

No. 793,307.

PATENTED JUNE 27, 1905.

M. LACHMAN.  
ART OF SHEET METAL WORKING.  
APPLICATION FILED APR. 27, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

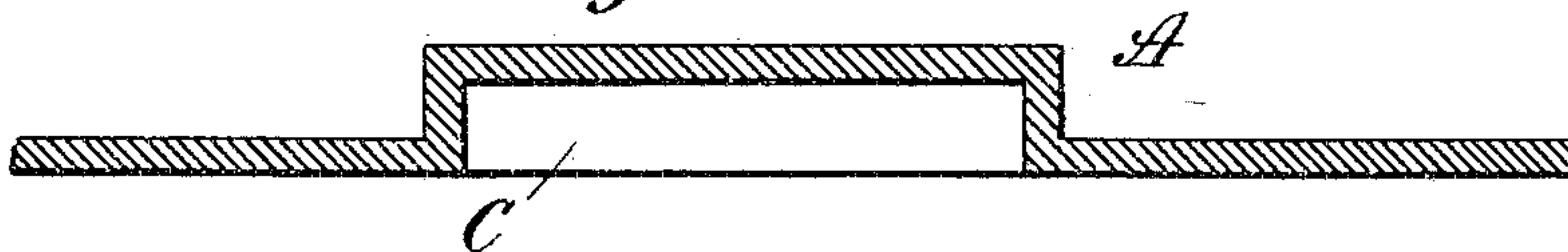


Fig. 2.

