

No. 882,152.

PATENTED MAR. 17, 1908.

J. LANG.

WINDOW FRAME.

APPLICATION FILED JULY 22, 1907.

4 SHEETS—SHEET 1.

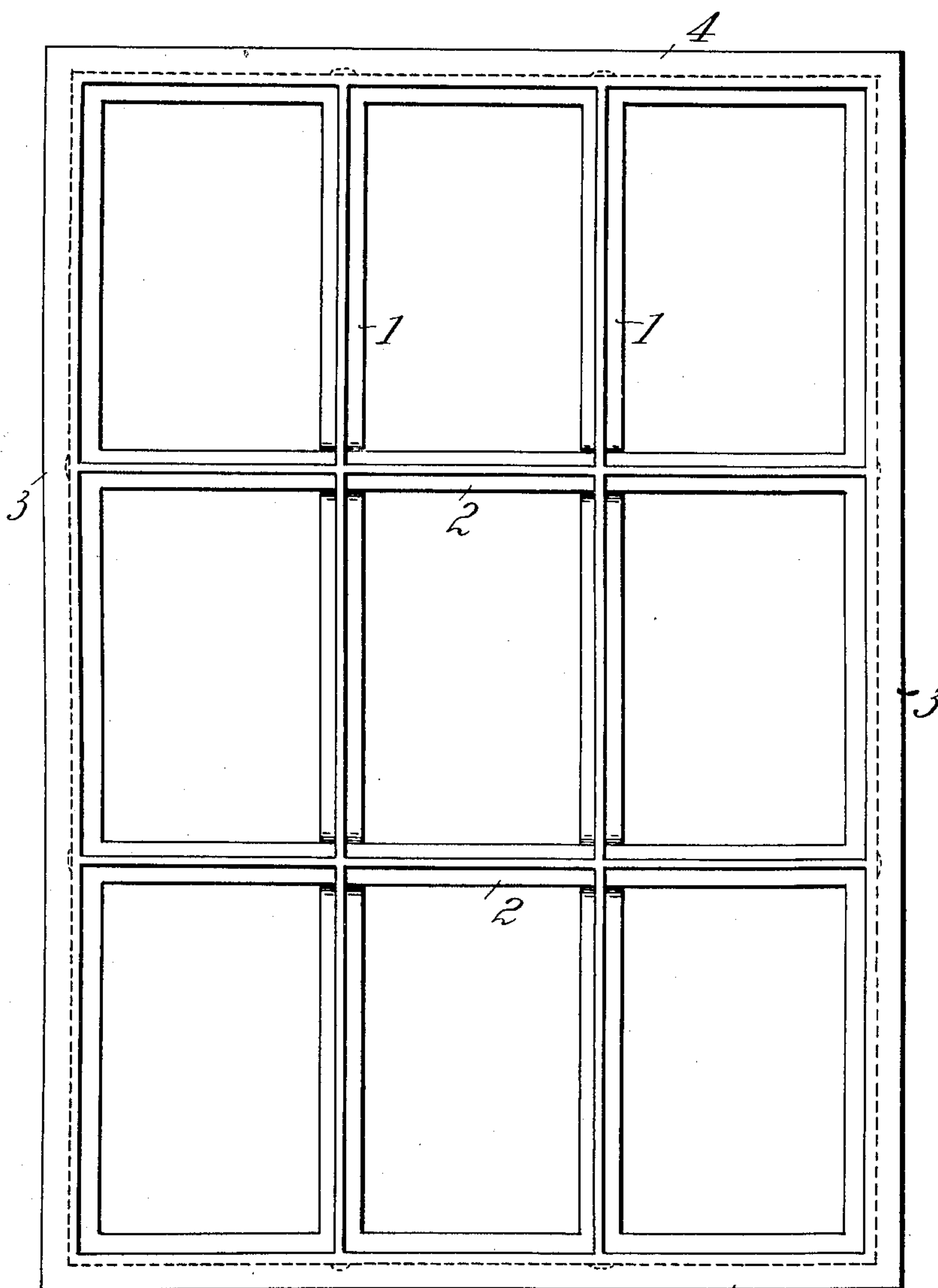


Fig. 1.



Fig. 1. a

WITNESSES

W. H. H.

Edw. C. S.

INVENTOR

Joseph Lang
By Wm. Wallace White

ATTY.

No. 882,152.

PATENTED MAR. 17, 1908.

J. LANG.

WINDOW FRAME.

APPLICATION FILED JULY 22, 1907.

4 SHEETS—SHEET 2.

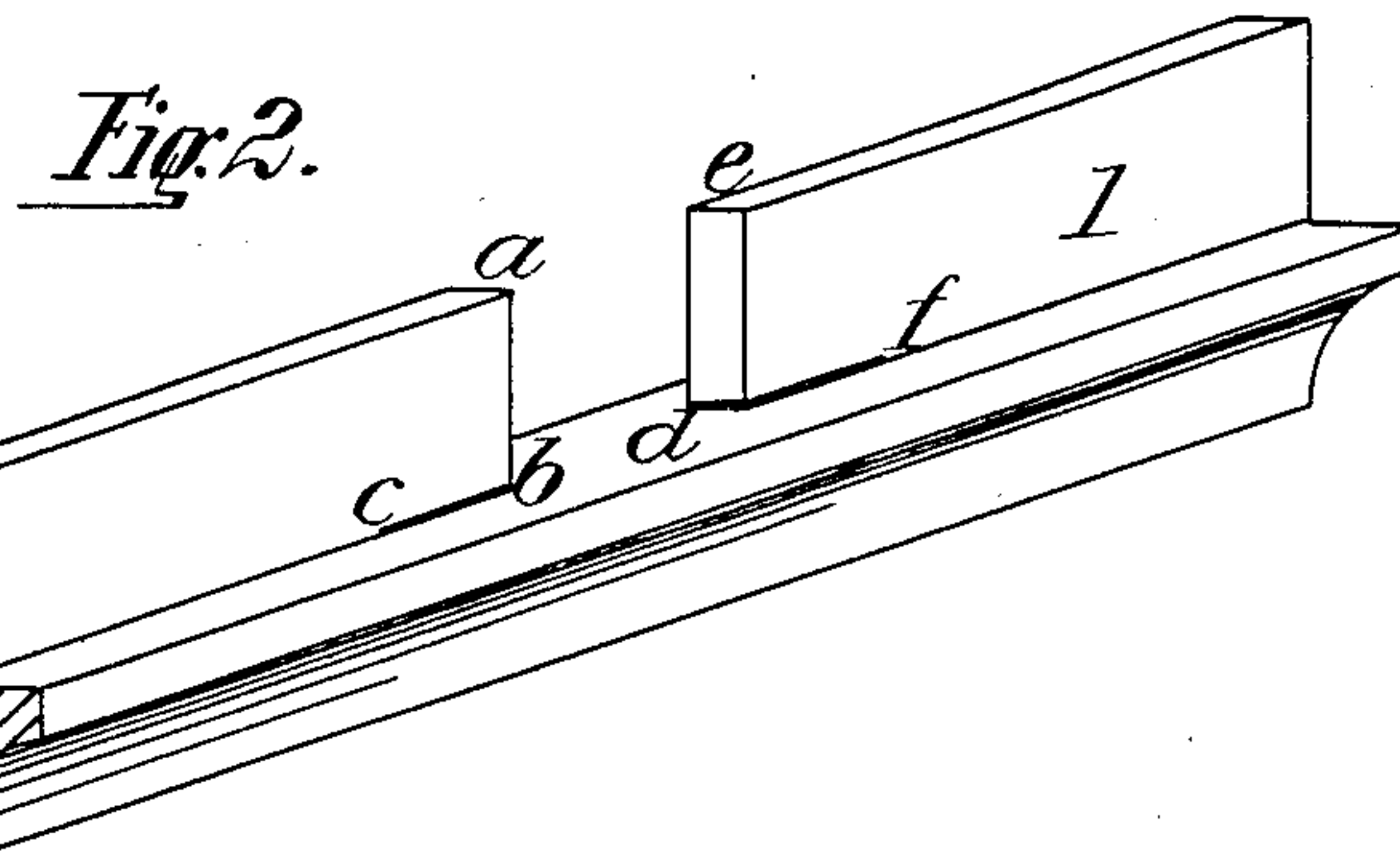


Fig. 3.

