

J. M. LARSH.
HARROW.

APPLICATION FILED AUG. 31, 1908.

920,069.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

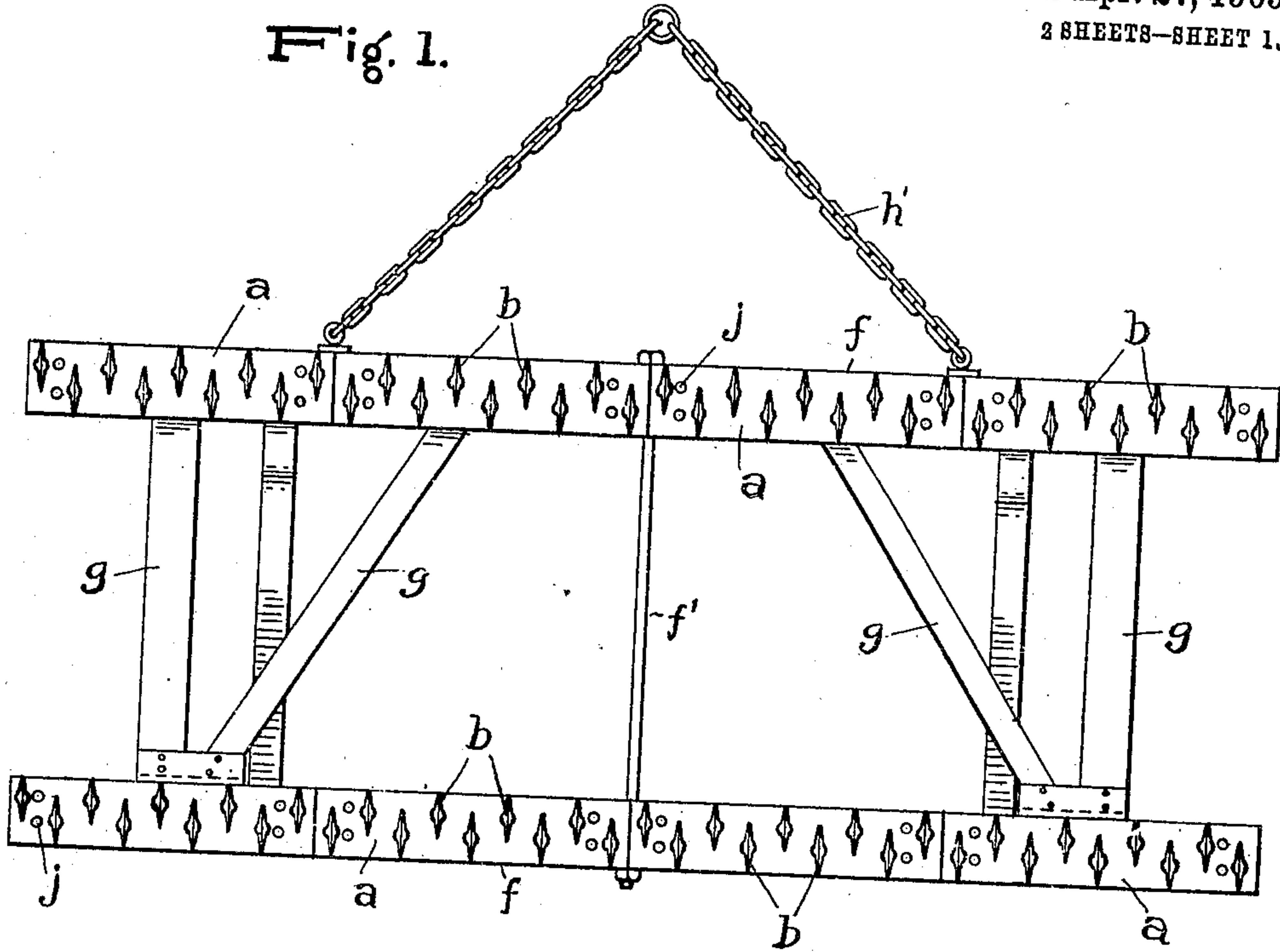


Fig. 2.

