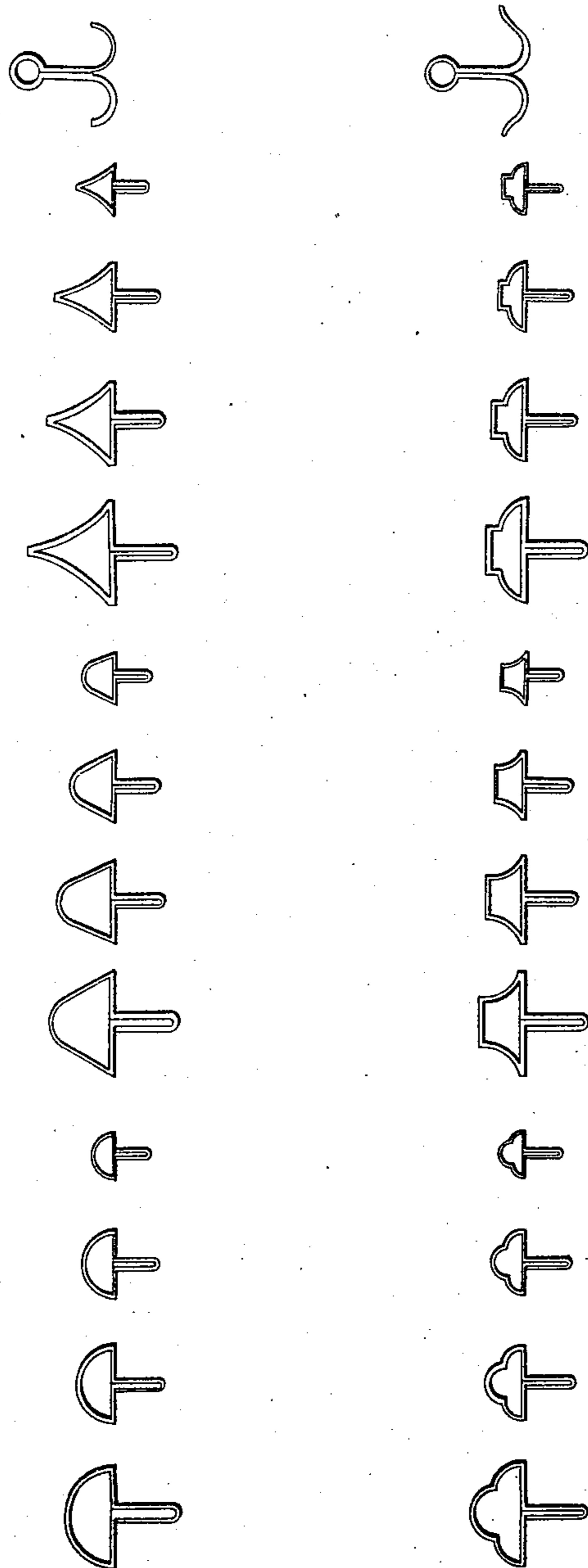


T. A. Cambensy,

Window Sheet-Iron Cross-Bar,

N^o 82,919.