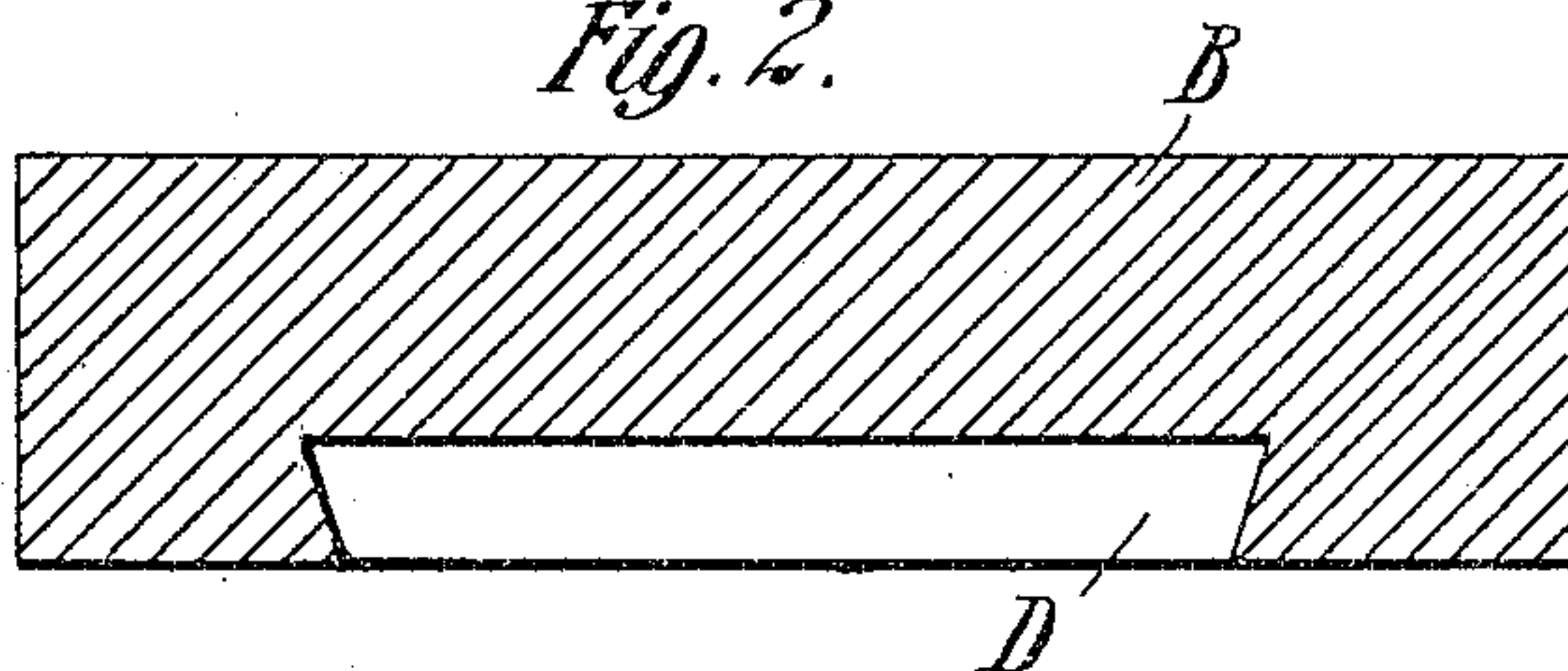


Fig. 3.



Fig. 4.

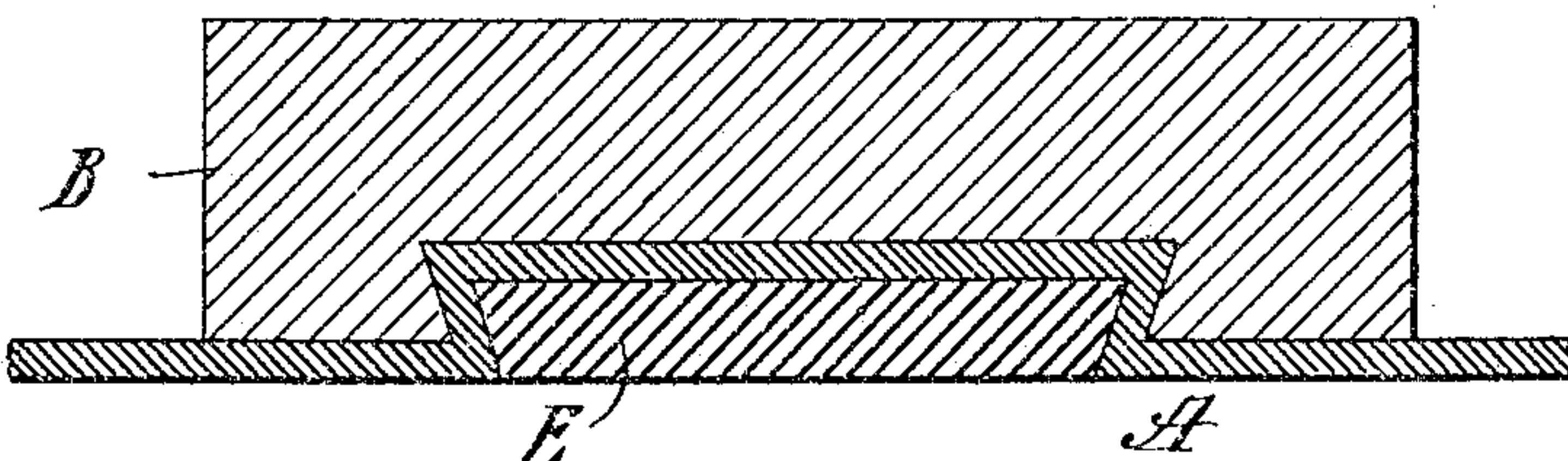


Fig. 5.

