

No. 885,118.

PATENTED APR. 21, 1908.

R. R. WILEY.  
ILLUMINATED SIGN.  
APPLICATION FILED OCT. 23, 1906.

Fig. 1.

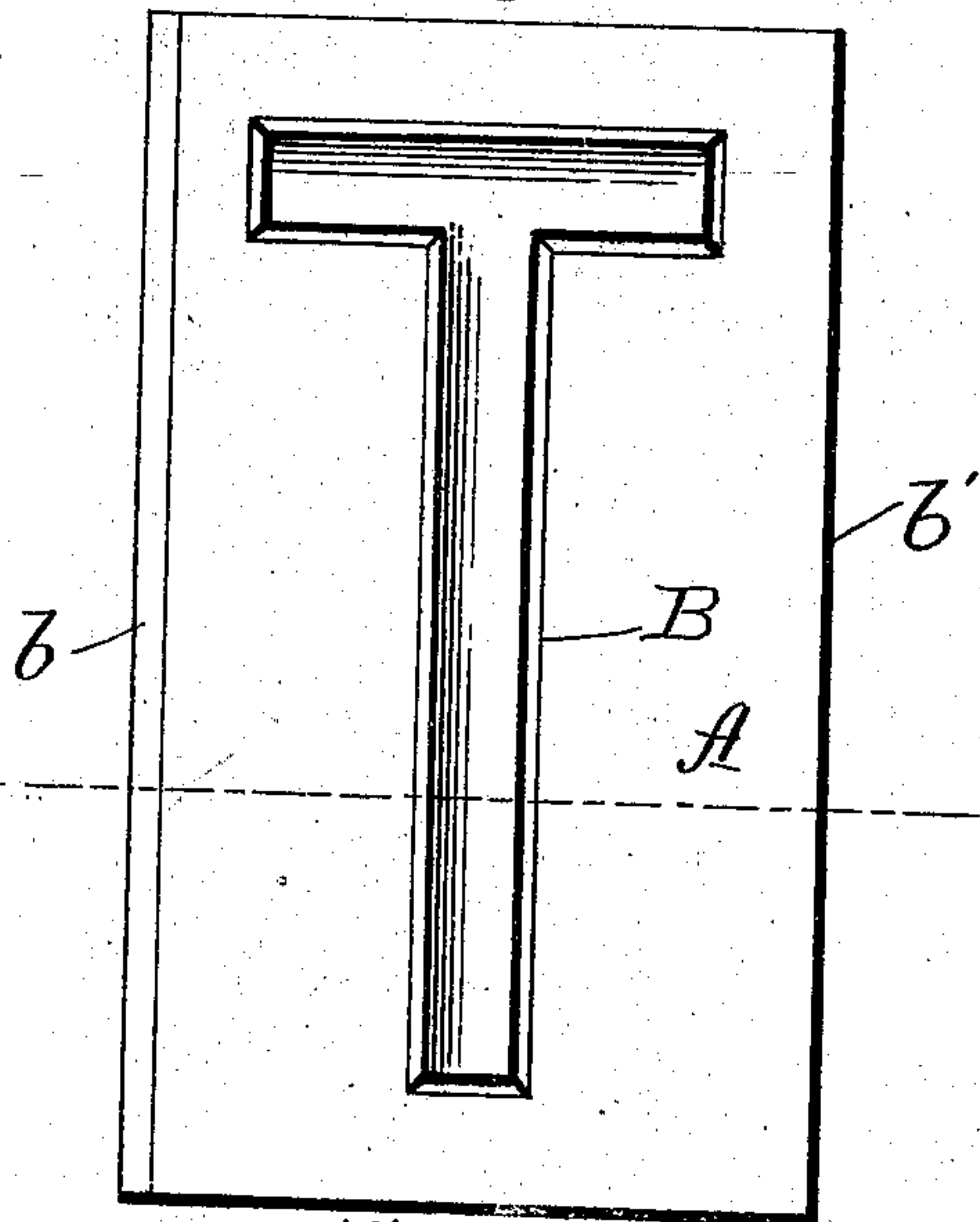


Fig. 2.