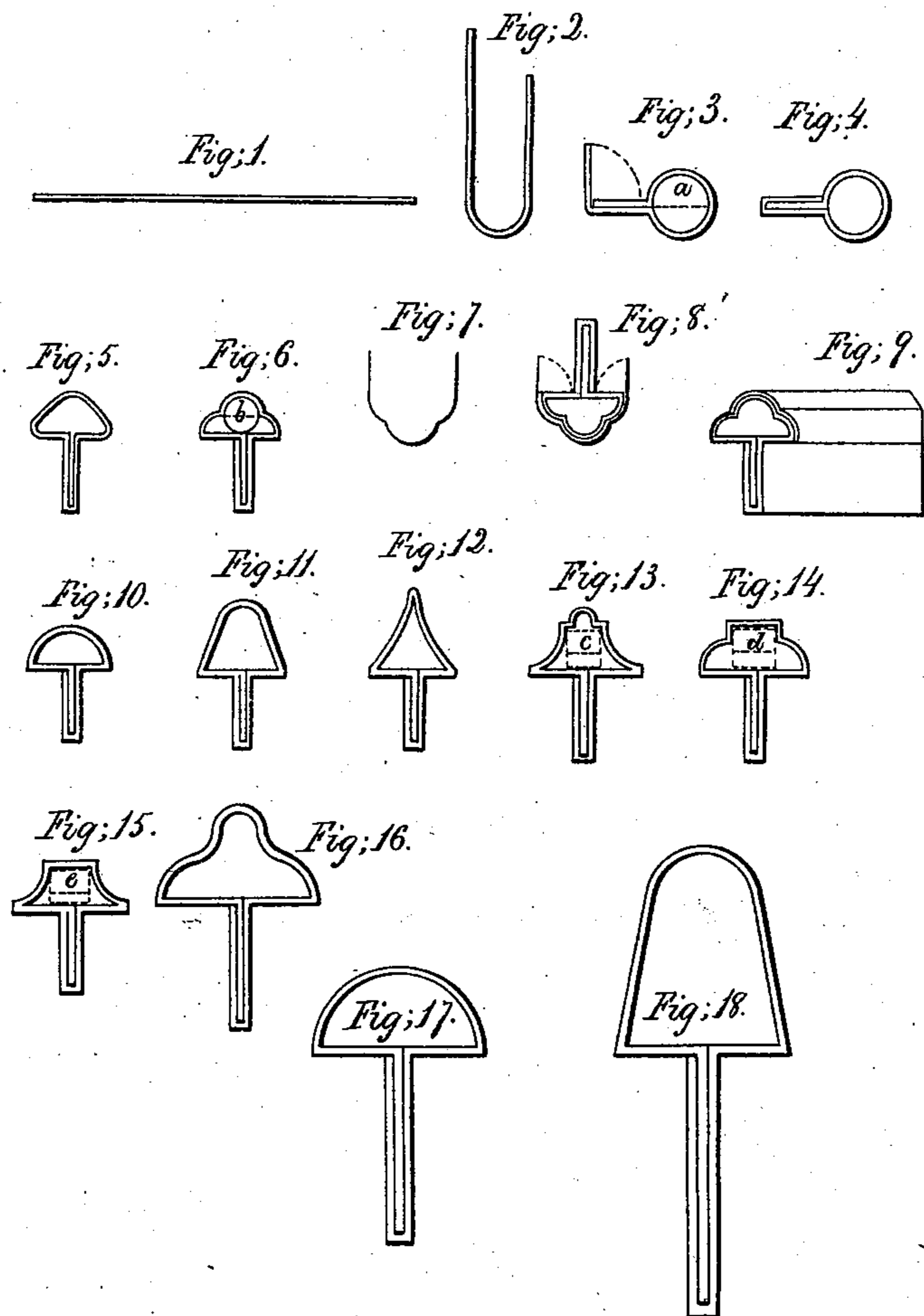
Patented Oct. 13, 1868.



Witnesses.
Charles Lang.
m. m. Pitt.

Inventor.
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Window Sheet-Iron Cross-Bar,
N^o 82,919. *Patented Oct. 13, 1868.*



