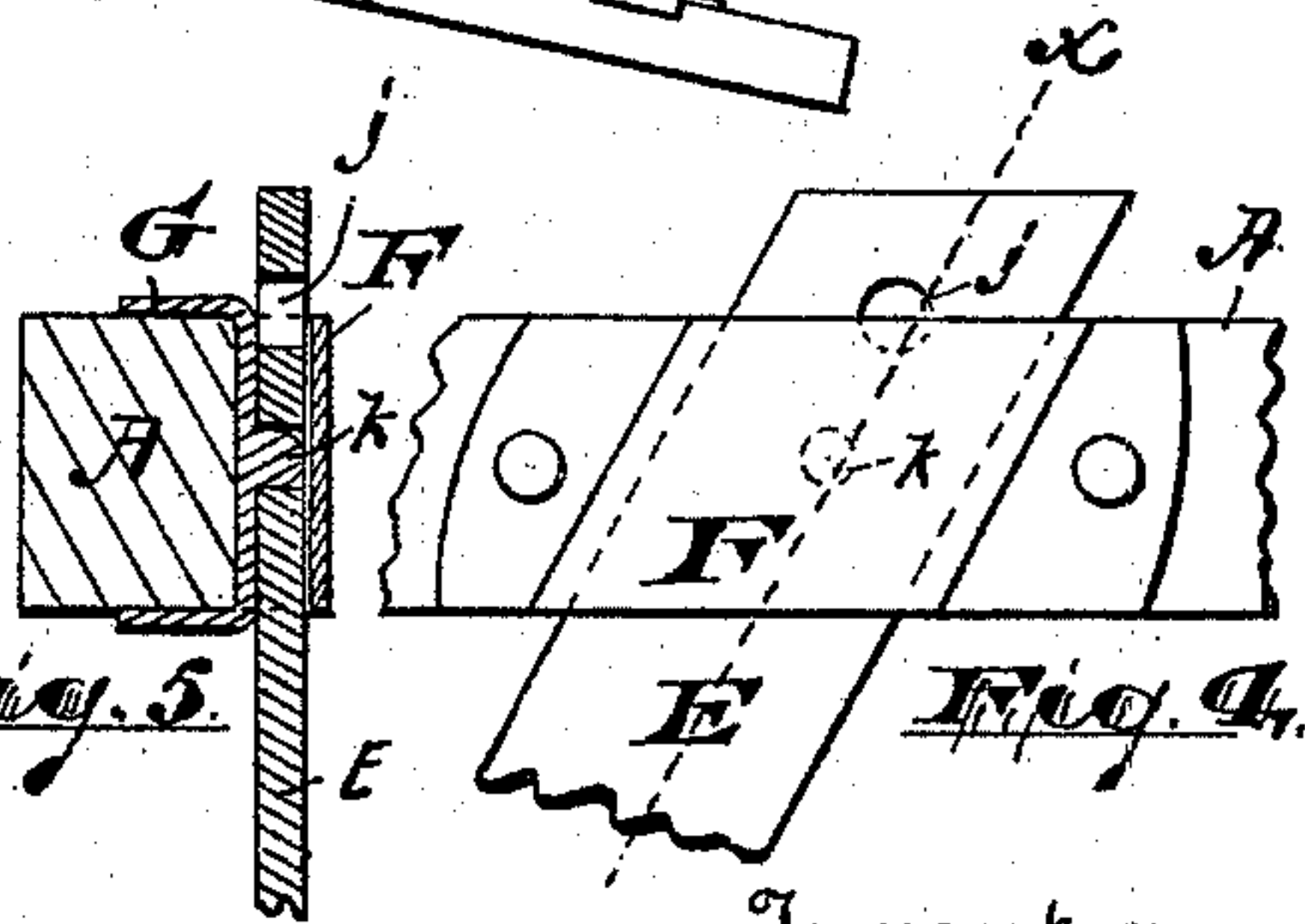
