

No. 827,733.

PATENTED AUG. 7, 1906.

J. KOENIG.  
MAKING COMBS.

APPLICATION FILED JAN. 18, 1902.

Fig. 3.

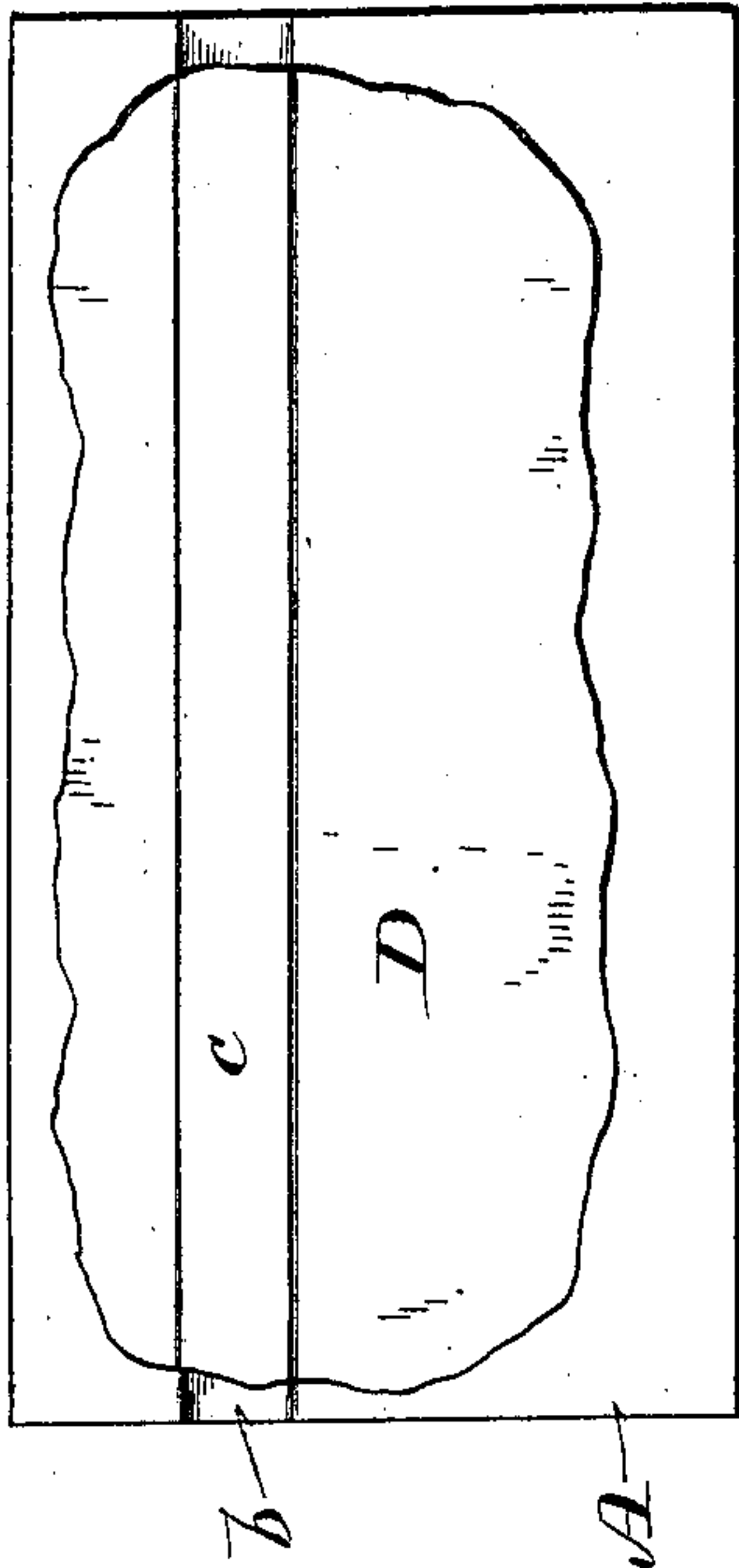


Fig. 4.