Witnesses.
Louis Schmitt.
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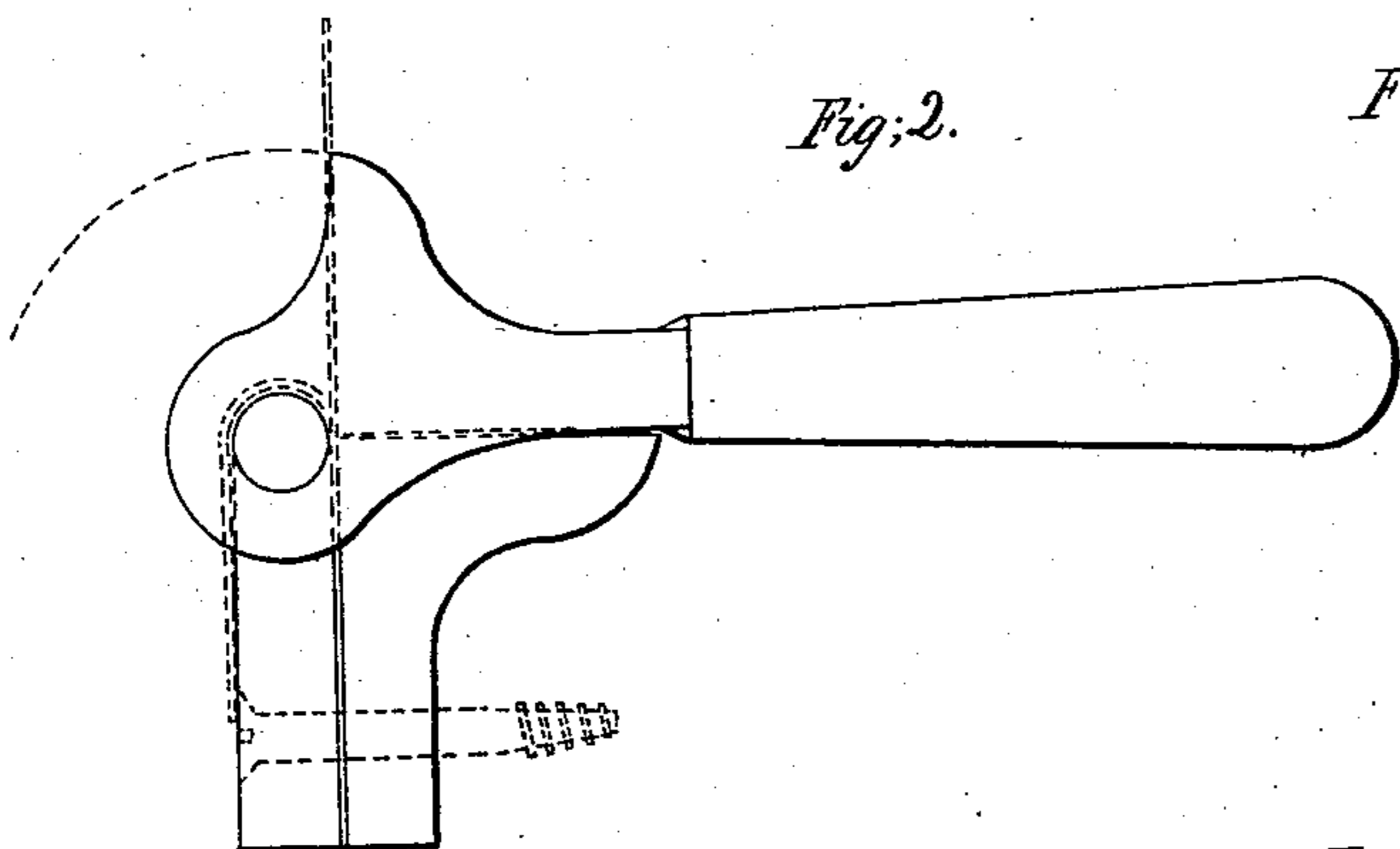
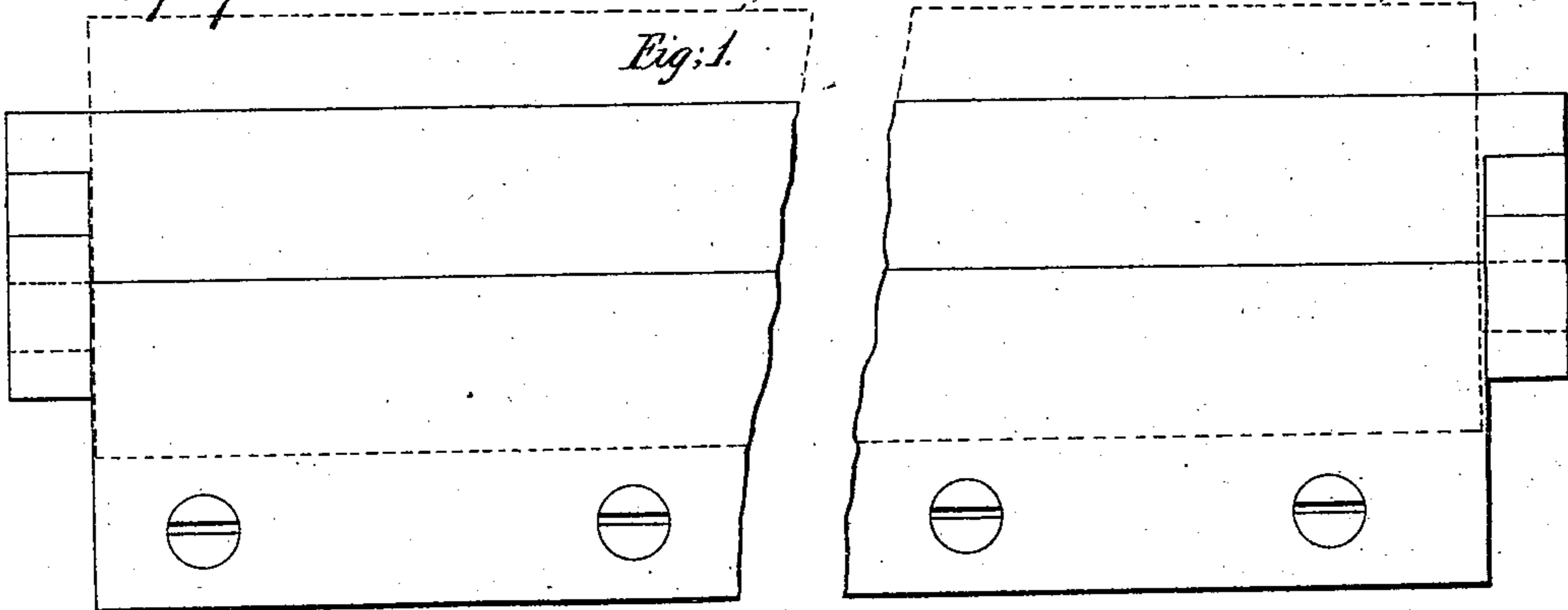


Fig. 3.

Fig. 4.