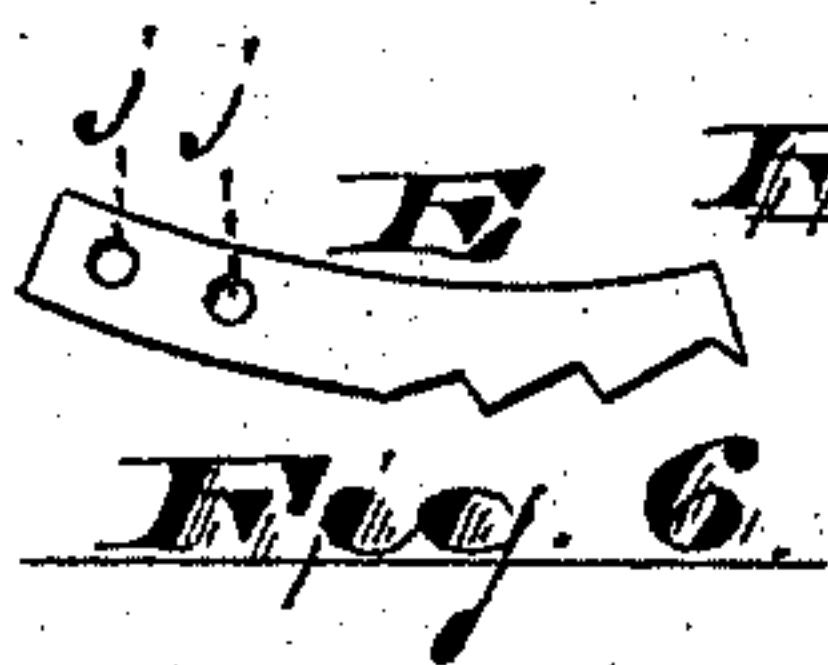
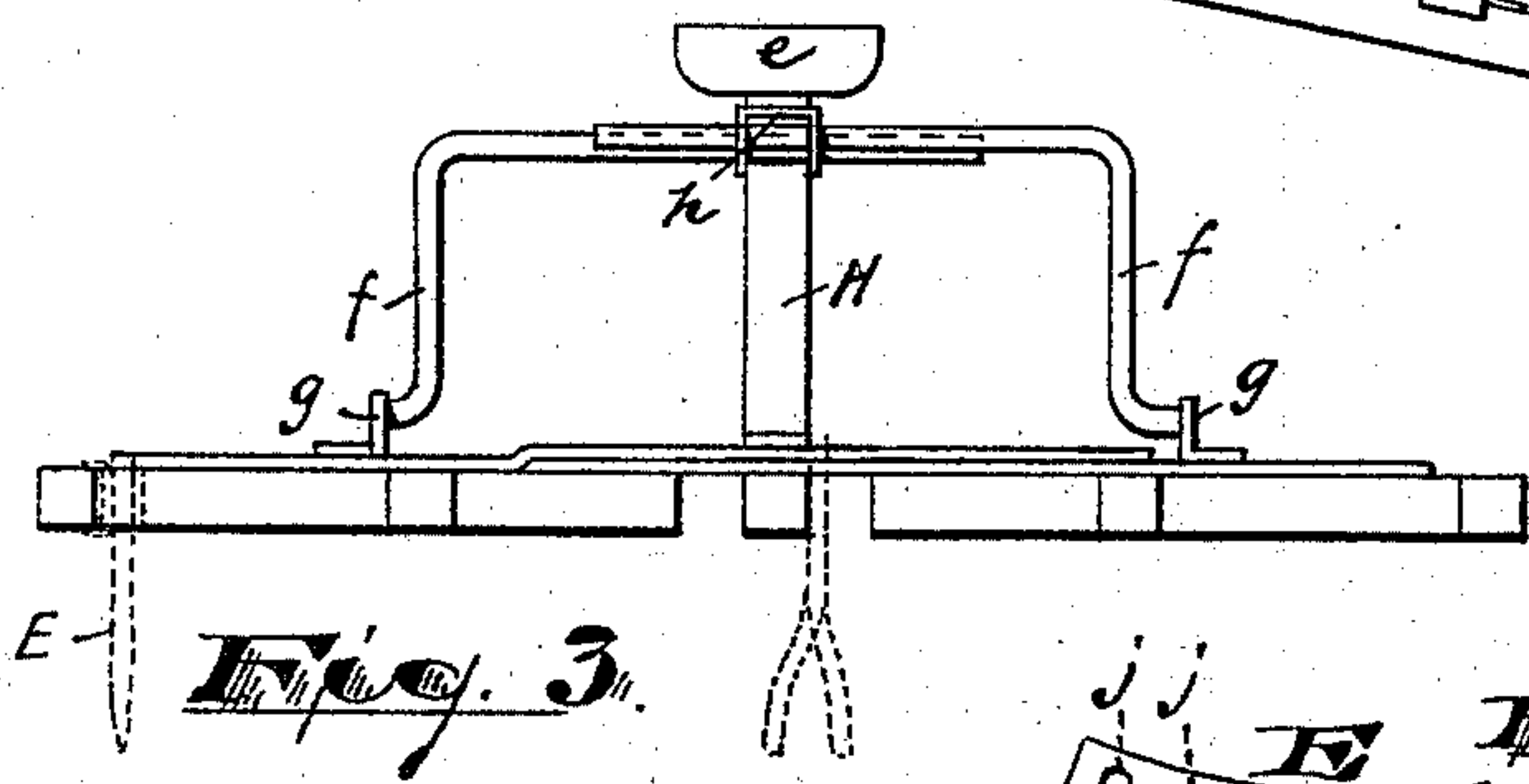