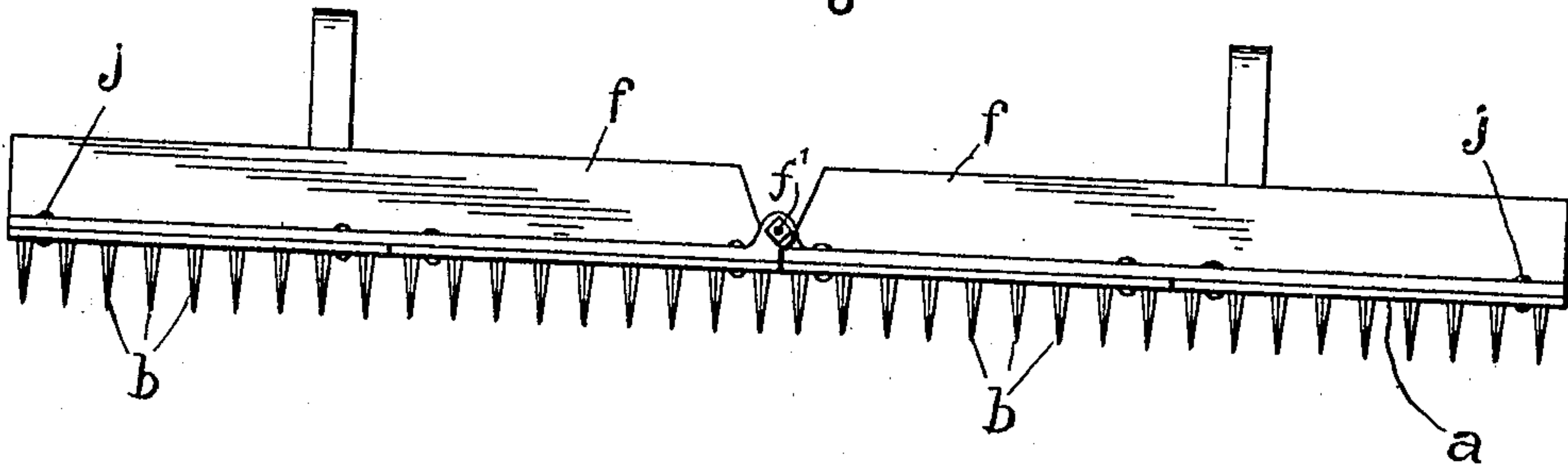
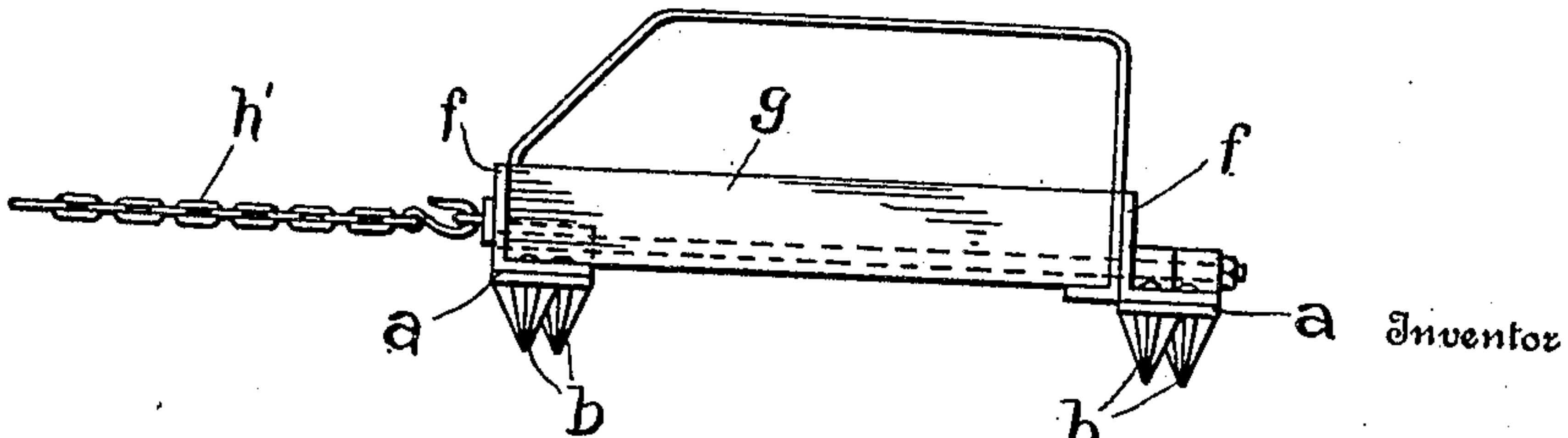