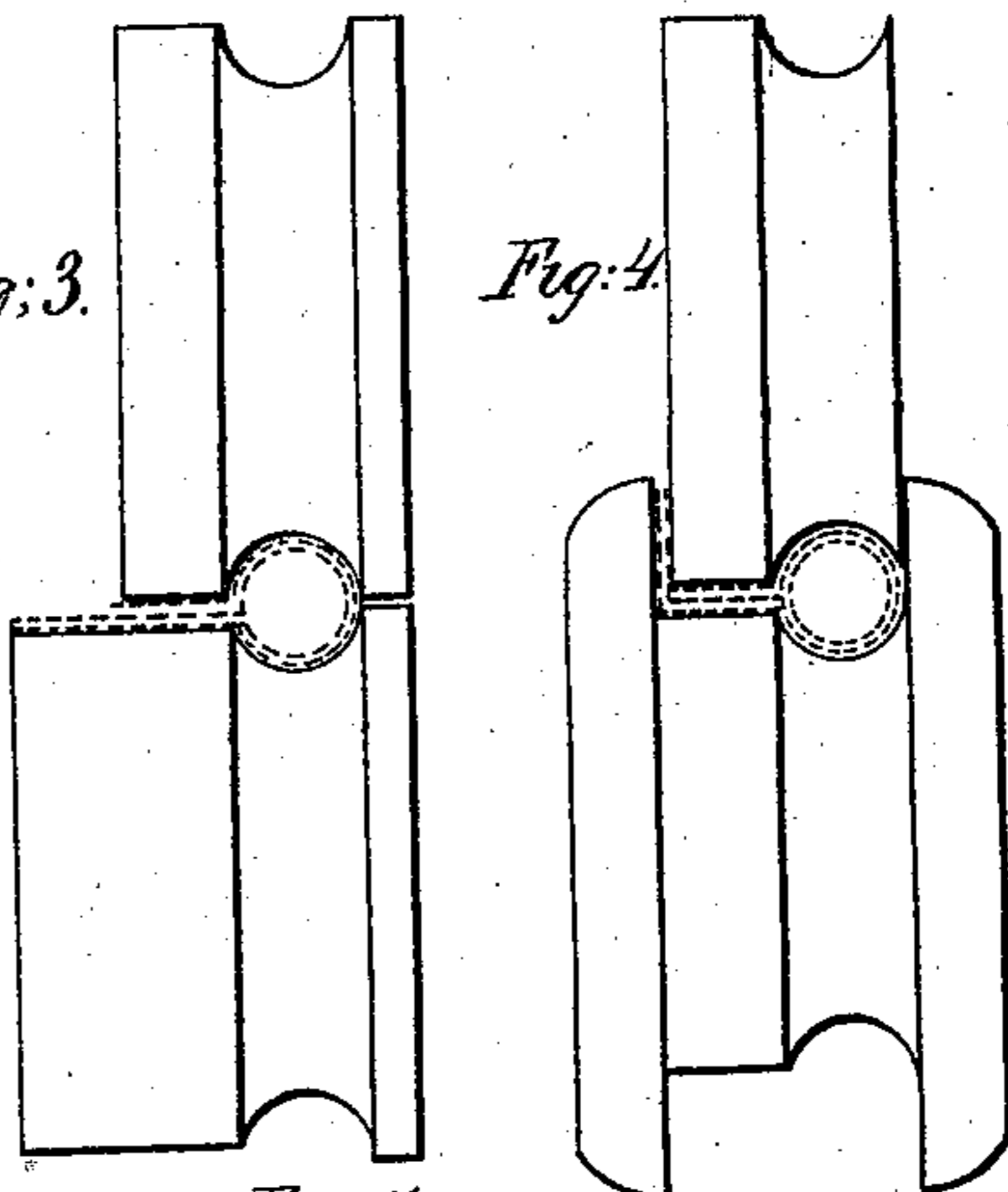


Fig. 2.

Fig. 6.

Fig. 7.

Fig. 8.