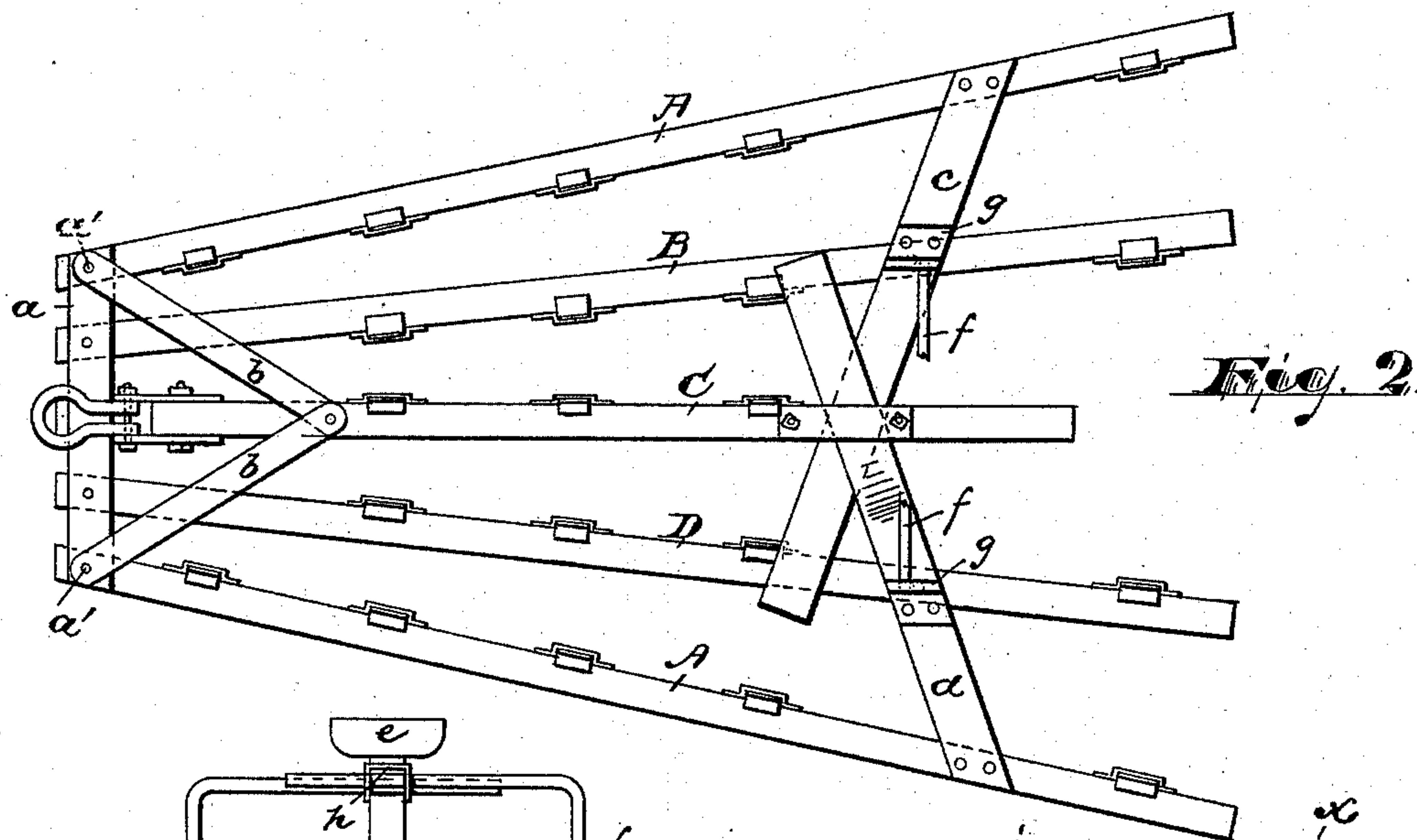