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

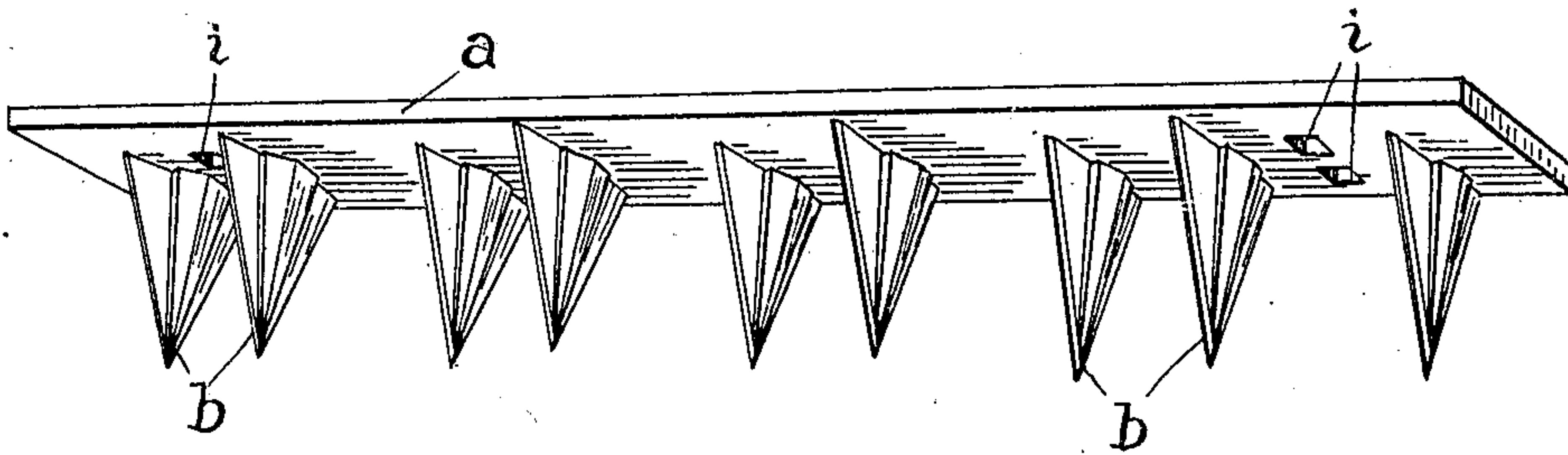


Fig. 5.