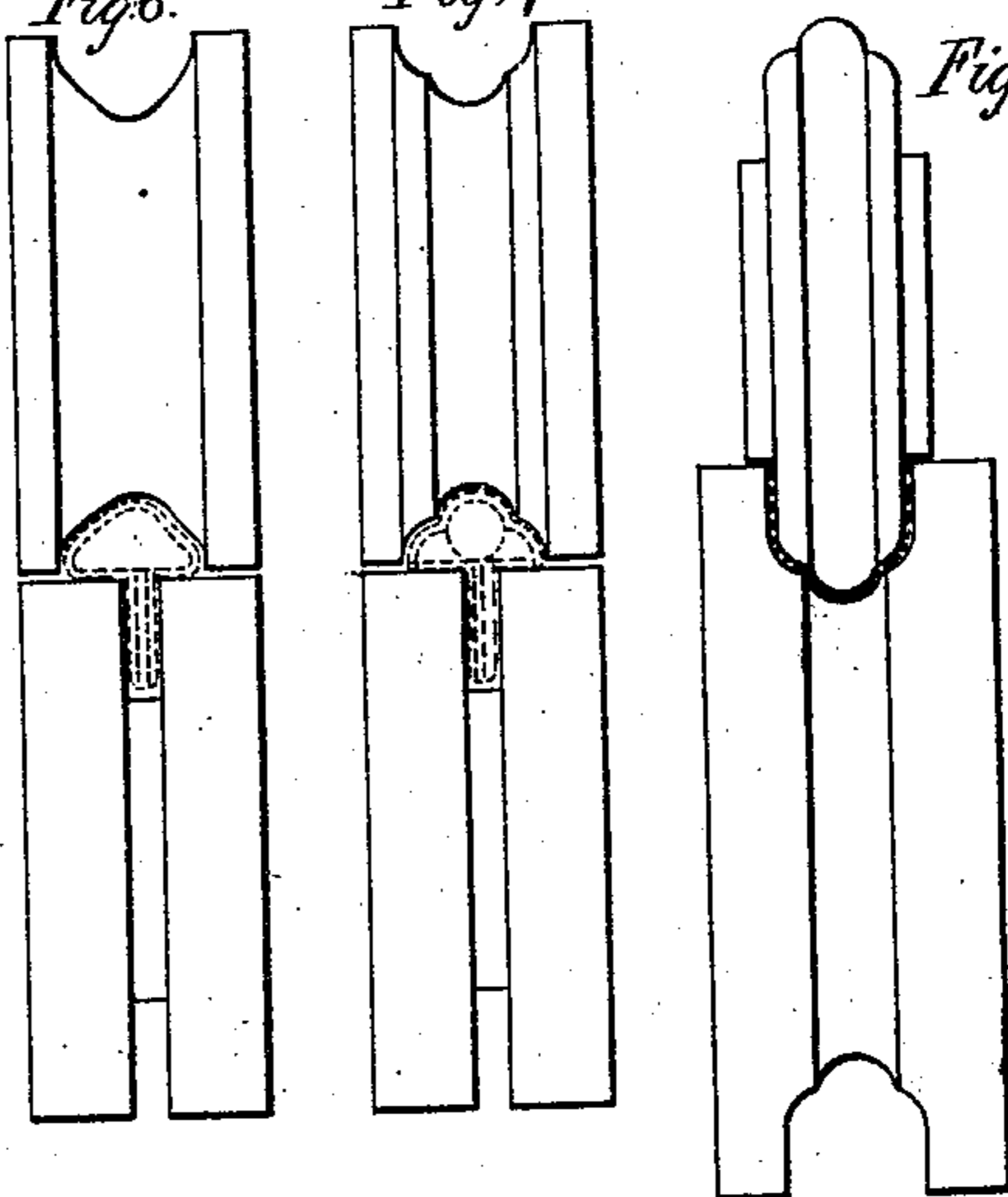


Fig. 5.

Witnesses.

Louis Schmidt.

Friedrich Sarg.

Inventor.

J. A. Cambensy

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Window Sheet-Iron Cross-Bar,

Patented Oct. 13, 1868.

N^o 82,919.

Fig. 1.

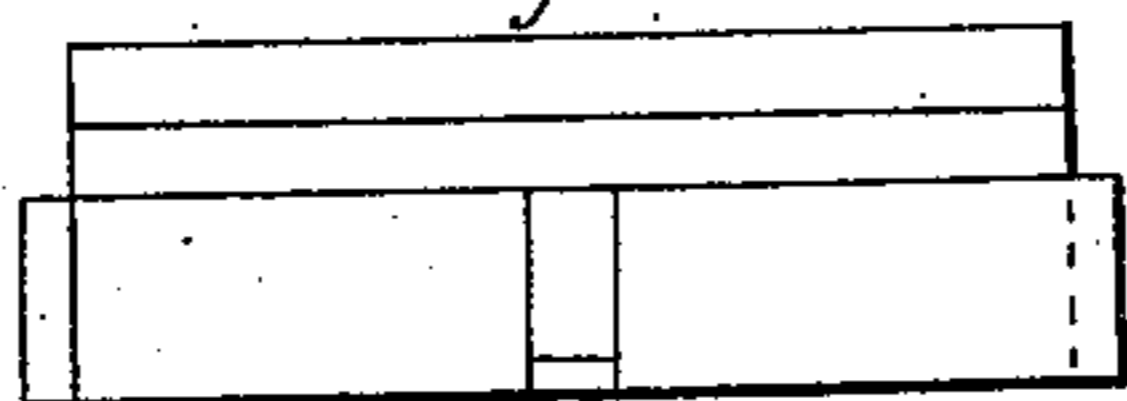


Fig. 2.