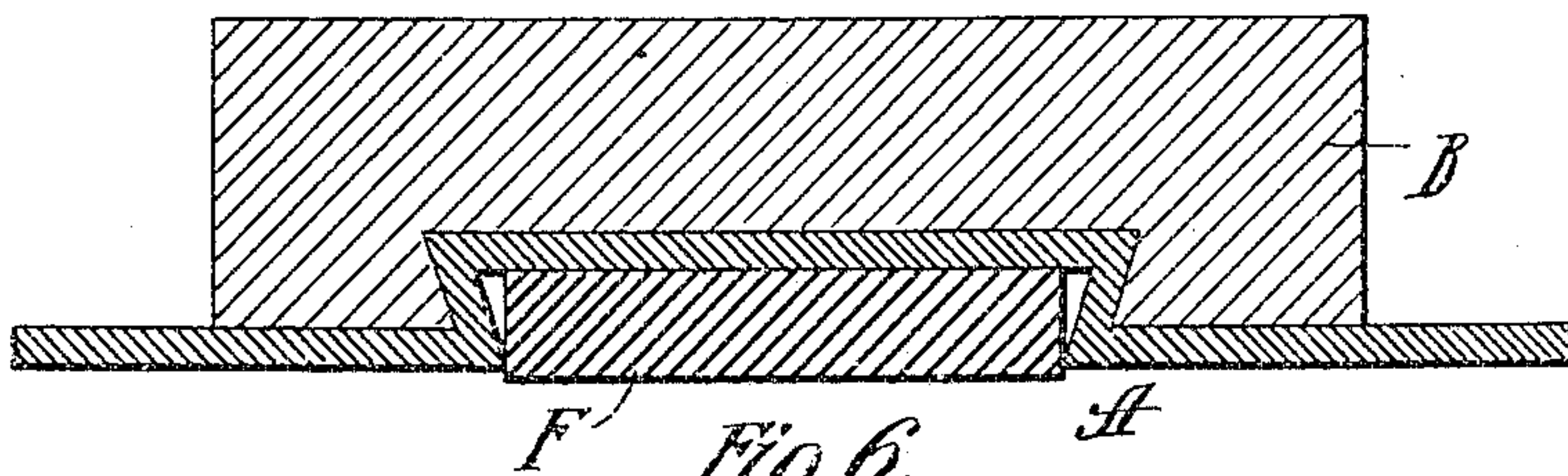
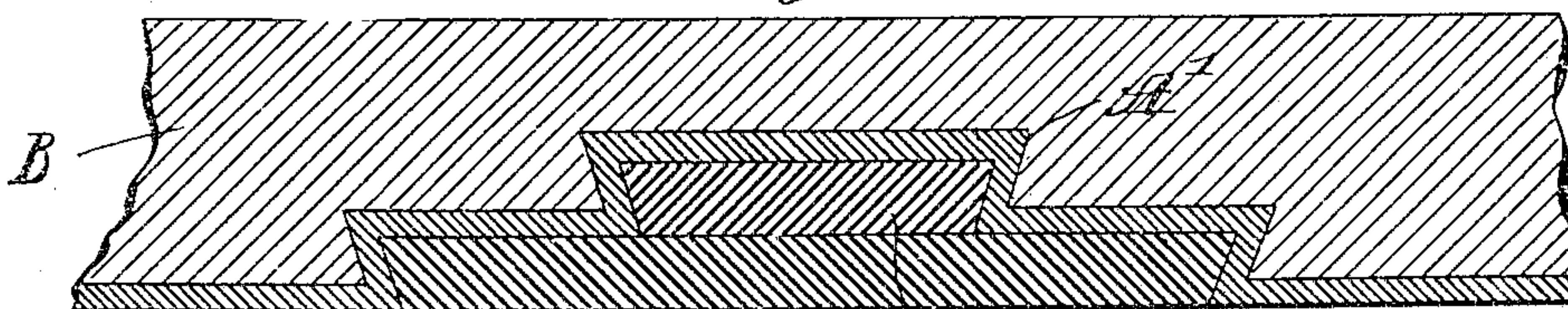


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 7.