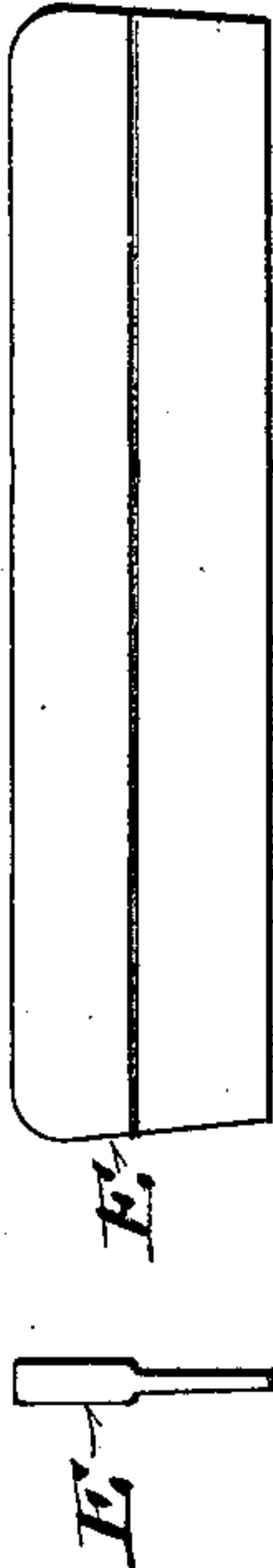


Fig. 4<sup>a</sup>.



Fig. 5.

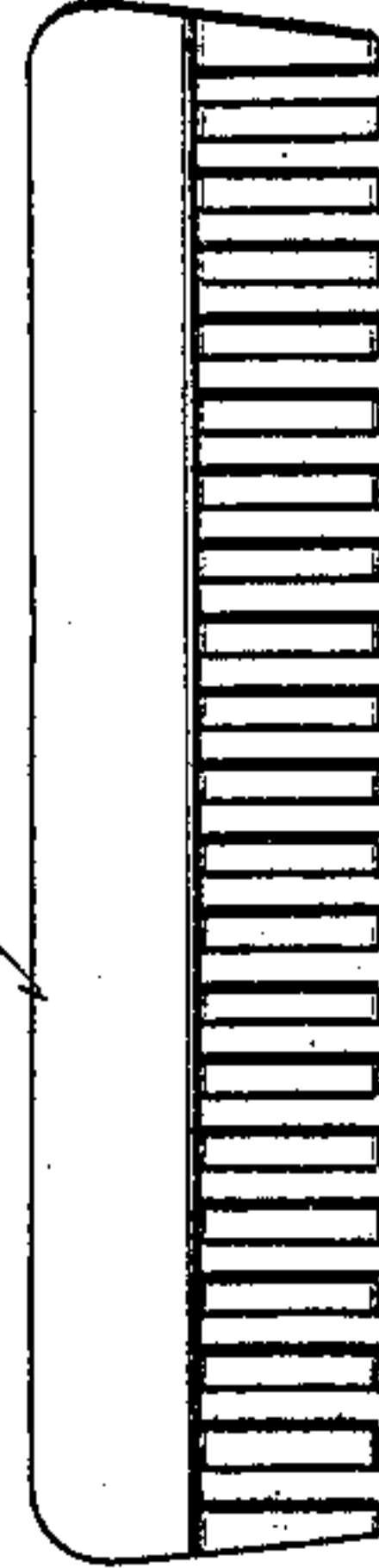


Fig. 1.