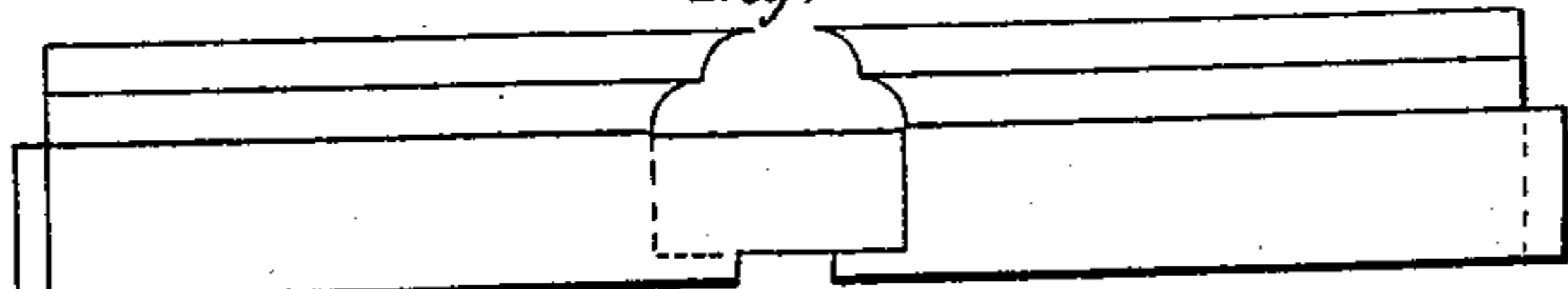


Fig. 3.

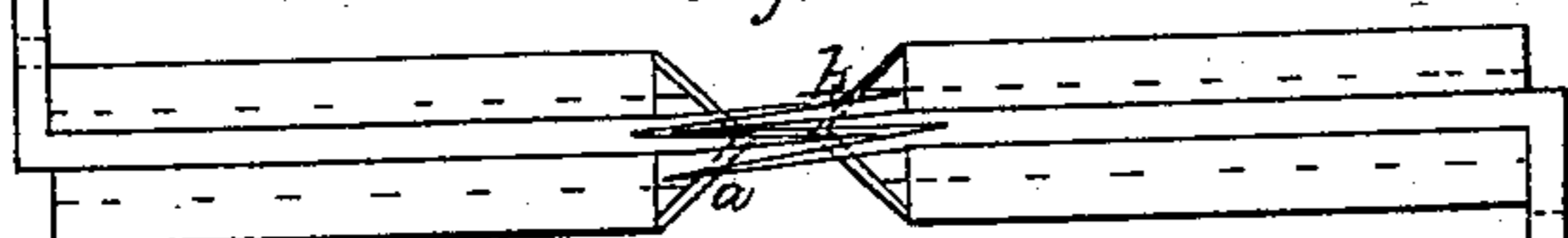


Fig. 4.

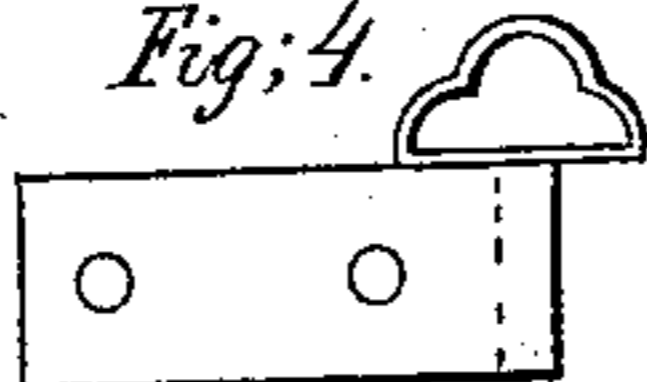


Fig. 6.