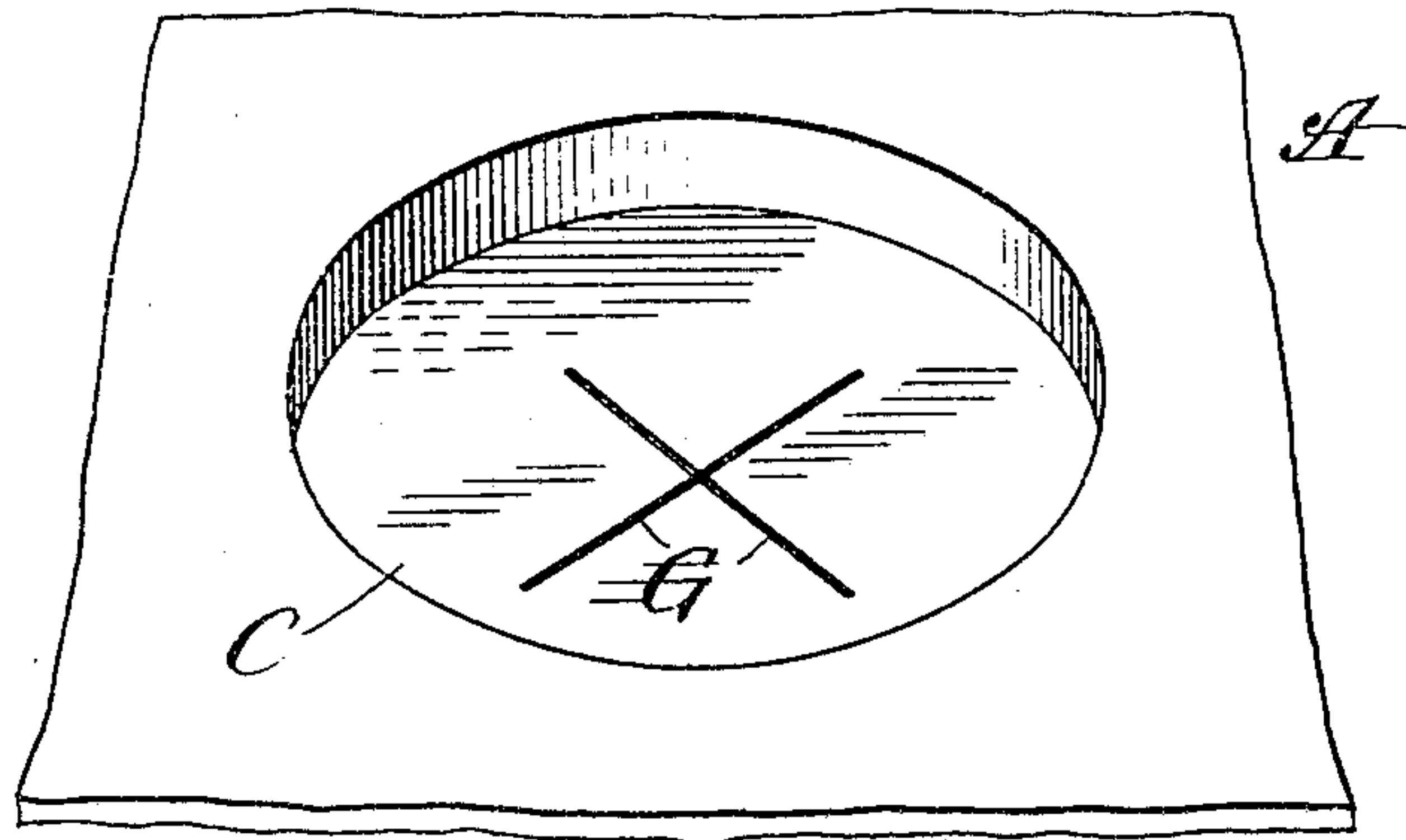


Fig. 8.