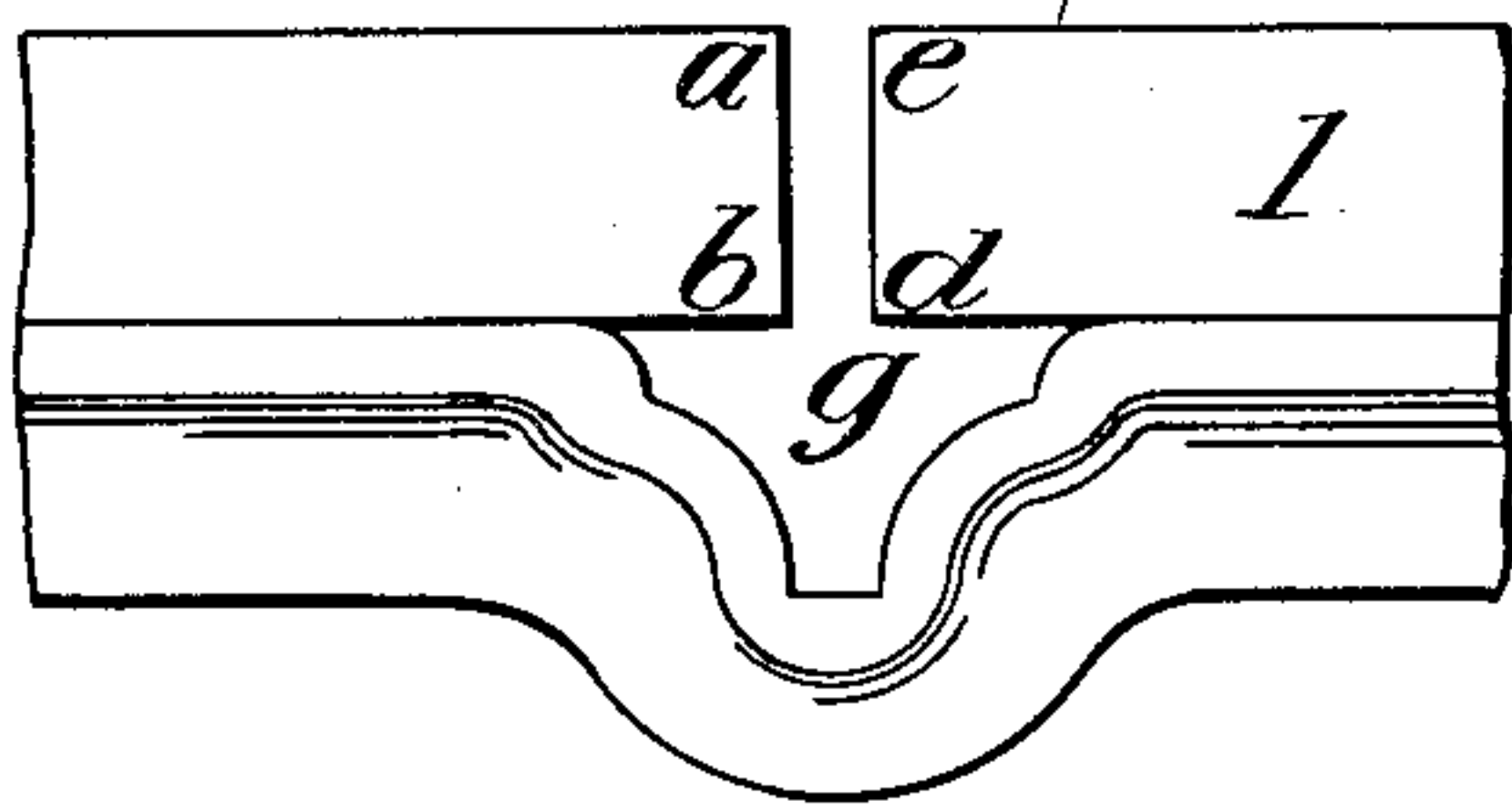


Fig. 3.a

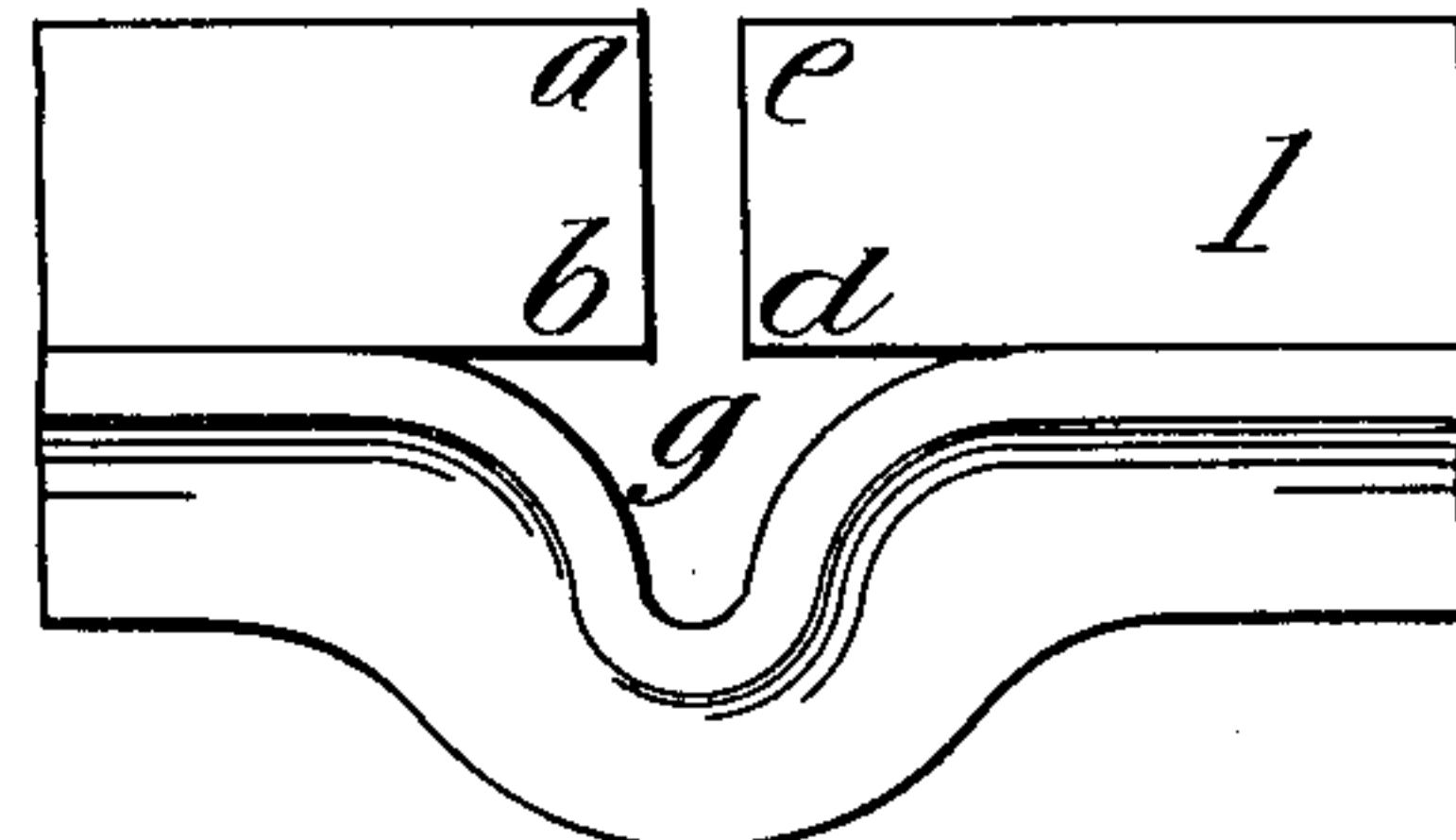


Fig. 4.