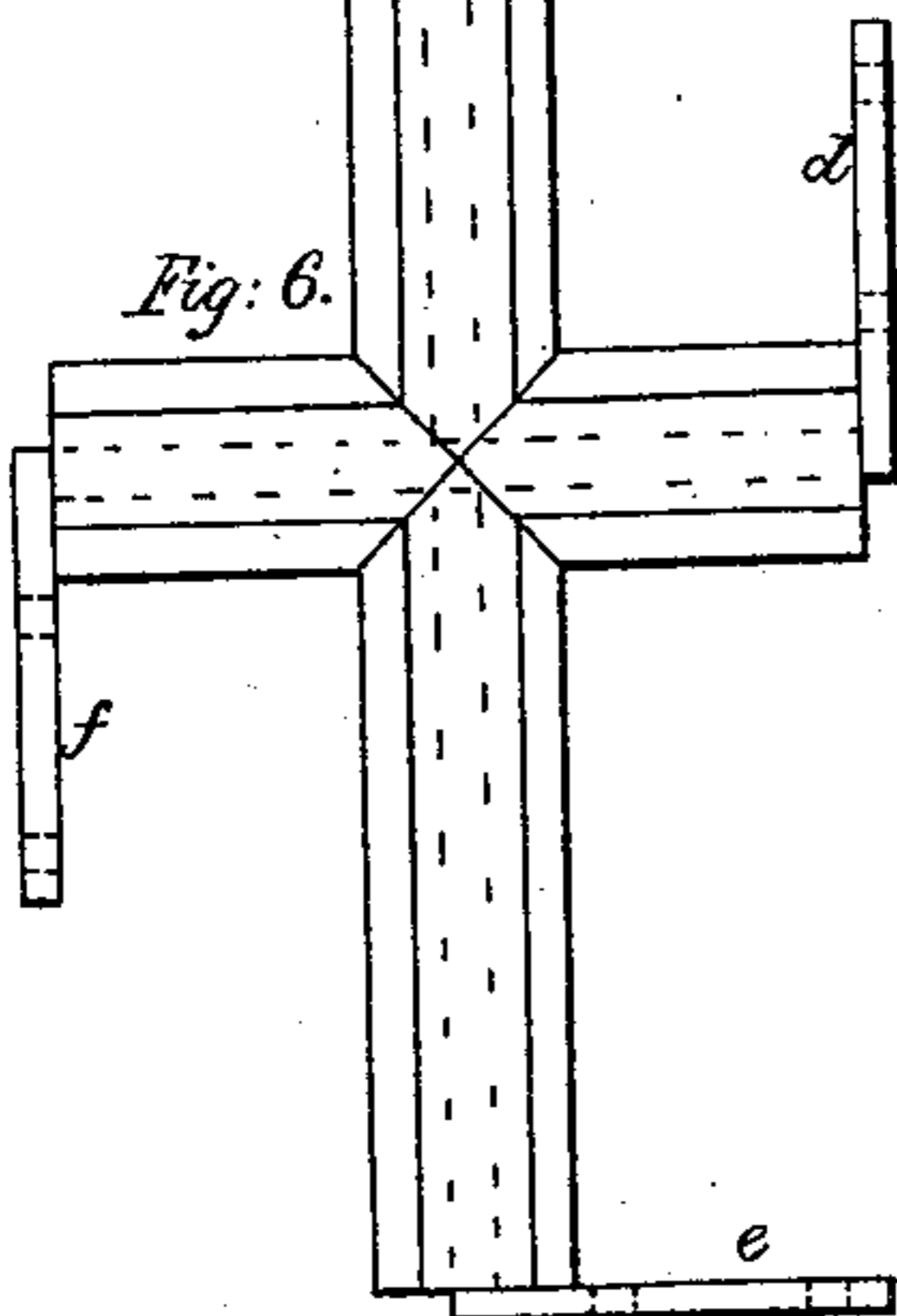
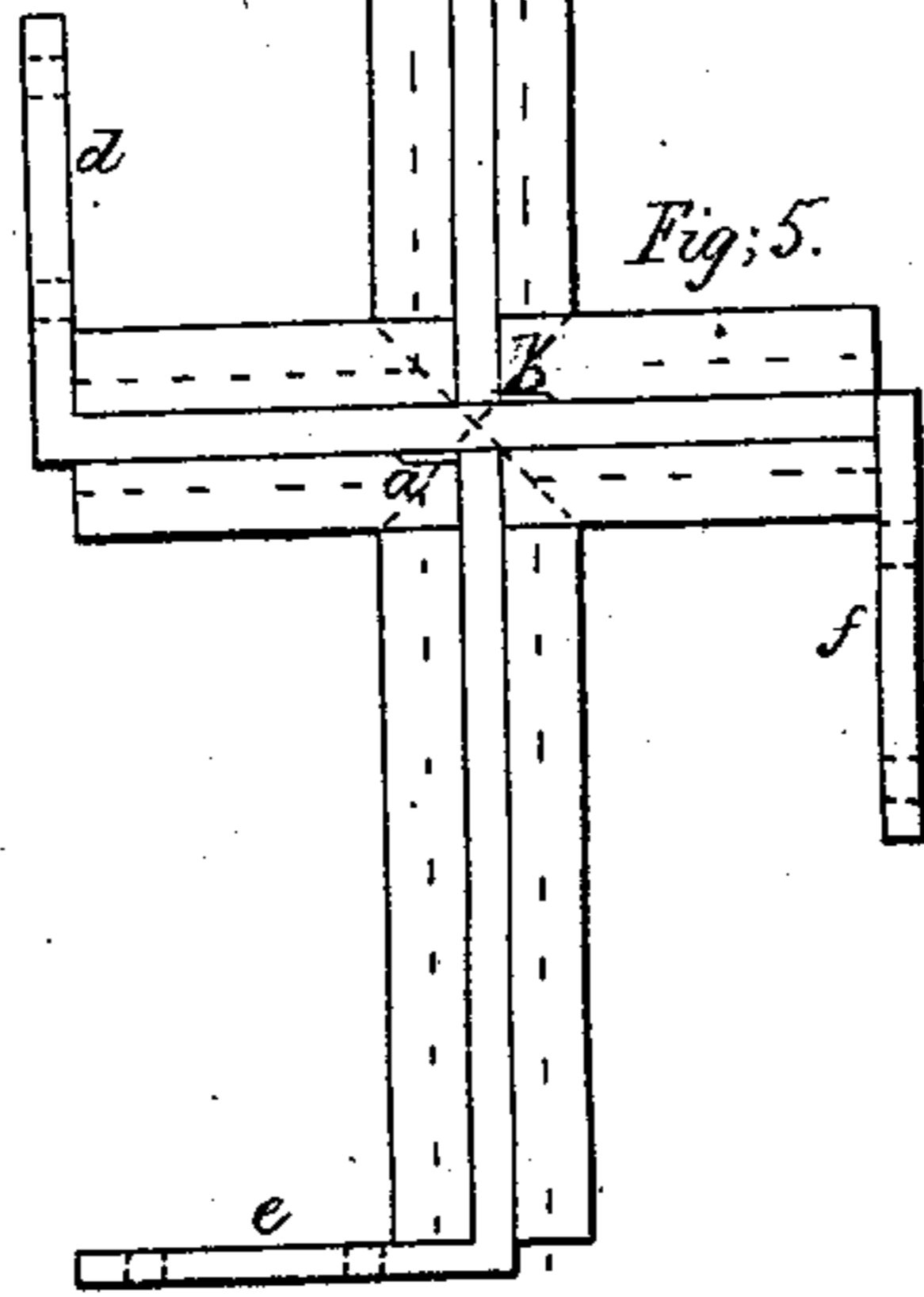