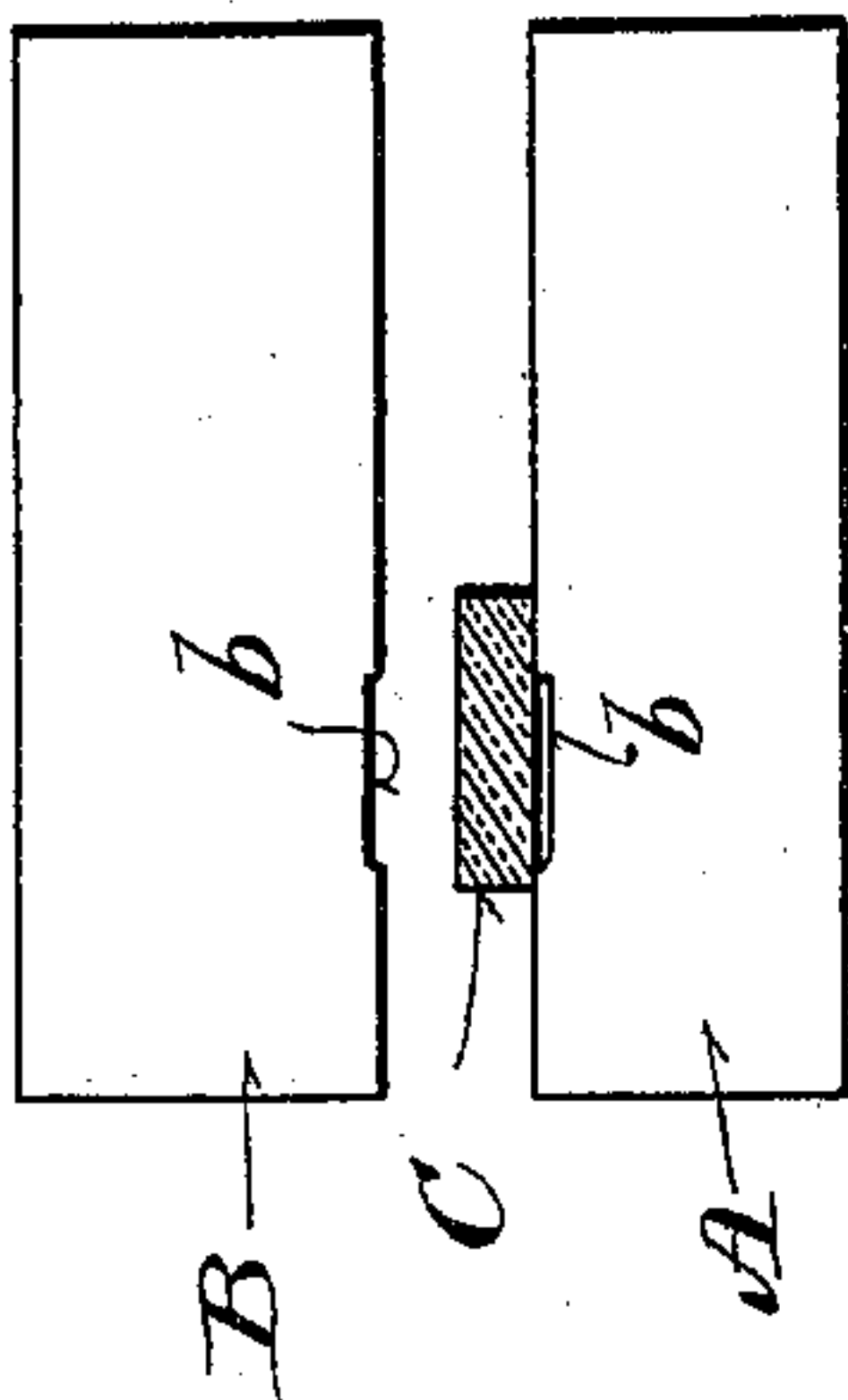
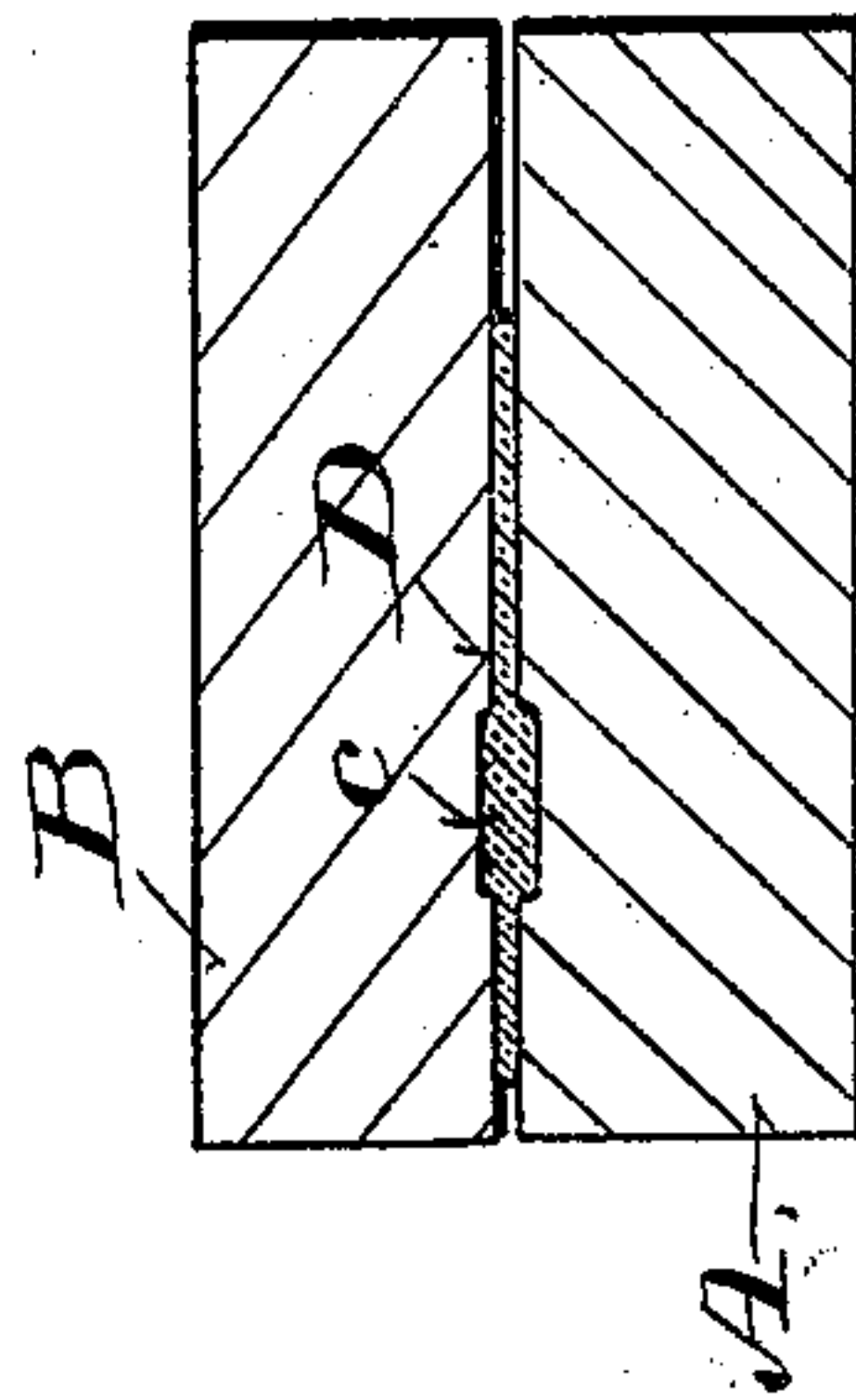