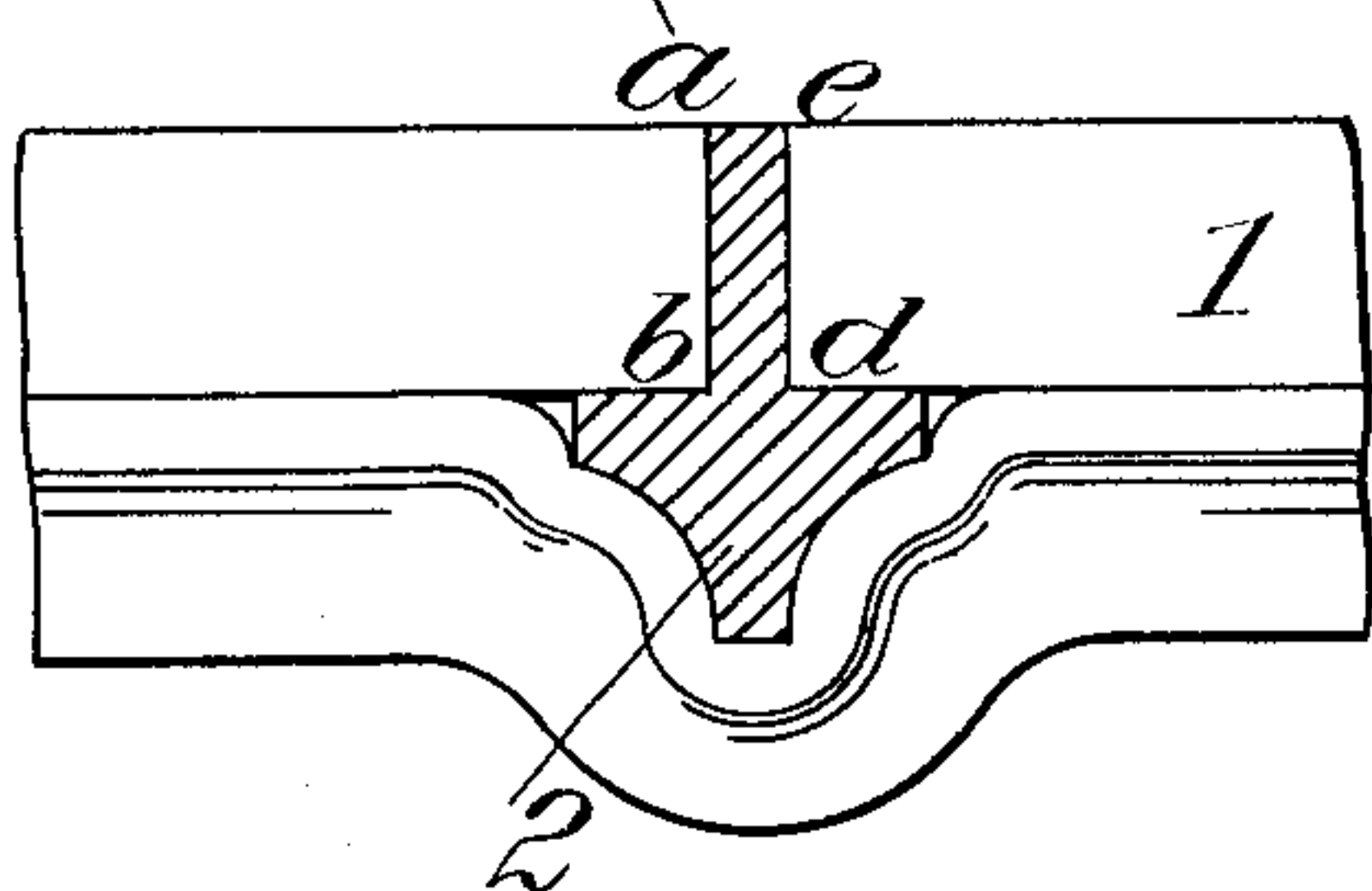


Fig. 4.a

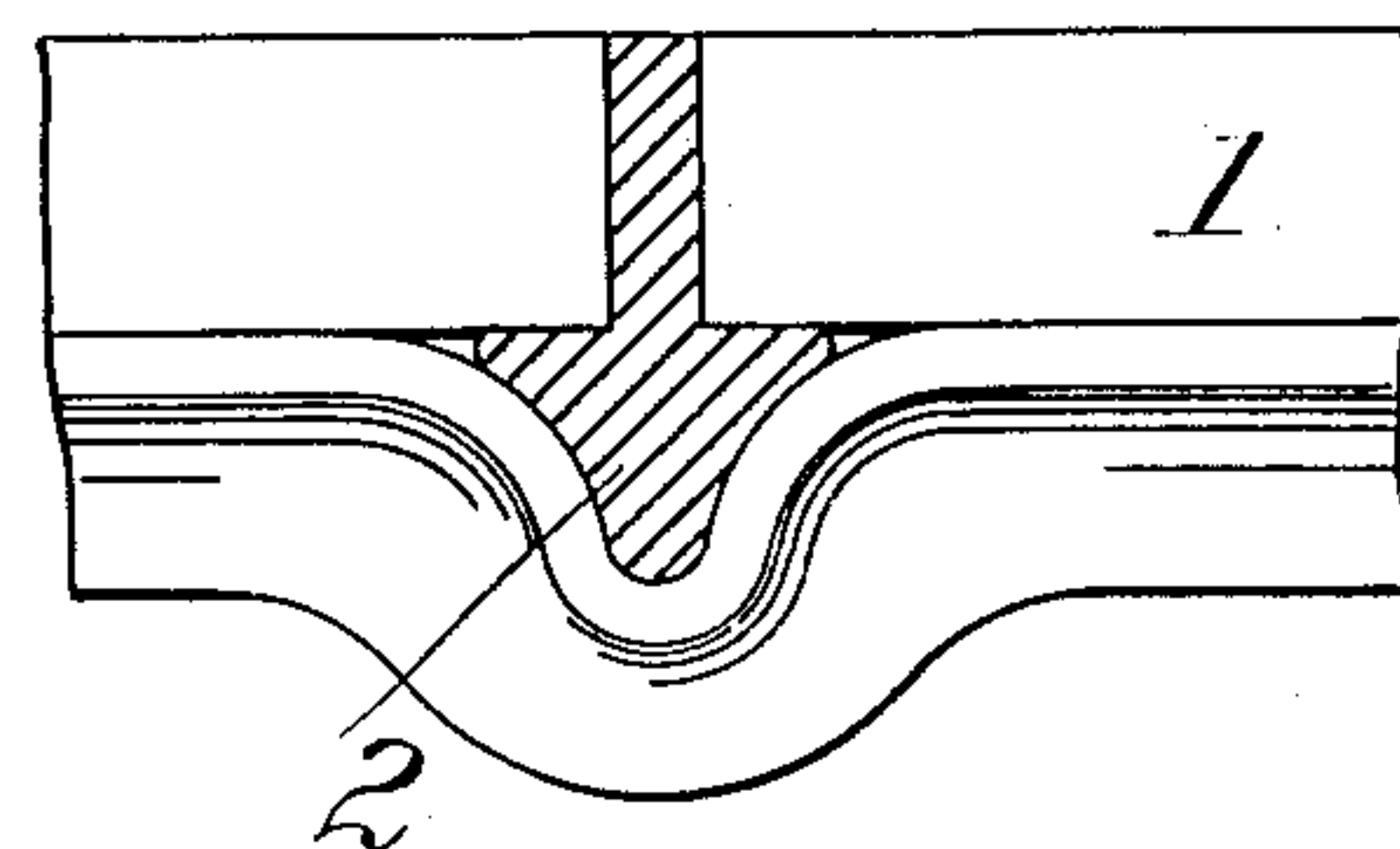


