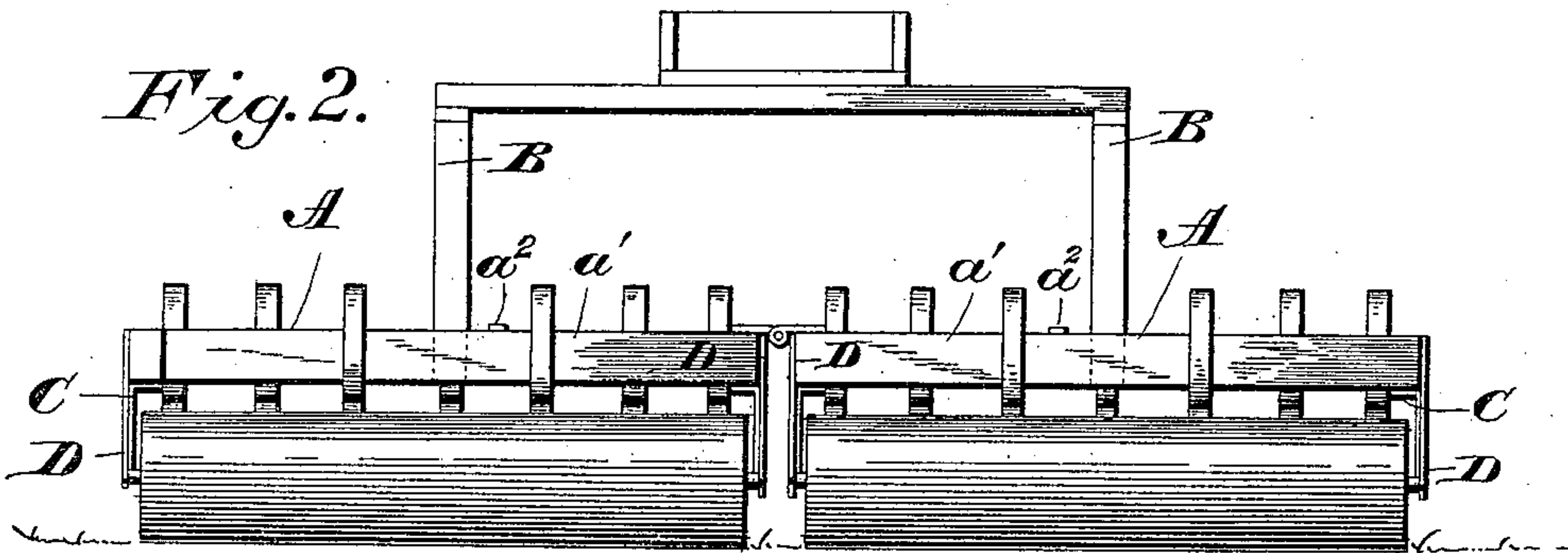