Fig. 5.



Witnesses.
Luis Schmitt.
Friedrich Borg.

Inventor.
T. A. Cambensy.

United States Patent Office.

T. A. CAMBENSY, OF CHICAGO, ILLINOIS.

Letters Patent No. 82,919, dated October 13, 1868.

IMPROVEMENT IN HOLLOW WINDOW CROSS-BARS OF SHEET-IRON.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, T. A. CAMBENSY, of the city of Chicago, in the county of Cook, and State of Illinois, have invented a new and improved Hollow Window Cross-Bar, made of sheet-iron.

A description of the same, as well as the various forms in which it can be manufactured, will be found in the accompanying drawing, making a part of this specification.

They may be combined with wood or iron frames, or with themselves as cross-bars, without weakening one or the other, and also give them a substantial and beautiful appearance.

Being made narrow, they will admit of more light through the window than the ordinary wooden cross-bars, and, for large window-frames, would be much lighter than solid iron. By a selection of material, or by dipping them into varnish, they will be completely prevented from rusting. The face of the same can be covered with sheet-brass or other metal, and plated with gold or silver, to give them a perfect finish.

The several figures in the drawings show transverse sections of a number of styles or patterns, as well as how formed.

There are several ways of giving them their required shape, such as by pressing in moulds, or drawing the metal through moulds or forms. The most approved method, however, is, after cutting the sheet-metal into strips of suitable dimensions, to pass the same through a series of "rolls," which will give it the required shape. If two metals be used, one as a facing, it is put on by the same process.

For a more detailed description of the method of forming my sash-bars, reference is had to the auxiliary drawings, marked plates 2, 3, and 4.

First, a strip of sheet-iron, of proper dimensions, is first cut in any suitable way. Taking a strip of the width shown by No. 1, plate 2, it will receive the shape No. 2, same plate, by means of an ordinary tin-folding machine, as seen by Figures Nos. 1 and 2, sheet No. 3.

In this condition, a round bar of iron, *a*, is placed in the bend, fitting it snugly, and by passing this through the rollers, Nos. 3 and 4, plate 3, the bar gets the shape shown by No. 3, plate 2. The bar of iron being removed, the lip on No. 3 is bent down, forming

shape No. 4, by means of a folding-tool, as seen by No. 5, plate 3.

No. 4 will receive the shape of No. 5, by passing it between rolls, as seen by No. 6, plate 2; then, by placing inside of it a round bar of iron, *b*, and passing it through rolls No. 7, the bar No. 6, plate 2, is formed. The round iron bar being removed, that shaped sash-bar is finished.

Forms, as shown by Nos. 10, 11, and 12, plate 2, are made without the necessity of inserting iron rods within the same.

Forms 13, 14, and 15, plate 2, are made with rollers or presses, as before, but using square bars, *c d e*, on the inside. In making No. 16, by means of rollers or presses, I use a core of lead, which is afterwards removed; and such as Nos. 17 and 18, I use properly-shaped wooden formers. I then dip my sash-bars in seething varnish for the covering, &c.

To cover a bar with brass, silver, &c., I take a properly-sized strip, and give it form No. 7, plate 2, by passing it through rolls No. 8, plate 3. Form No. 6 is now laid inside of this, and the ends turned over, as shown by No. 8. This, then, being passed through the "drawbanche," the two metals will adhere, and the bar is completed, as seen in No. 9.

To join the bars and secure them to wooden frames, the operation is illustrated by plate 4, No. 1, showing how one part of the bar is cut below or on the inside. Nos. 2 and 3 show the cutting of the cross-bar. No. 4 illustrates how the ends are turned to secure bars to a frame. It is also shown in several of the other figures.

Nos. 5 and 6 represent a top and bottom view of the bars joined. In No. 5, two lips, *a* and *b*, will be seen of one bar soldered to the other. The joints will also be soldered, which finishes the joining-process.

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

As a new article of manufacture, the hollow sheet-metal window-bars, constructed substantially as shown and described.

T. A. CAMBENSY.

Witnesses:

F. E. CANDA,
CHAS. STRUVE.