Fig. 5.

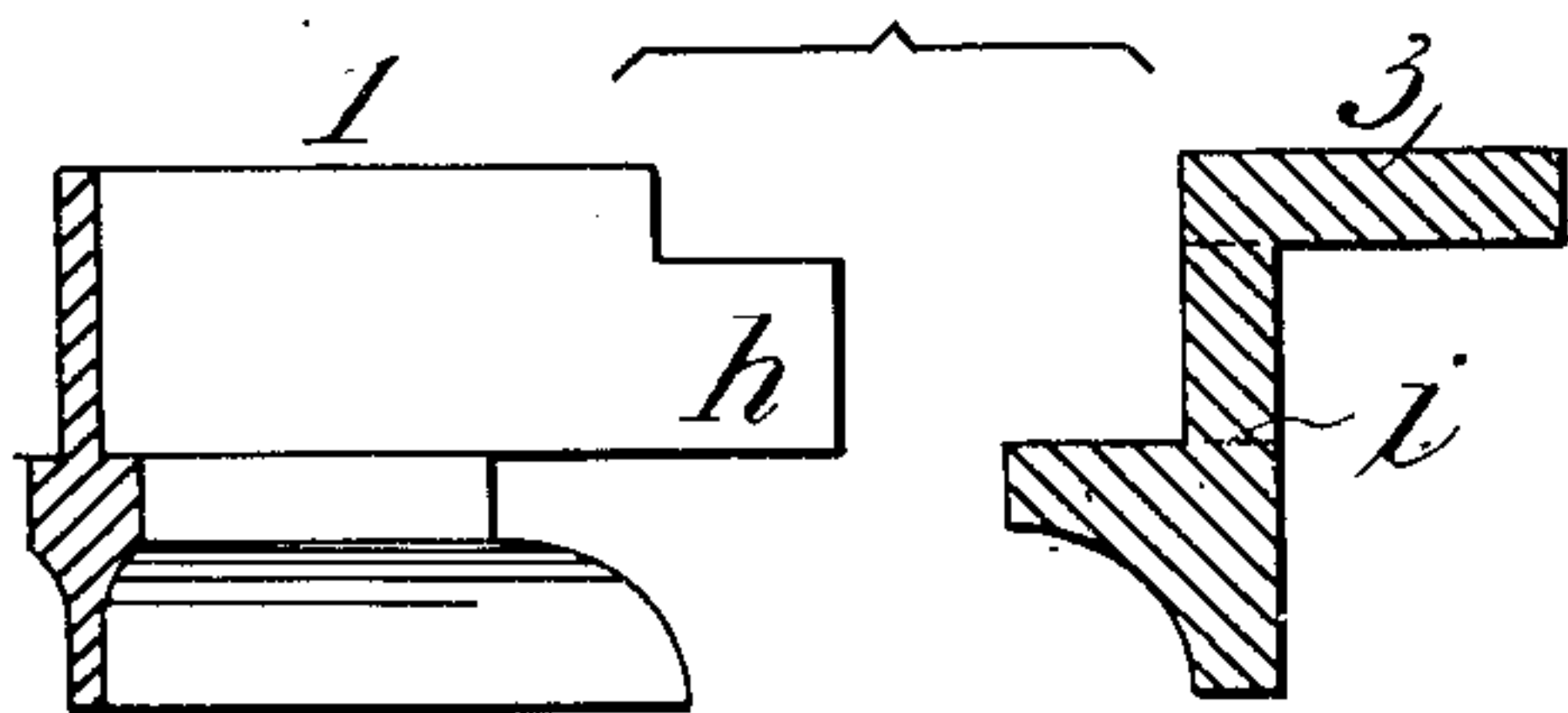
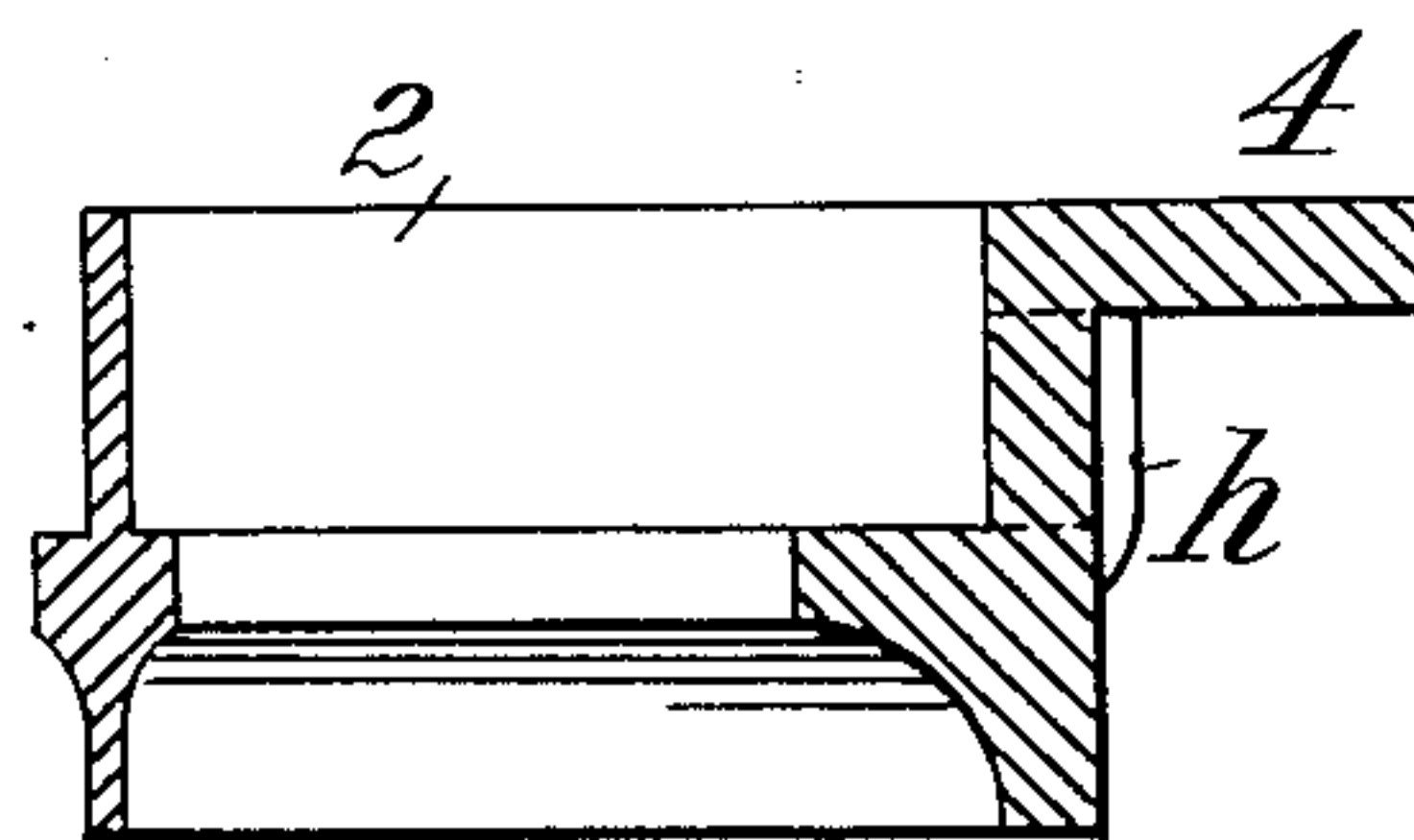