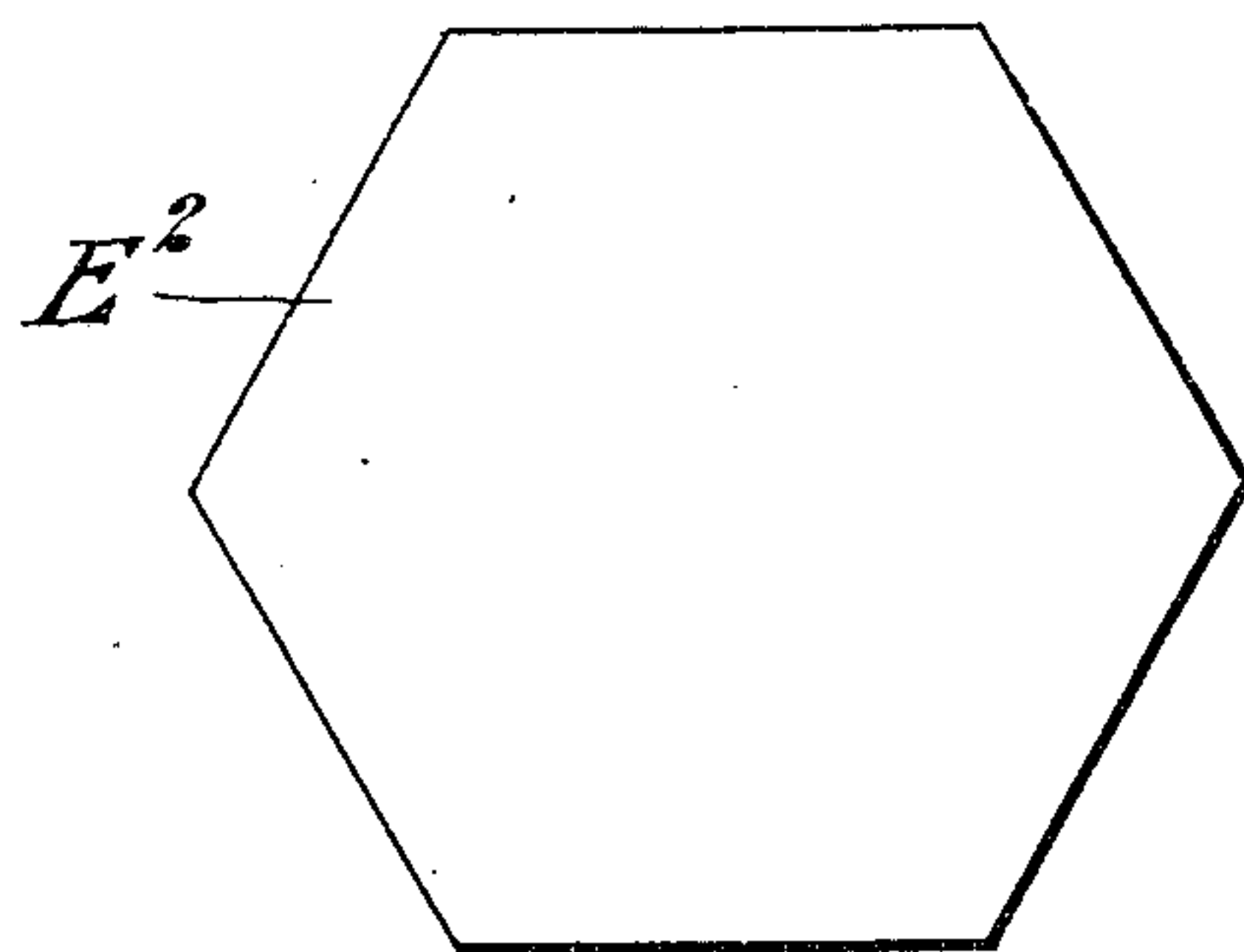


Fig. 9.