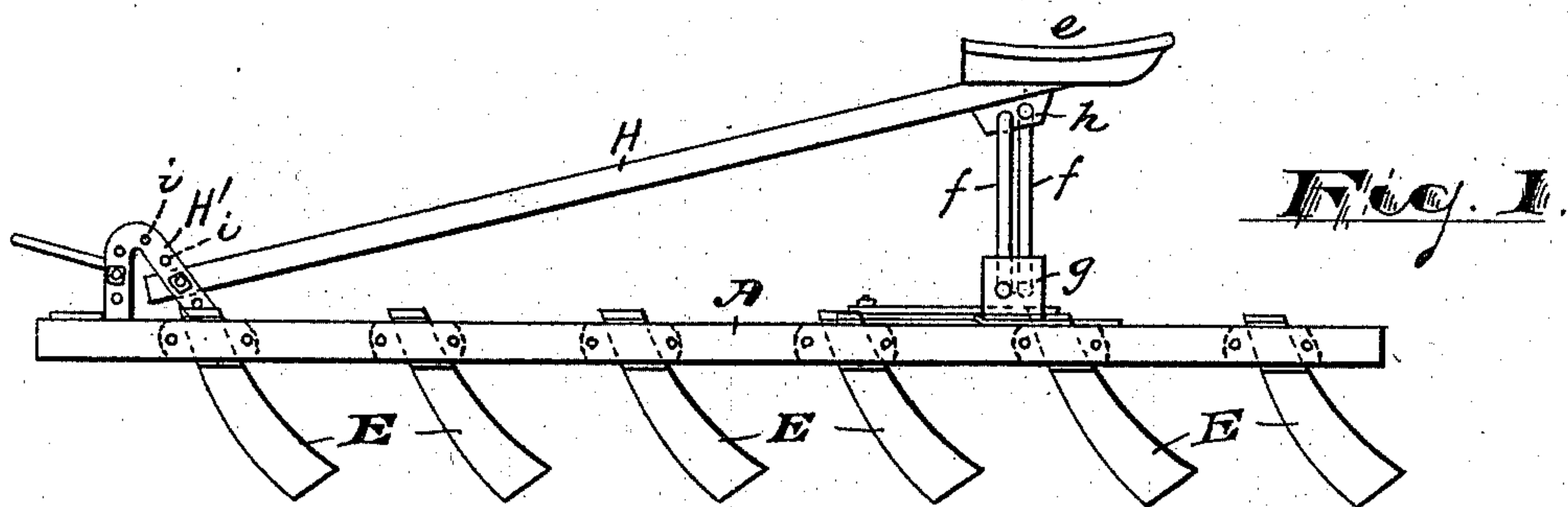