Fig. 6.



WITNESSES

W. B. L.
Schuyler

INVENTOR

Joseph Lang.
By Wm. Hallen White

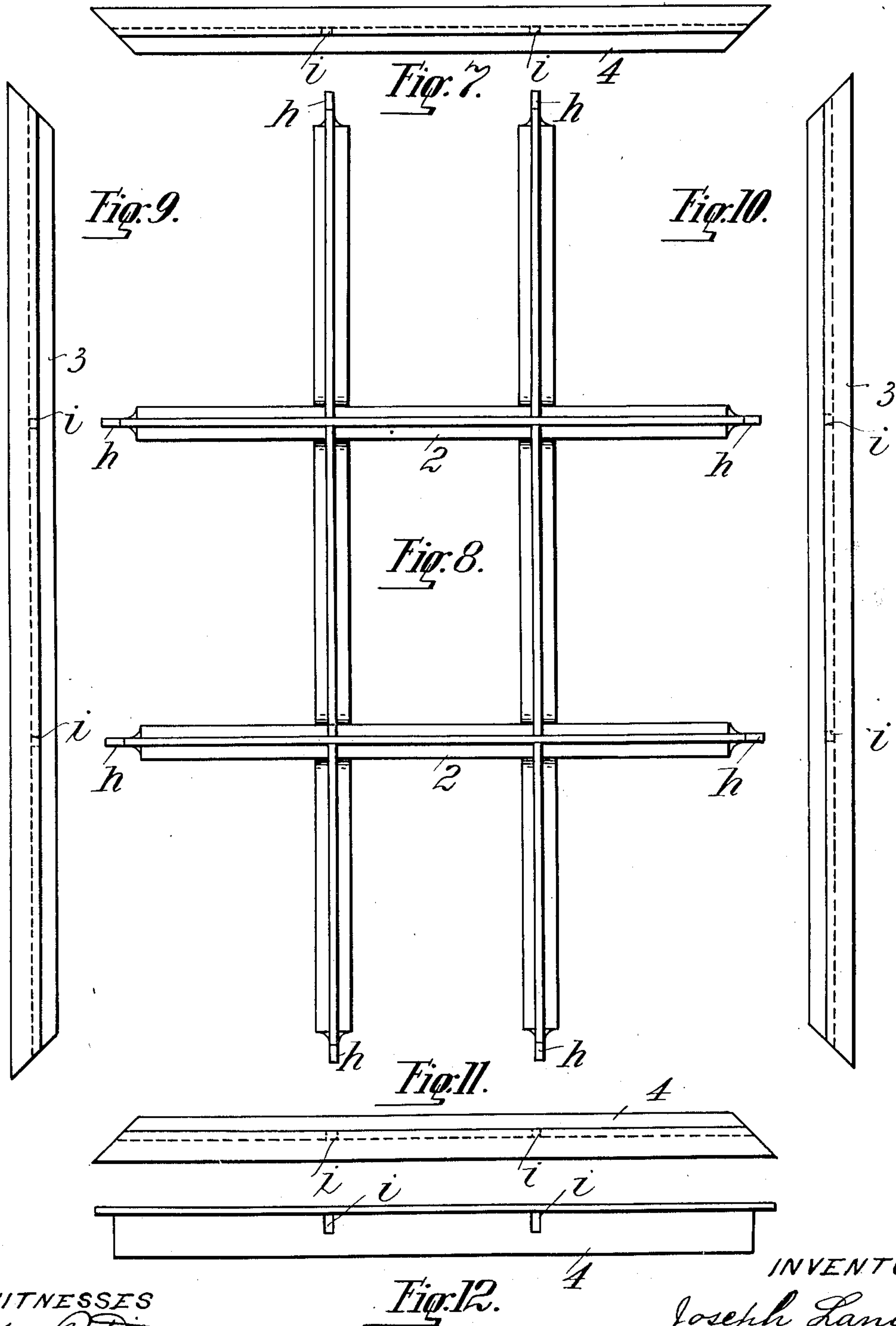
ATTY

No. 882,152.

PATENTED MAR. 17, 1908.

J. LANG.
WINDOW FRAME.
APPLICATION FILED JULY 22, 1907.

4 SHEETS—SHEET 3.



WITNESSES
M. Petit
Lang & Co.

Fig. 12.

INVENTOR
Joseph Lang
By Mrs. Kallan White
ATTY.

No. 882,152.

PATENTED MAR. 17, 1908.

J. LANG.

WINDOW FRAME.

APPLICATION FILED JULY 22, 1907.

4 SHEETS—SHEET 4.

Fig. 14.