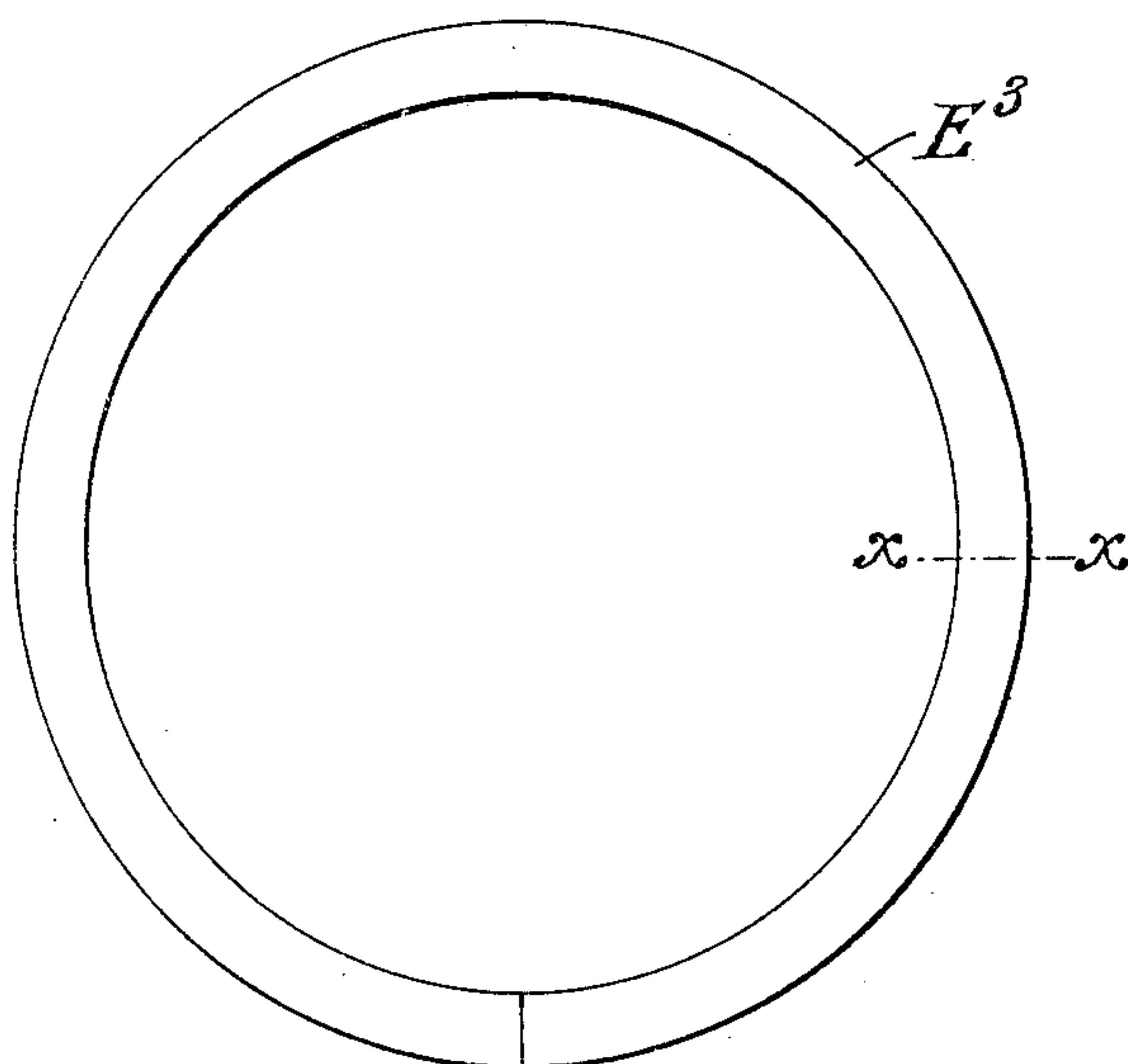


Fig. 11.