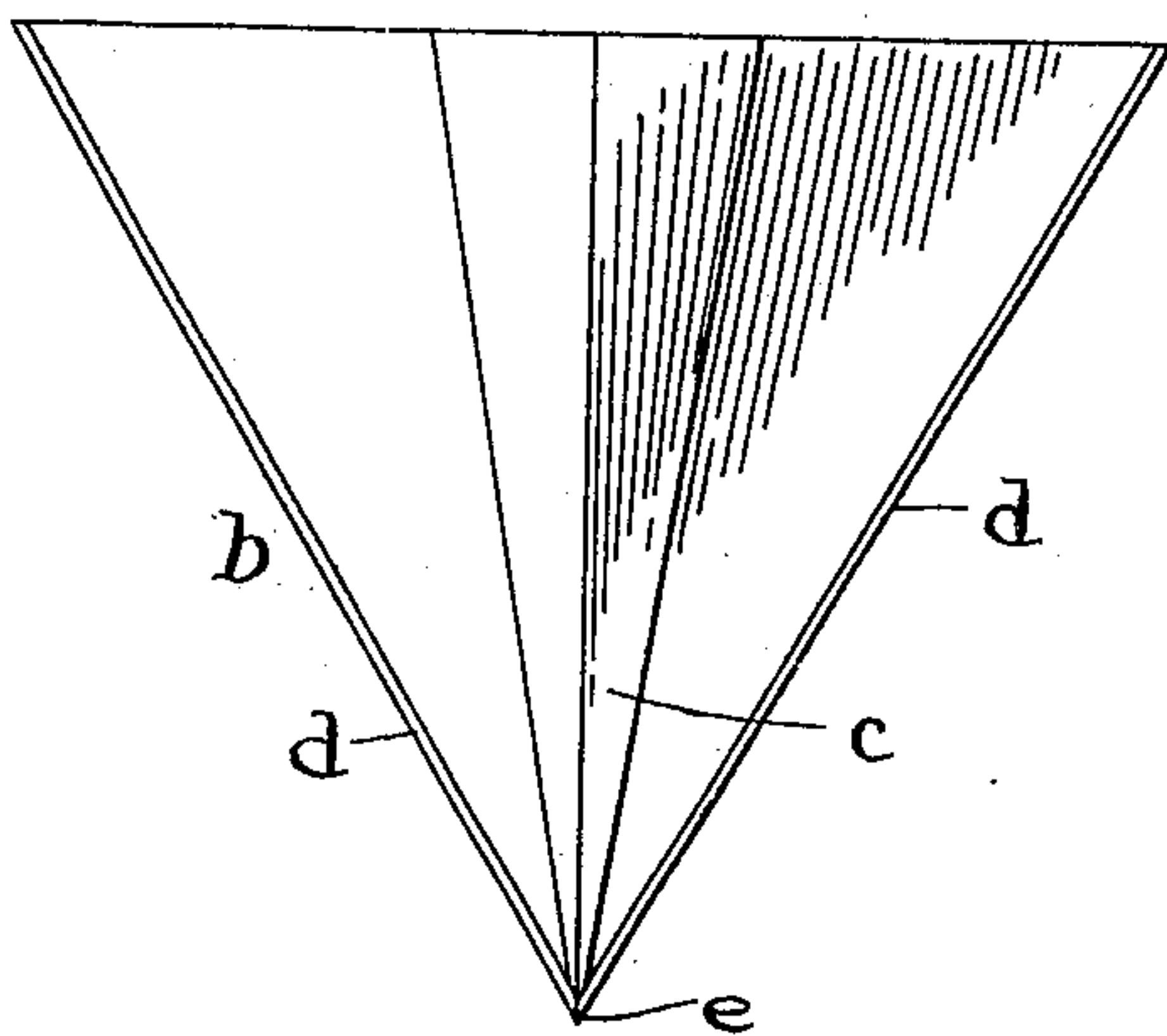


Fig. 6.