Fig. 2.



Witnesses  
Geo. W. Young  
H. E. Oliphant

Witnesses  
Joseph Koenig,  
H. G. Underwood  
Attorneys

# UNITED STATES PATENT OFFICE.

JOSEPH KOENIG, OF TWO RIVERS, WISCONSIN, ASSIGNOR TO ALUMINUM  
MANUFACTURING COMPANY, OF TWO RIVERS, WISCONSIN.

## MAKING COMBS.

No. 827,733.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed January 18, 1902. Serial No. 90,263.

*To all whom it may concern:*

Be it known that I, JOSEPH KOENIG, a citizen of the United States, and a resident of Two Rivers, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Making Combs; and I do hereby declare that the following is a full, clear, and exact description thereof.

The object of the improvements is economical production of hard, stiff, and thick back combs from slabs of aluminium; and the invention consists in a method of making such combs, as is hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents an end view of a pair of squeezing-dies and a slab of aluminium laid in on the lower die over a depressed portion of the same; Fig. 2, a sectional view of said dies and the metal squeezed between them; Fig. 3, a plan view of the squeezed metal and lower die; Fig. 4, a side elevation of a metal comb-blank; Fig. 4<sup>a</sup>, an end view of the blank, and Fig. 5 a side elevation of a finished comb.

Referring by letter to the drawings, A indicates the lower and B the upper of a pair of matrix-dies, the face of each being flat, except for a depressed portion *b* of predetermined width therein to one side of the center. A uniformly soft thick slab C, of aluminium, wider than the depressions in the dies is squeezed between the said dies into a sheet D of more or less irregular contour, according to the flow of the metal under pressure, that portion *c* of said metal caught in said die depressions being considerably thicker than the remainder of the sheet, the whole of which is hardened by compression and its major portion spread between the dies in opposite directions from the depressions therein. The thick part *c* of the sheet is designed

to serve as the back of the comb-blank E, and the sheet D is trimmed by blanking-dies or other means to complete said comb-blank, the finished product having a portion thereof thinner than its back aforesaid, this thin portion being subsequently saw-kerfed at intervals of its length to leave teeth, and thereafter the resulting comb F is ground and buffed to remove sharp corners and ridges that may be left after the kerfing of the blank, said comb in this instance being one having teeth that are less thick from back to front than the back itself. The tooth portion of the comb being thinnest, the teeth are more compact, harder, and springy than the thick back portion, on which ornamentations may be impressed, especially raised ornamentations higher in relief than said teeth, to improve the appearance of said comb.

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

A method of making aluminium comb-blanks that consists in placing a slab of the material of greater volume than the finished article between a pair of matrix-dies having relatively deep matrices and flat faces, said faces allowing a free lateral flow of excess metal, then in bringing the dies toward each other until their flat faces are at a distance from each other commensurate with the thinnest portion of the finished blank, and then in trimming the product to the shape of a comb-blank.

In testimony that I claim the foregoing I have hereunto set my hand, at Two Rivers, in the county of Manitowoc and State of Wisconsin, in the presence of two witnesses.

JOSEPH KOENIG.

Witnesses:

W. J. WRIETH,  
G. A. MAGEE.