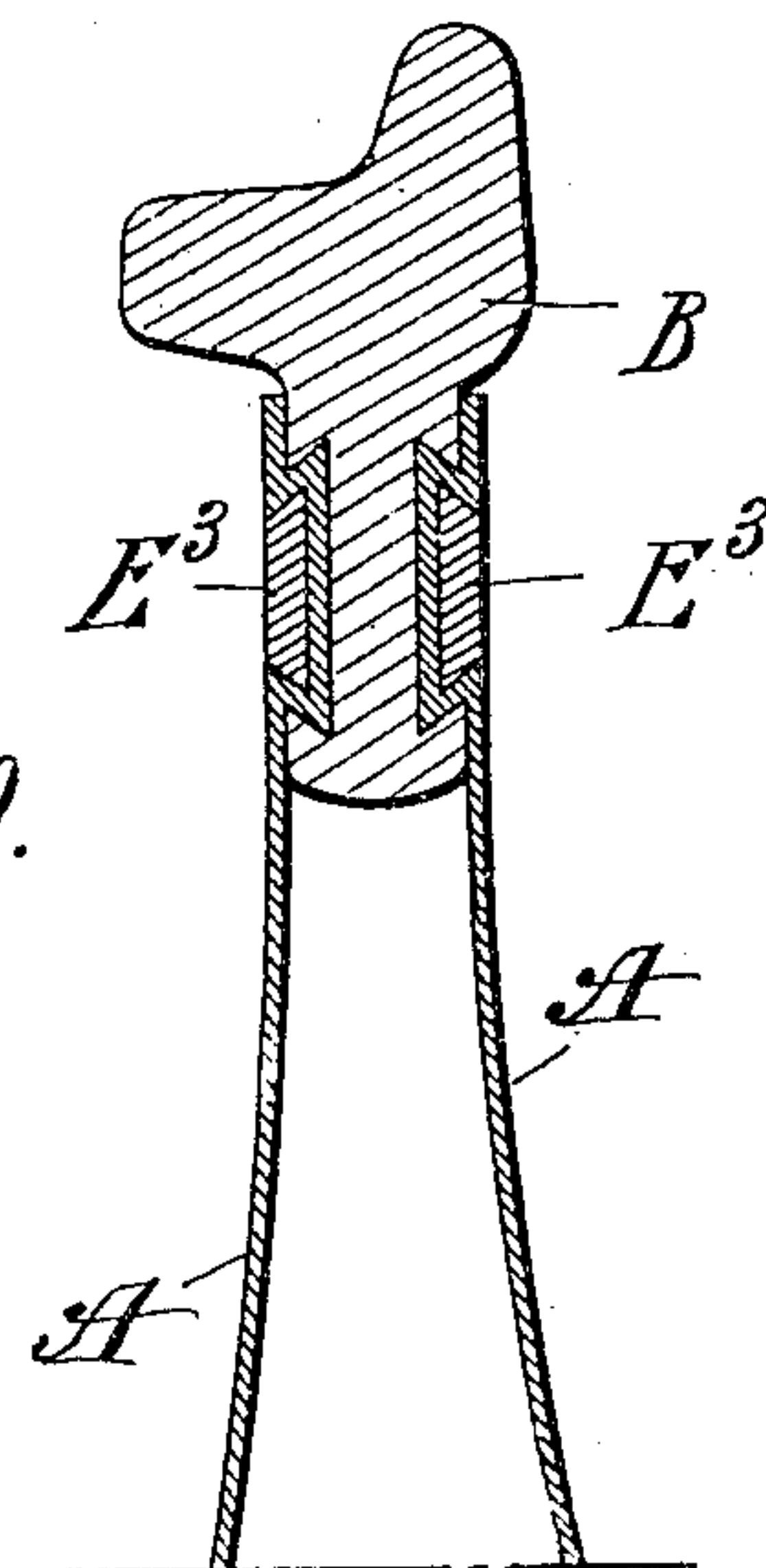


Fig. 10.



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# UNITED STATES PATENT OFFICE.

MAURICE LACHMAN, OF LONDON, ENGLAND.

## ART OF SHEET-METAL WORKING.

SPECIFICATION forming part of Letters Patent No. 793,307, dated June 27, 1905.

Application filed April 27, 1904. Serial No. 205,113.

*To all whom it may concern:*

Be it known that I, MAURICE LACHMAN, a citizen of the United States, and a resident of London, England, have invented certain new and useful Improvements in the Art of Sheet-Metal Working, of which the following is a specification.

My invention relates to the art of working with sheet metals, and particularly to a new method of fastening to sheet-metal articles pieces of metal and other substances, especially those of greater thickness or of a character more bulky than that of the sheet metal to which they are to be fastened, and the objects of my invention are to provide a method by which materials may be securely fastened to thin sheet-metal articles, also to provide a simple, quick, and economical method for accomplishing such result; and to accomplish these objects it consists in the combination, construction, and arrangement of the various parts and the steps and processes hereinafter more fully described and claimed, and shown on the drawings accompanying this specification, in which—

Figure 1 represents a cross-section of a piece of sheet metal diametrical of a circular boss or cup formed thereon. Fig. 2 is a cross-section of a lug or piece of metal to be secured to the sheet metal diametrical of a circular undercut recess therein. Fig. 3 is a diametrical cross-section of a circular tie-piece. Fig. 4 is a diametrical cross-section of the parts after the completion of the operation of my invention. Figs. 5 and 6 show modifications. Fig. 7 is a perspective view of the metal "cup" provided with cross-slits. Fig. 8 is a plan view of a tie-piece of polygonal contour. Fig. 9 is an elevation of a tie-piece in form of a split ring. Fig. 10 is a section on line *xx* of Fig. 9. Fig. 11 is a section of a portion of a metal wheel embodying the principle of the invention where ring is used.