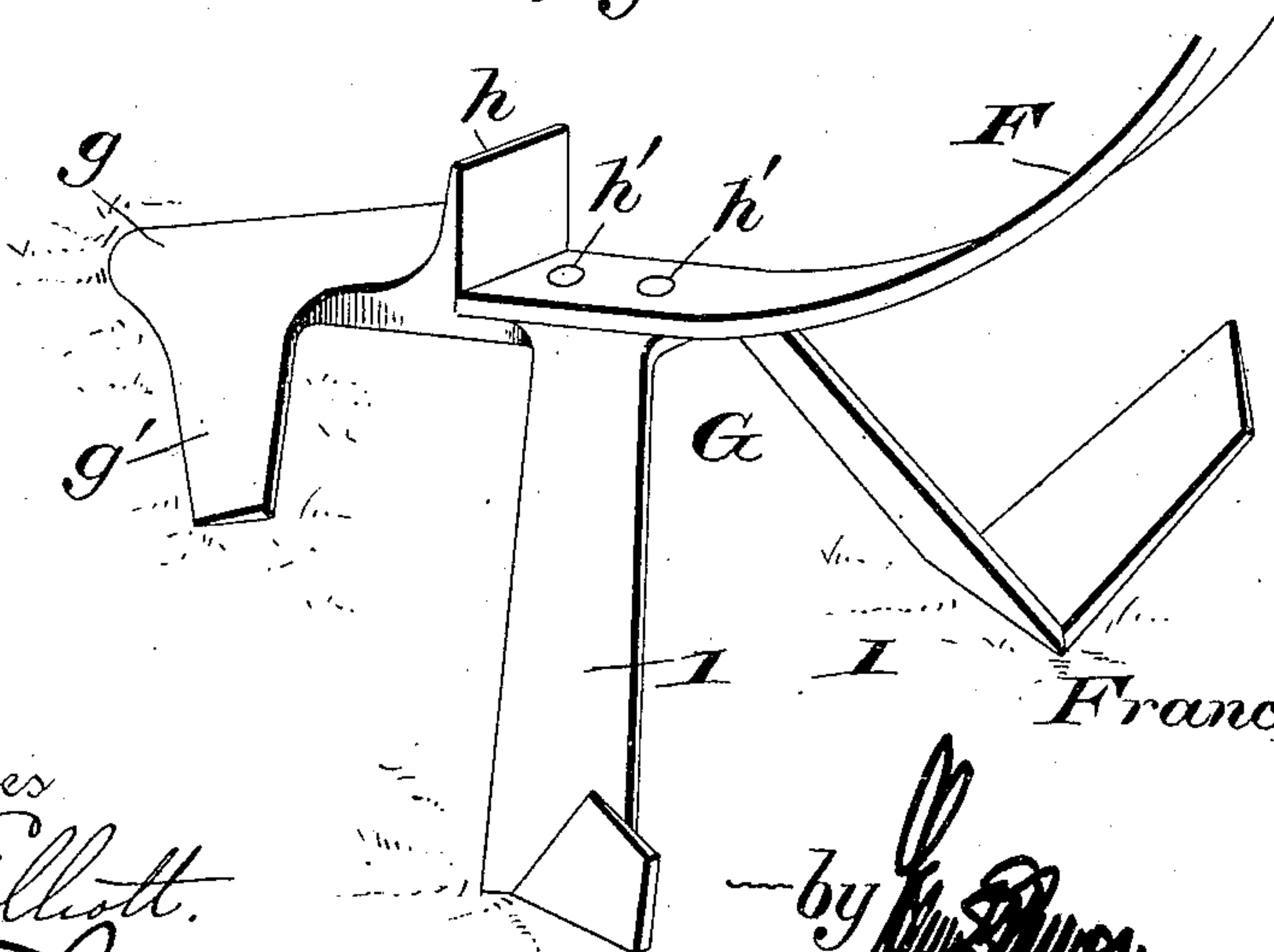