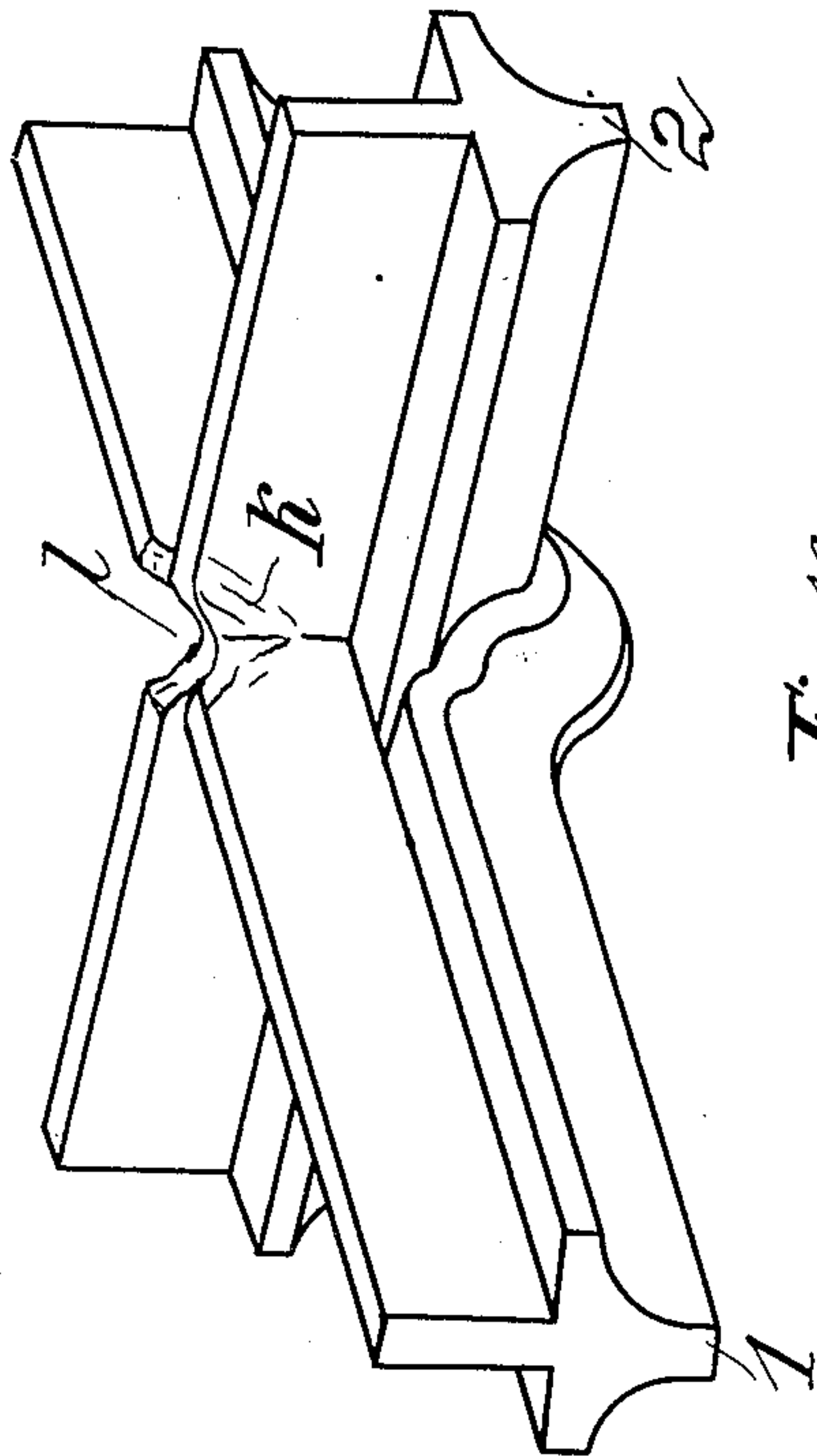


Fig. 16.

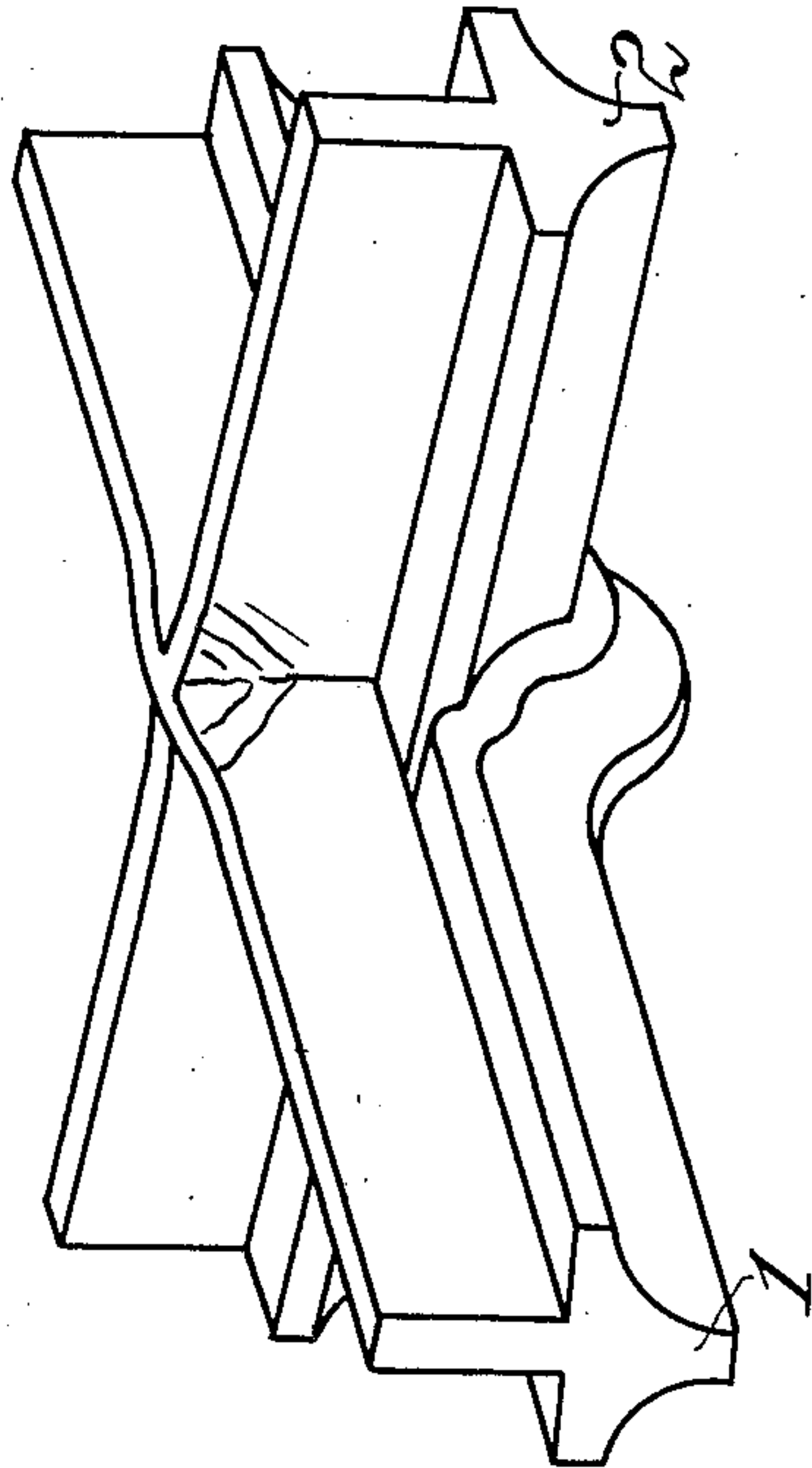


Fig. 13.