(No Model.)

P. J. HELLER.
HARROW.

No. 527,978.

Patented Oct. 23, 1894..



Witnesses

George A. Waldell
Charles Van Ness.

Feb. 6.

Inventor:

Peter J. Heller.

By Drake G Atty's.

UNITED STATES PATENT OFFICE.

PETER J. HELLER, OF MONTCLAIR, NEW JERSEY.

HARROW.

SPECIFICATION forming part of Letters Patent No. 527,978, dated October 23, 1894.

Application filed May 24, 1893. Serial No. 475,352. (No model.)

To all whom it may concern:

Be it known that I, PETER J. HELLER, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Harrows; 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.

The object of this invention is to increase the efficiency of a harrow, to overcome certain objections heretofore existing and to secure other advantages hereinafter referred to.

The invention consists in the improved harrow and in the arrangements and combination of the several parts thereof, as herein set forth and finally pointed out in the claims.

Referring to the accompanying drawings, in which similar letters of reference indicate corresponding parts in each of the several figures where they occur, Figure 1, represents, in side elevation, a harrow embodying my improvements, and Fig. 2, a top-plan view of the same. Fig. 3, represents a rear end view of the harrow; Fig. 4, a detail, in elevation, enlarged of one of the teeth and the parts connected therewith, and Fig. 5, is a section taken through line *x* of the same. Fig. 6, represents a modified form of tooth.

In said drawings A, B, C, D, designate the beams which carry the teeth, and E, the said teeth.

F, G, designate two plates which, together, form a clamp in which the teeth are securely adjusted; said plates being secured to the several beams, as indicated in Figs. 1, 2, 3, 4 and 5.

The several beams of the harrow are secured at the front end by a bar, *a*, and braces *b*, the two outside beams being pivotally secured, as at *a'*, to permit a slight movement of said beams thereon. At, or near the rear end, the beams are provided with braces *c* and *d* which are pivotally secured to the outer beams and attached to the inner or central beams so as to permit of a lateral adjustment

of the harrow and thus to increase or diminish its width, as will be understood upon reference to Fig. 2.

The seat or chair, *e*, is supported by means of rods *f, f*, which are hinged or pivotally secured to the harrow, at, *g*, and to said seat, at, *h*, and work freely in the latter so as to permit the lateral adjustment of the harrow, above referred to, as will be understood upon reference to Figs. 1, 2 and 3.

The seat-bar or rail, H, is adjustable, in the draw-head, H', at the front or forward end at *i*, Fig. 1, to permit a slight adjustment of the seat, as may be desired.

The teeth, E, are preferably made sharp at the front edges and are set so as to incline toward the rear end of the harrow, as will be understood upon reference to Figs. 1 and 4; the purpose of which is to render the harrow more efficient in breaking and granulating the soil and to enable it to pass more easily over an obstruction than it would were the teeth blunt and straight, as will be obvious. These objects or results will be further promoted by the curved form of the teeth, as shown in Fig. 1, or by serrating their edges, as shown in Fig. 6. The shanks or roots of the teeth are provided with means, (a series of apertures, *j*, in the present case) whereby said teeth may be lowered or lengthened, as they wear off at the points by usage, as will be understood. The clamps F, G, in which the teeth are adjusted, are provided with a holding lug or pin, *k*, Fig. 5, which, in the present case, is formed upon and integral with one side of the clamp. This however is not essential as a separate pin or bolt may be substituted therefor if desired, to engage with the apertures, *j*, in said teeth. The portion G of the clamp is also preferably provided with a flange on each edge for overlapping the sides of the beams or bars, and the other portion F is in the form of a clip which fits over the side of the portion G provided with the lug *k*. This makes a very strong and effective form of device for the teeth and prevents the teeth from bearing against the sides of the beams and wearing them and thereby getting out of proper alignment.

Having thus described my invention, what

I claim, and wish to secure by Letters Patent of the United States, is—

1. A harrow, consisting of a frame comprising a rigid T-shaped portion, a series of rearwardly extending bars pivoted to the head of said rigid portion, braces pivotally attached to said bars and having sliding connections with the foot of the rigid portion, whereby each series may be adjusted laterally relative to the rigid portion independently of each other, and angle irons having oppositely extending horizontal extremities secured to said braces and forming a support for a seat slidably arranged thereon, substantially as set forth.

2. A harrow consisting of a frame comprising a rigid T-shaped portion, a series of rearwardly extending bars pivoted to the head of said rigid portion, braces pivotally attached to said bars and having sliding connections with the foot of the rigid portion, whereby each series may be independently and laterally adjusted relative to the rigid portion, angle irons having oppositely extending hori-

zontal extremities, secured to said braces and forming a support for a seat slidably arranged thereon, an angular draw iron at the head of the frame, a seat bar extending from the seat to said draw iron and vertically adjustable therein, and cutter knives secured to the several bars and the rigid portion of the frame.

3. A harrow consisting of a central beam, and side beams, a seat support pivotally secured to each series of side beams, the upper ends of which are adapted to pass each other in substantially parallel directions, a seat pivotally and movably secured upon said passing ends, and a brace secured to said seat at one end and adjustably secured to the harrow at the other end, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of May, 1893.

PETER J. HELLER.

Witnesses:

OLIVER DRAKE,
CHARLES H. PELL.