Referring to the accompanying drawings, in which corresponding parts are designated by similar marks of reference, A represents that portion of a piece of sheet metal to which it is desired to secure, for instance, lug B. The lug B may be of cast metal or any other

desirable firm substance, and is provided in the side which is to abut the sheet metal A with a circular undercut recess D. The undercutting need be but slight, as but little spread is necessary to accomplish the object of my invention. The cup C is formed on A of a diameter slightly smaller than the smallest diameter of the recess D. Tie-piece E is formed from a circular piece of malleable substance, preferably sheet metal of greater thickness than the metal of A or at least harder than the metal of A. This circular tie-piece in the flat is of greater diameter than the smallest diameter of the recess D, but is cupped or curved, as shown, so that its diameter is slightly smaller than the inside diameter of cup C.

The operation of fastening is conducted as follows: Lug B is placed on A so that cup C enters recess D. Tie-piece E is placed inside cup C and pressure applied in a direction perpendicular to the plane of the parts B, A, and E, thus expanding the tie-piece E, which causes cup C to expand with it into the farthest corners of the recess D, thus securely tying the parts together almost as firmly as though integral with each other.

In Fig. 5 I show a modification in which I have substituted a flat piece F for the cupped sheet. This piece when compressed and expanded assumes the position as shown by E, Fig. 4. In such cases a softer metal is used.

In Fig. 6 I show another modification or extension of my invention to large areas. In such cases I gain the required strength by the construction shown, in which I make use of two or more concentric or overlapping recesses with cups and tie-pieces to correspond. To facilitate drawing the cup C, I usually make two slits in the shape of a cross, (+), in that portion of the metal. This is particularly desirable when heavy metal is used. These slits also tend to grip the parts and make the whole more secure.

Heretofore great difficulty has been experienced in securing heavier pieces of metal to sheet metal. For instance, it is often necessary or desirable to form a foundation or base for set-screws or to fasten a lug on sheet-



metal articles. Practically the only method has been to place a piece of heavier metal on each side of the sheet metal and bolt or rivet the whole together. This is slow, expensive, and frequently inconvenient, circumstances being such as do not readily admit of the use of an inside piece. Unless, however, such a method has been used the applied parts have been found to tear off under strain, the screws or other fastenings ripping the sheet metal. All these objections and difficulties are overcome by my invention, which rigidly secures the attaching part to the main body of sheet metal and at the same time in such a manner as to prevent its being loosened or torn out.

I do not limit myself to circular parts C, D, and E, but they may be polygonal or of other adaptable shapes to the object to be accomplished. Furthermore, it is obvious that many features may be varied without departing materially from my invention; but, without naming all such modifications or equivalents,

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The method of securing bodies to sheet metal which consists in forming an undercut recess in the face of the body, forming a cup on the face of the sheet metal, and expanding said cup in said undercut recess and forming a retaining-piece inside said cup and recess,

the edges of said retaining-piece being wholly within the periphery of said cup.

2. The method of securing bodies to sheet metal, which consists in forming an undercut recess in the face of the body, forming a cup on the face of the sheet metal and expanding said cup and a cupped tie-piece in said recess.

3. The method of securing bodies to sheet metal, which consists in forming an undercut recess in the face of the body, forming a cup on the face of the sheet metal and expanding said cup in said recess and compressing a tie-piece in said expanded cup.

4. The method of securing bodies to sheet metal, which consists in expanding a portion of the sheet metal in an undercut recess in the body and expanding a tie-piece in said expanded sheet-metal portion.

5. The method of securing bodies to sheet metal, which consists in forming a plurality of undercut recesses in said body and in expanding portions of the sheet metal and tie-pieces in said recesses.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAURICE LACHMAN.

Witnesses:

J. WARREN BIRD,

O. MONROE MACMILLAN, Jr.