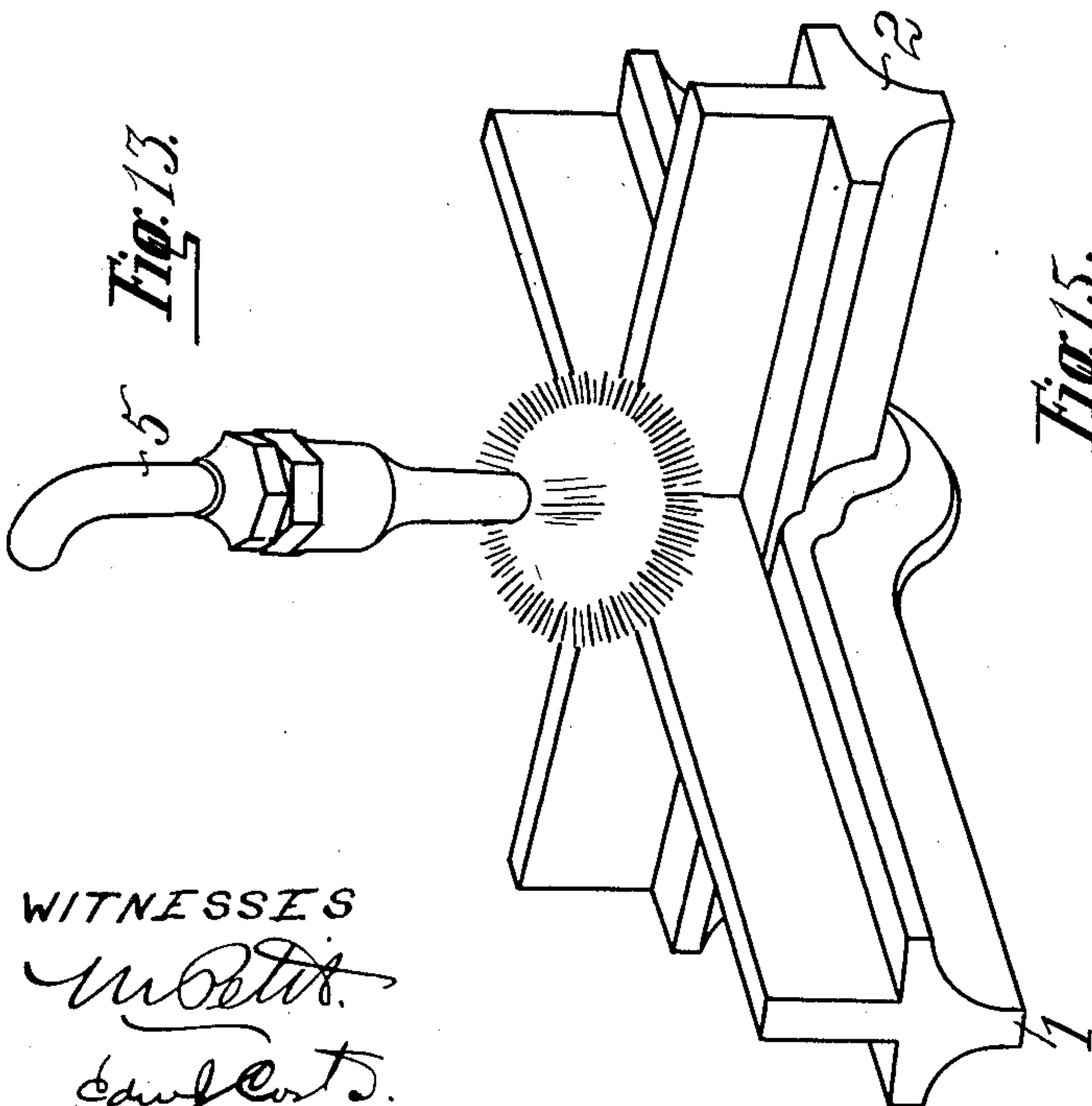
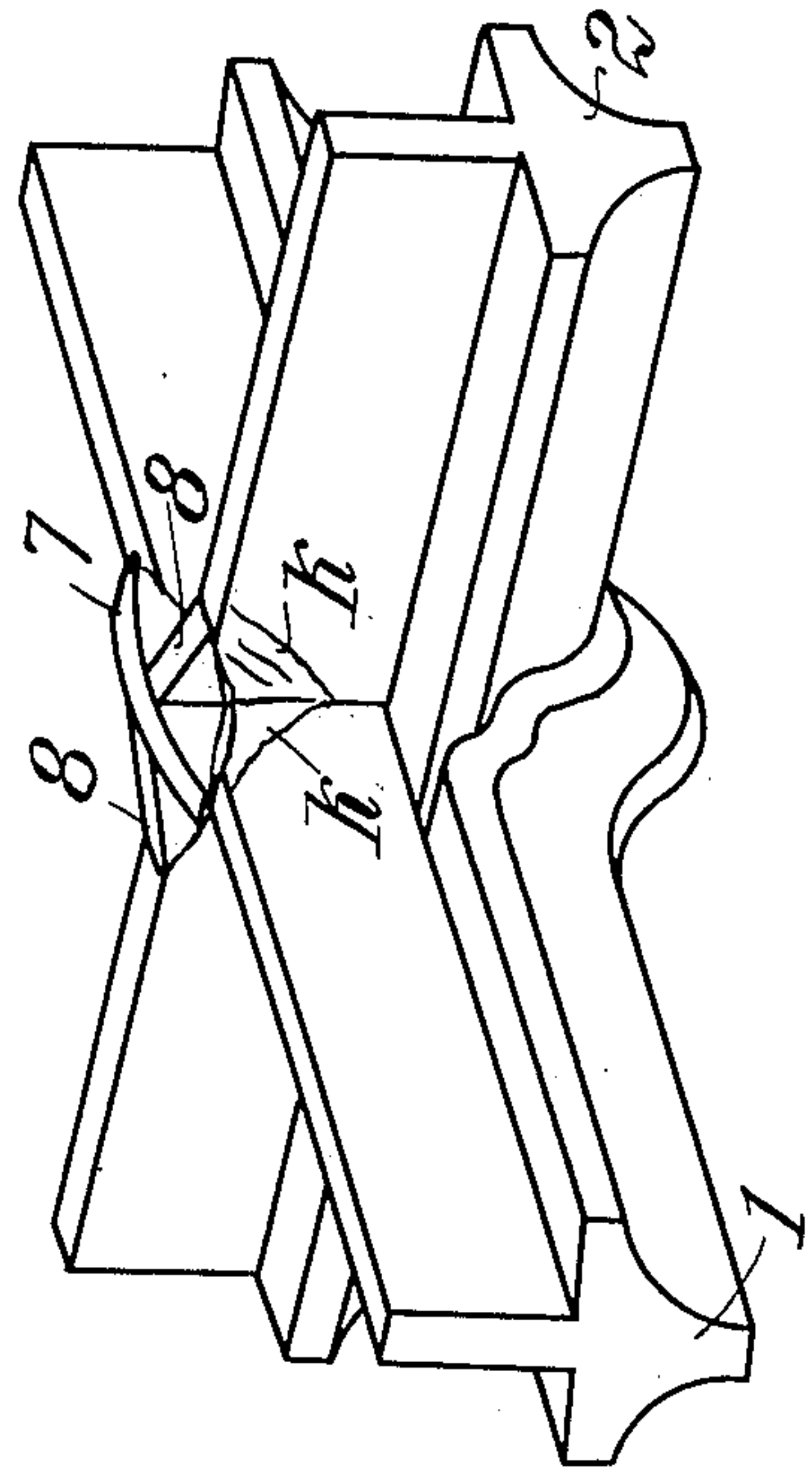


Fig. 15.



WITNESSES
M. B. T. A.
Chas. C. T. S.

INVENTOR
Joseph Lang
By Wm. Wallace White

ATTY.

UNITED STATES PATENT OFFICE.

JOSEPH LANG, OF MANNHEIM, GERMANY.

WINDOW-FRAME.

No. 882,152.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed July 22, 1907. Serial No. 385,078.

To all whom it may concern:

Be it known that I, JOSEPH LANG, a citizen of the Empire of Germany, residing at Mannheim, in the Empire of Germany, have invented a new and useful Window-Frame, of which the following is a specification.