Fig. 3.



Witnesses
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FRANCIS B. HARVEY, OF PICKERING, PENNSYLVANIA.

COMBINED HARROW AND ROLLER.

SPECIFICATION forming part of Letters Patent No. 471,341, dated March 22, 1892.

Application filed April 16, 1891. Serial No. 389,212. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS B. HARVEY, a citizen of the United States of America, residing at Pickering, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in a Combined Harrow and Roller; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in combined harrows and rollers.

The object of the invention is to provide a land-roller and spring-tooth harrow which is so constructed that the parts will automatically adjust themselves to the surface of the ground and in which the rollers may be set to determine the depth which the spring-teeth will enter the ground, said spring-teeth being of such construction that they will thoroughly pulverize the soil.

In the accompanying drawings, forming part of this specification, Figure 1 is a side view of a combined harrow and roller constructed in accordance with my invention. Fig. 2 is a front view. Fig. 3 is a detail view of one of the spring-teeth.

A A refer to the harrow-frames, which are preferably made up of longitudinal beams a , which are connected to each other by transverse bars a' , which may be further braced by a central longitudinal bar a^2 . The inner longitudinal beams a , at a point about opposite the transverse bars a' , are provided with hinge-leaves, through which pintles pass, or a continuous rod for connecting the harrow-frames to each other. These harrow-frames are provided centrally with staples or loops, which are adapted to receive the shouldered lower ends of the standards B, which support a frame carrying the driver's seat and toolbox. To the ends of the longitudinal beams a are rigidly secured slotted plates C, which are curved in the segment of a circle, the center thereof being the pivotal point of the bars D, which are bolted to the beams in any suitable manner. These bars D are provided op-

posite the slotted plates C with clamp-screws or bolts, so that the rollers which are pivotally attached to the ends of the bars can be adjusted to the desired height with respect to the harrow frames and teeth carried thereby. The side beams may be provided with gage-plates to assist in setting the bars D at the proper angle, and they may be provided with perforations, in which pins can be inserted to assist in holding the bars D in position. In a harrow and roller frame thus constructed the rollers can be used in transporting the device to hold the teeth entirely out of contact with the ground, and by means of these rollers the depth which the teeth enter the ground can be varied.

In connection with the harrow and roller frames hereinbefore described I use a skeleton tooth, as shown in Fig. 3, the lower part of which is made up of a single casting, to which the spring is bolted. The upper end of the spring, which is attached to the transverse bar a' of the harrow-frame, is provided with a bolt for securing the same thereto, and beneath said bolt is preferably placed a bifurcated wedge e , so that the angle of the supporting-spring and tooth carried thereby can be varied. The spring F preferably passes over and under the transverse bar, as shown.

The tooth G, as hereinbefore stated, is made up of a single casting; and it consists of a point g , having laterally projecting and inclined ends g' . Rear of the point this tooth is provided with an upwardly-projecting portion h , beyond which extends the rear central portion of the tooth, which is provided with bolt-holes h' , which register with the bolt-holes in the lower end of the spring. This upwardly-projecting portion h not only serves to pulverize the ground, but protects the bolt-heads and lower end of the spring from undue wear by contact with the soil. To the rear end of the rearwardly and upwardly extended portion of the tooth diverging wings I are formed, which depend at a greater angle from the body than the inclined projecting portions g' , and the ends of the portions I are upturned, their rear edges being slightly inclined. This form of tooth I term a "skeleton tooth," and it is effective in operation and thoroughly agitates and pulverizes the soil.

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

1. In a roller and harrow, the combination
5 of the harrow-sections A A, hinged to each other and provided with cross-bars carrying spring-teeth, forwardly and rearwardly projecting bars D D, each pivotally secured at its upper end to the harrow-frame and carrying
10 a roller at its lower end, and curved plates C C, secured adjacent to the ends of the harrow-frame so as to depend therefrom, the front plates being curved rearwardly and the rear plates forwardly, said plates having segmental
15 slots through which pass fastening devices for adjusting and rigidly connecting the bars to the harrow-frame, the fastening devices being located at an intermediate point between the ends of said bars, substantially as
20 shown, and for the purpose set forth.

2. A harrow and cultivator tooth made up of a single piece, consisting of a point having

laterally-inclined extensions g' , a central portion having an upwardly-projecting portion h in front of where the spring F is secured, 25 and downwardly and laterally extended portions I, having upturned portions at their outer ends, substantially as shown.

3. As a new article of manufacture, a skeleton tooth for harrows and cultivators, made 30 up of a single piece provided with an inclined central portion, with perforations for attaching thereto a flat spring, said tooth having an upwardly-projecting portion h in front of the attachment of the spring, laterally-diverging 35 arms g' and I at different angles from each other, and a point g , substantially as set forth.

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

FRANCIS B. HARVEY.

Witnesses:

DAVID HUTCHISON,
CHARLES BENNETT.