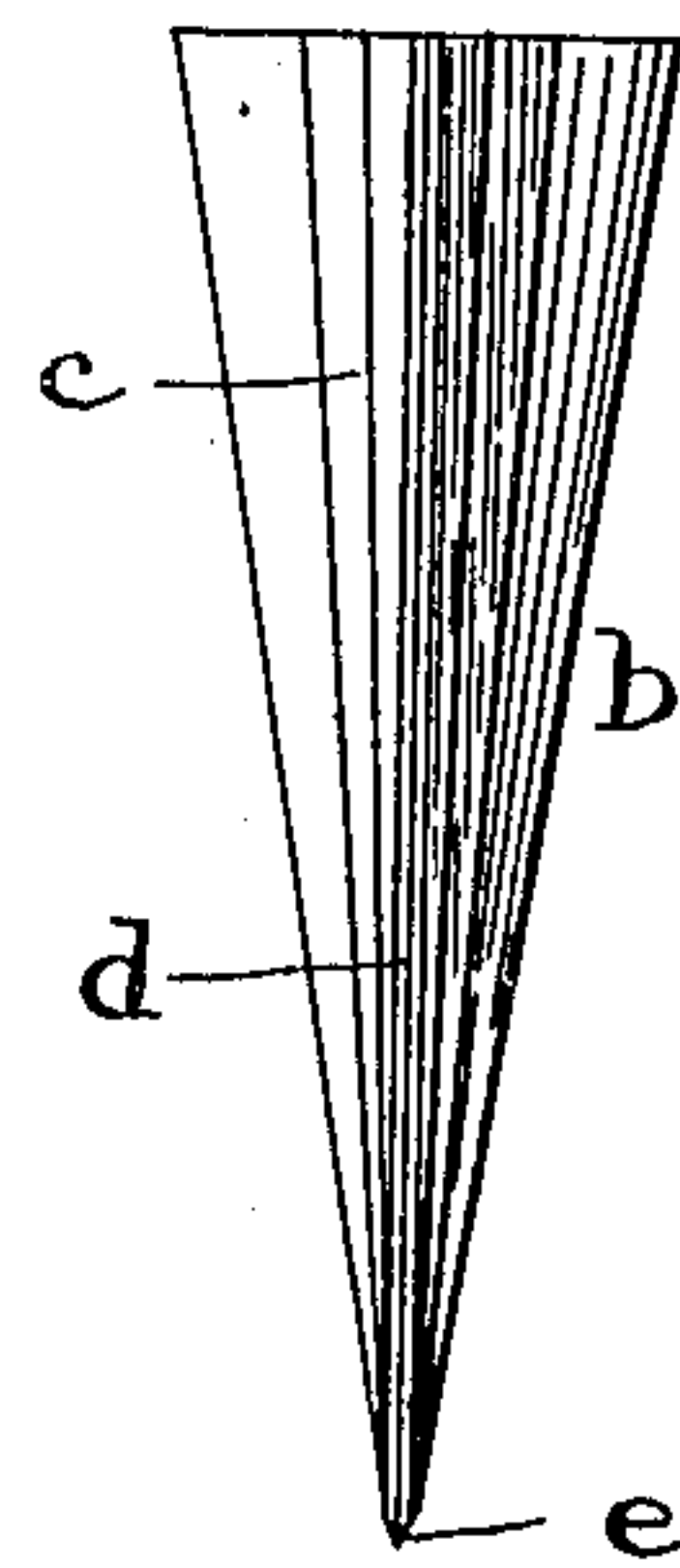


Fig. 7.