My invention relates to window frames made from iron or steel sash-bars and rolled bars.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is an elevation of a finished iron or steel window frame, Fig. 1^a is an end view of the same, Fig. 2 is a perspective view of an internal frame piece cut away and slitted in the upper web and ready for bending, Fig. 3 is an elevation of the same after it has been bent, Fig. 4 is a similar elevation and a cross section through another internal frame piece which is straight and passes through the gap of the former, Figs. 3^a and 4^a are similar to Figs. 3 and 4 and show modifications, Fig. 5 is an elevation of an end of an internal frame piece and a cross section through an external frame piece, the former being cut out and ready for the insertion in a hole of the latter, Fig. 6 is a similar view after the union of the two parts, Figs. 7, 9, 10 and 11 are elevations of the four external frame pieces before their composition, Fig. 8 is an elevation of four composed internal frame pieces, of which the two long ones are cut out and bent in the manner shown at Fig. 3 and the two short pieces are straight and have been passed through the gaps of the former, as is shown at Fig. 4, and the ends of all these pieces being cut out in the manner shown at Fig. 5, Fig. 12 is a side view of the external frame piece shown at Fig. 11, Figs. 13 to 16 illustrate the several steps in the process of welding the crossing points of two internal frame pieces.

Similar characters of reference refer to similar parts throughout the several views.

For the manufacture of a rigid window frame of iron or steel as shown at Figs. 1 and 1^a four internal pieces 1, 1 and 2, 2 of sash-iron or steel and four external pieces 3, 3 and 4, 4 of rolled iron or steel of the desired section are cut and the ends of the external pieces 3, 3 and 4, 4 are beveled off, as is shown at Figs. 7, 9, 10 and 11. The upper web of each internal piece 1 is on two places cut away so as to form two gaps *a b d e* as is clearly shown at Fig. 2. The cutting of

these gaps may be effected in any known manner, be it by means of a die and a stamp in a press or otherwise. Afterwards two slits *b c* and *d f* are made on both sides of each gap, the said slits being produced in any known manner, for example by means of a thin and flat chisel, or a circular metal saw or a band metal saw or the like. The upper web of the internal piece 1 is thus divided from the lower triangular part by the two slits *b c* and *d f*. Thereupon the piece 1 is heated and so bent by pressing in any known manner as to form two gaps *g* shown in Fig. 3, through which the two pieces 2, 2 can pass, as is shown at Fig. 4. It depends upon the section of the sash-bars what shape the gap *g* is to be given. A modification of the gap *g* is for example shown at Fig. 3^a. It will be understood, that the length of the gap in the piece 1 before bending, in other words the distance between the two end faces *a b* and *e d* in Fig. 2, requires to have such a size as to leave after bending a distance between them like the thickness of the upper web of the piece 2 (see Fig. 4) or nearly so. The ends of all the internal pieces 1, 1 and 2, 2 are then cut out to fit the cross section of the external pieces 3, 3 and 4, 4 respectively as is clearly shown at Fig. 5, a projection *h* being left which is to pass through a rectangular hole *i* in the piece 3 or 4. The cutting of the ends of the pieces 1, 1 and 2, 2 may be effected in any known manner, for example by means of a planing machine, the emery disk of a grinding machine, dies and stamps in a press or the like. The two holes *i i* in each external piece 3 or 4 may be cut in any known manner, for example by means of dies and stamps in a press.

The two internal pieces 2, 2 are passed through the gaps *g* of the two other internal pieces 1, 1 and the latter are adjusted on the former, so that the two short external pieces 4, 4 can be put over the projections *h h* of the pieces 1, 1. The projections *h h* of the pieces 2, 2 are inserted in the holes *i i* of the two long external pieces 3, 3, so that the beveled-off ends of all the four external pieces 3, 4, 3, 4 touch each other and the whole frame looks like Fig. 1. Thereupon the beveled-off ends of the external pieces 3, 4, 3, 4 in contact with each other are welded, preferably by means of an oxyhydrogen-blowpipe. In this manner or in any other known and approved manner the four external pieces 3, 3 and 4, 4 are turned into a rigid rectangular frame, in which the four internal pieces 1, 1

and 2, 2 are secured. The ends *h h* of these internal pieces, which project from the external pieces 3, 3 and 4, 4, are then riveted, as is shown in Fig. 6. Where so preferred, the riveted ends *h h* may also be welded on the external pieces by means of the oxyhydrogen-blowpipe 5 without using the wire 6. Fig. 1^a shows the welded ends *h h*. The next step is to weld the crossing points of the internal pieces 1, 1 and 2, 2. According to my invention this welding is effected in the following manner: The oxyhydrogen blowpipe 5 is so applied as to direct the jet of oxyhydrogen to the point where the upper web of the piece 2 crosses that of the piece 1, see Fig. 13, so that the flame will melt the metal in the manner clearly shown at Fig. 14. Thereby a gap *l* will be formed in the upper webs of the crossing pieces 1 and 2 and layers *k k* of molten metal of a varying shape and extension will be produced on the vertical sides of the upper webs as is illustrated in Fig. 14. Thereby one or both joints between the upper webs of the crossing pieces 1 and 2 are welded in their upper parts. For filling up the gap *l* pieces of weldable metal (such as soft wrought-iron or the like) and of convenient shape are placed in the gap as is for example shown at Fig. 15, where the pieces are denoted by 7 and 8, 8. The oxyhydrogen-blow-pipe 5 is again applied for melting these pieces 7 and 8, 8 and for welding them on the upper webs of the crossing pieces 1 and 2 as is for example shown at Fig. 16. Thereby the upper parts of the end faces *a b* and *e d* of the upper web of the piece 1 (see Fig. 3) are rigidly connected with the upper web of the crossing piece 2, so that the so finished window frame shown at Fig. 1 will be capable of withstanding forces to which it is subjected.

The pieces 7 and 8, 8 shown at Fig. 15 may have any other shape; they may be short pieces of wire or the like. Also a single piece of weldable metal may be employed for filling up the gap *l*. The essential point is, that the piece is or the pieces are placed or inserted in the gap *l* and subjected to the jet of oxyhydrogen. In Fig. 16 the weld is

shown as somewhat irregular in order to better illustrate the method. A skilled operator may be able to produce in this manner a nice and regular weld. This method of welding the said crossing points presents the advantage, that the welding can be effected rapidly and in a simple manner.

Where so preferred, of course the whole joint between the crossing pieces 1 and 2, that is to say the joint running from the point *a* in Fig. 4 downwards round the piece 2 and upwards to the joint *e* may be completely welded, and in the manner that the upper parts of the joint are welded as just described above and the lower parts are welded similarly.

The method may be varied without departing from the spirit of my invention. It is optional in what order the several operations described should be conducted. For bending each cut out internal piece 1 may be heated wholly or partly or only on the places where the gaps *g* are to be formed. The projecting ends *h h* shown in Figs. 1^a and 6 may be so treated with the jet of oxyhydrogen as to make them flush with the vertical outside of the pieces 3 or 4. The internal frame pieces 1, 2 may have any other cross section and also the external frame pieces 3, 4.

I claim:

A metal window frame comprising four external pieces having their ends beveled off and welded together, said external pieces having holes therein for the reception of the ends of the internal pieces, a number of internal pieces disposed in one direction, and having openings therein of a shape corresponding to the cross sectional shape of the internal pieces, and other internal pieces extending at right angles to the first mentioned internal pieces, and passing through said openings, the ends of all of said internal pieces being welded into openings in the external pieces.

JOSEPH LANG.

Witnesses:

ORMYNPB WALTER
JOS. H. LEUTE.