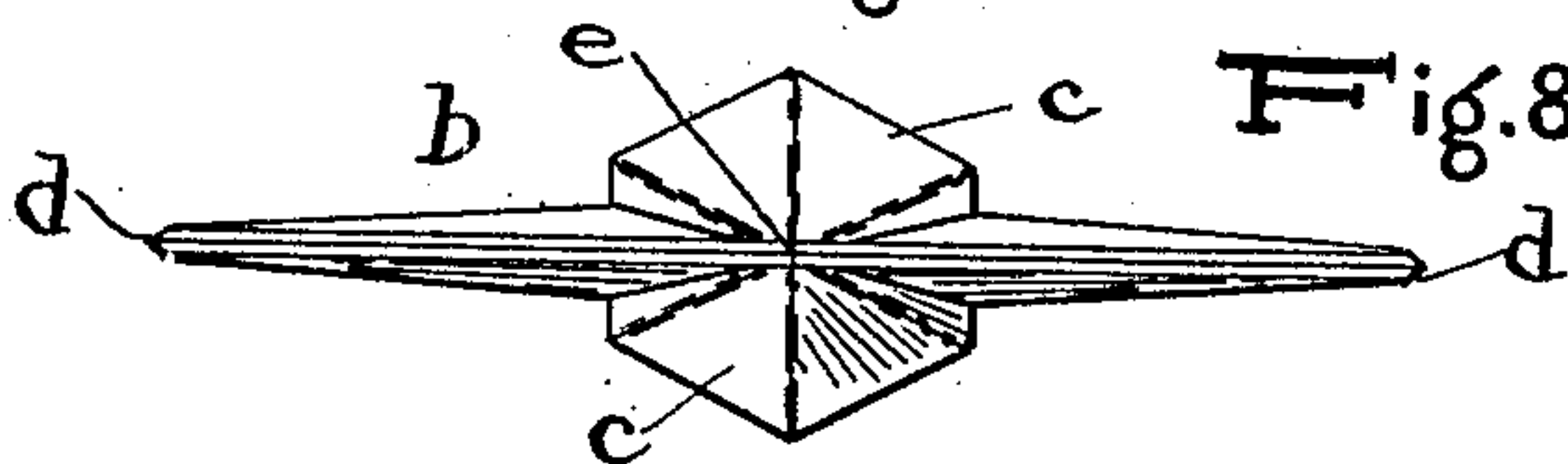
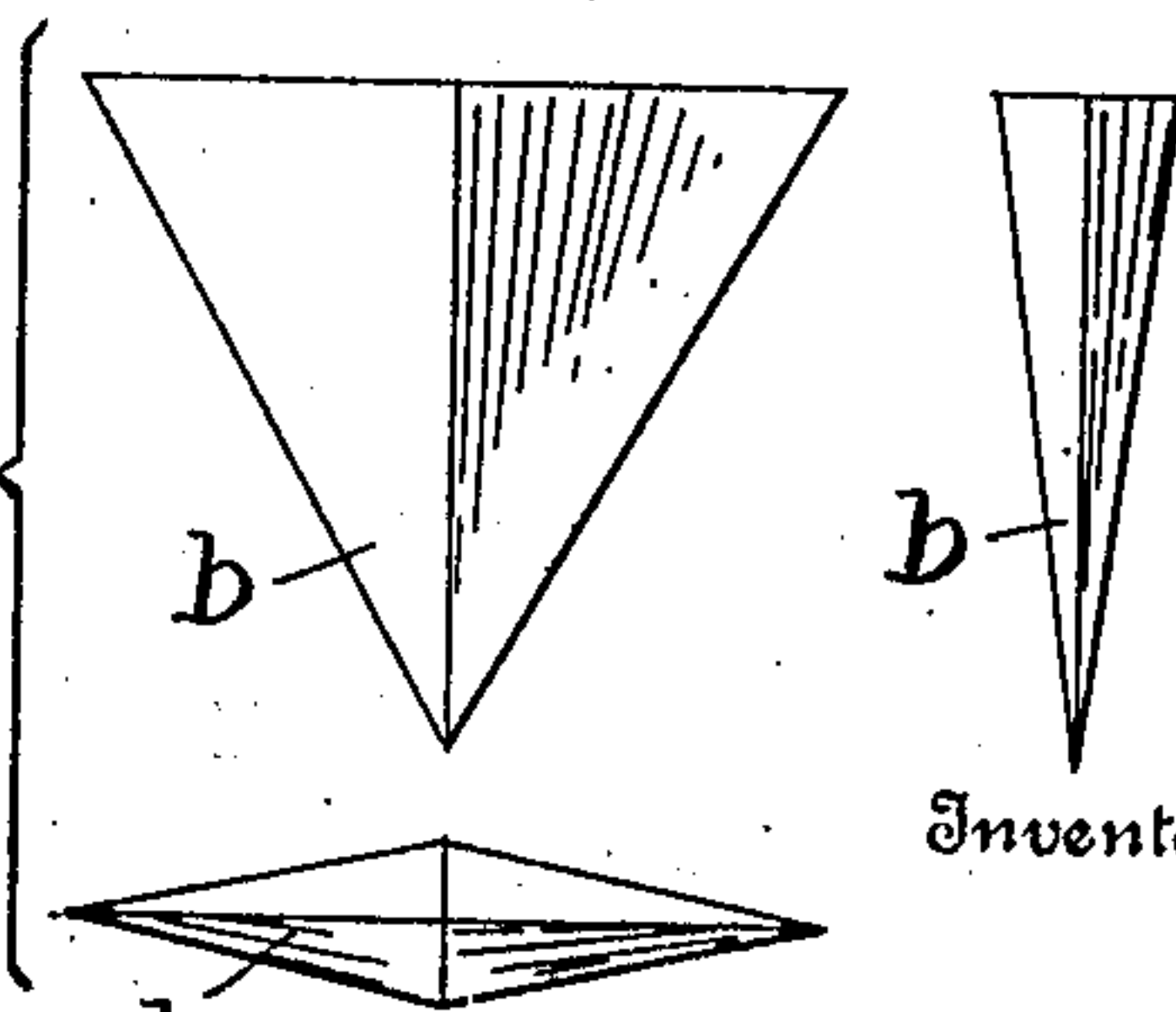


Fig. 8.



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UNITED STATES PATENT OFFICE.

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HARROW.

No. 920,069.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed August 31, 1908. Serial No. 451,019.

To all whom it may concern:

Be it known that I, JOHN MYERS LARSH, a citizen of the United States, resident of Indianapolis, in the county of Marion and State of Indiana, have made a certain new and useful Invention in Harrows; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a bottom plan view of my harrow. Fig. 2 is a rear elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a detail perspective view of a carrier plate. Figs. 5, 6 and 7 are detail views of one of the teeth. Fig. 8 shows by detail views a modified form of tooth.

The invention relates to harrows, and it consists in the novel construction and combinations of parts as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the letter *a*, indicates a carrier plate commonly five inches wide, twenty-two and one-half inches long and seven sixteenths of an inch thick, although these proportions are not essential. This carrier plate is cast from steel or malleable or gray iron, with a plurality of teeth *b, b*, integral therewith, said teeth being of thin diamond form in cross section, and of tapering form in both front and side view, nine of such teeth being usually provided for each carrier plate section, and each tooth being usually three and one half inches wide at its base and three inches in length, whereby the three sides thereof are of about equal length, forming an equilateral triangle.

The teeth *b, b*, are arranged at intervals of about two and one-half inches from each other, in two rows, the opposite ends of the bases of the teeth of each row being closely adjacent to or attaching at opposite longitudinal edges of the carrier plate, the teeth *b*, of one row standing forward or rearward of the teeth of the other row by a space shown as one and one-half inches, and the teeth of the two rows having a staggered relation to each other, each alternate tooth lying in a different row.

Each tooth *b*, is of thin diamond form in cross section, as before stated, having a strengthening rib *c*, running from top to

bottom thereof at the center of each side, and of tapering form from top or base to bottom or point, opposite vertical halves of the tooth tapering to a sharp cutting edge *d*, the cutting edges *d, d*, at each side tapering to a sharp point *e*, which in view of the angle at which the cutting edges *d, d*, are arranged (about sixty degrees) and the central strengthening rib at each side, is of strong character in spite of the thin nature of the teeth.

The use of my invention insures a light draft, owing to the comparatively thin character of the teeth, and at the same time accomplishes pulverization of the soil in an efficient manner, the teeth being arranged at intervals of two and one-half inches, the action of the teeth upon the soil being also somewhat assisted by the tapering lateral strengthening ribs.

The carrier plate described having nine teeth as shown forms one section or element of my implement, any required number of such sections being employed. As shown in Fig. 1 of the drawings, two parallel horizontal beams *f, f*, are provided, each carrying four of such sections in line, one line behind the other, the beams having suitable cross braces, *g, g*, and a draft chain attachment shown at *h*'. The carrier plate sections have each two bolt holes therein at each end, as shown at *i, i*, securing bolts *j, j*, passing through such holes.

The staggered arrangement of the teeth of each section, whereby the teeth are arranged in two rows one behind the other, adds lightness to the draft and takes strain from the teeth. At the same time each section is reversible, and will act in the same manner when reversed.

But one harrowing is required with the present invention where several harrowings are needed with other harrows. In other words the invention accomplishes in one operation what a heavy harrow or drag and a light or ordinary harrow has hitherto been needed for.

Each horizontal beam *f*, is divided into two parts having a central hinged or pivotal connection by pivot rod *f'*.

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

1. In a harrow, a carrier having a plurality of teeth, each tooth being of tapering form,

of thin diamond-form in cross section and having a central strengthening rib at each side.

2. In a harrow, a carrier having a plurality
5 of teeth, each tooth being of tapering form, of thin diamond form in cross section and having a central tapering strengthening rib at each side.

3. In a harrow, a carrier having a plurality
10 of teeth, each tooth being of tapering form, of thin diamond form in cross section, having a central strengthening rib at each side and opposite cutting edges meeting at an angle of sixty degrees, and equal to each other and to
15 the base in length.

4. In a harrow, a carrier having integral

therewith a plurality of teeth, each tooth being of tapering form, of thin diamond form in cross section and having a central strengthening rib at each side.

5. In a harrow, a carrier having integral therewith a plurality of teeth, each tooth being of tapering form, of thin diamond form in cross section and having a central strengthening rib at each side, said teeth having a
25 staggered arrangement.

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

JOHN MYERS LARSH.

Witnesses:

THOS. W. FORD,

MART. DUMPHY.