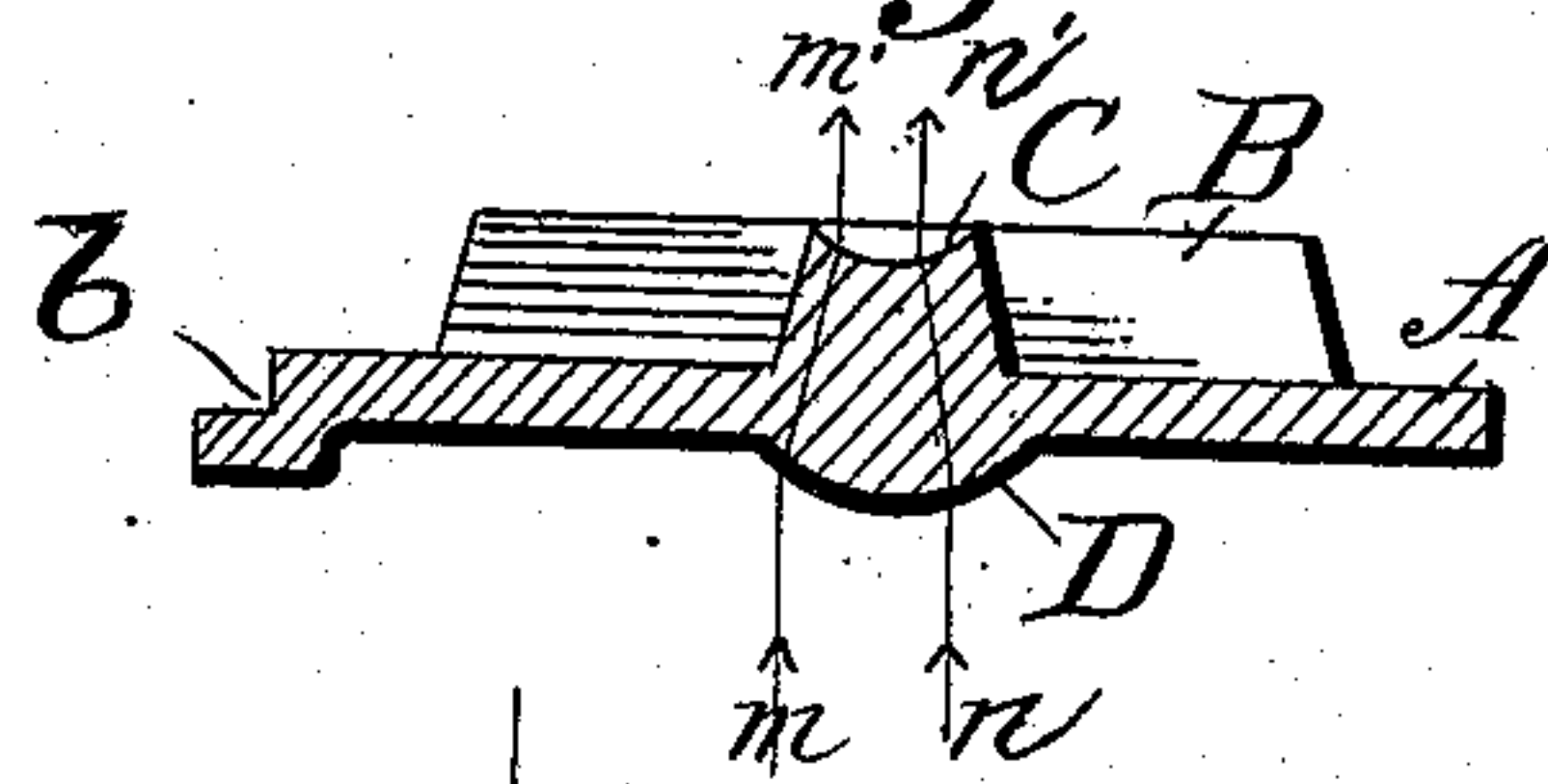


Fig. 3.

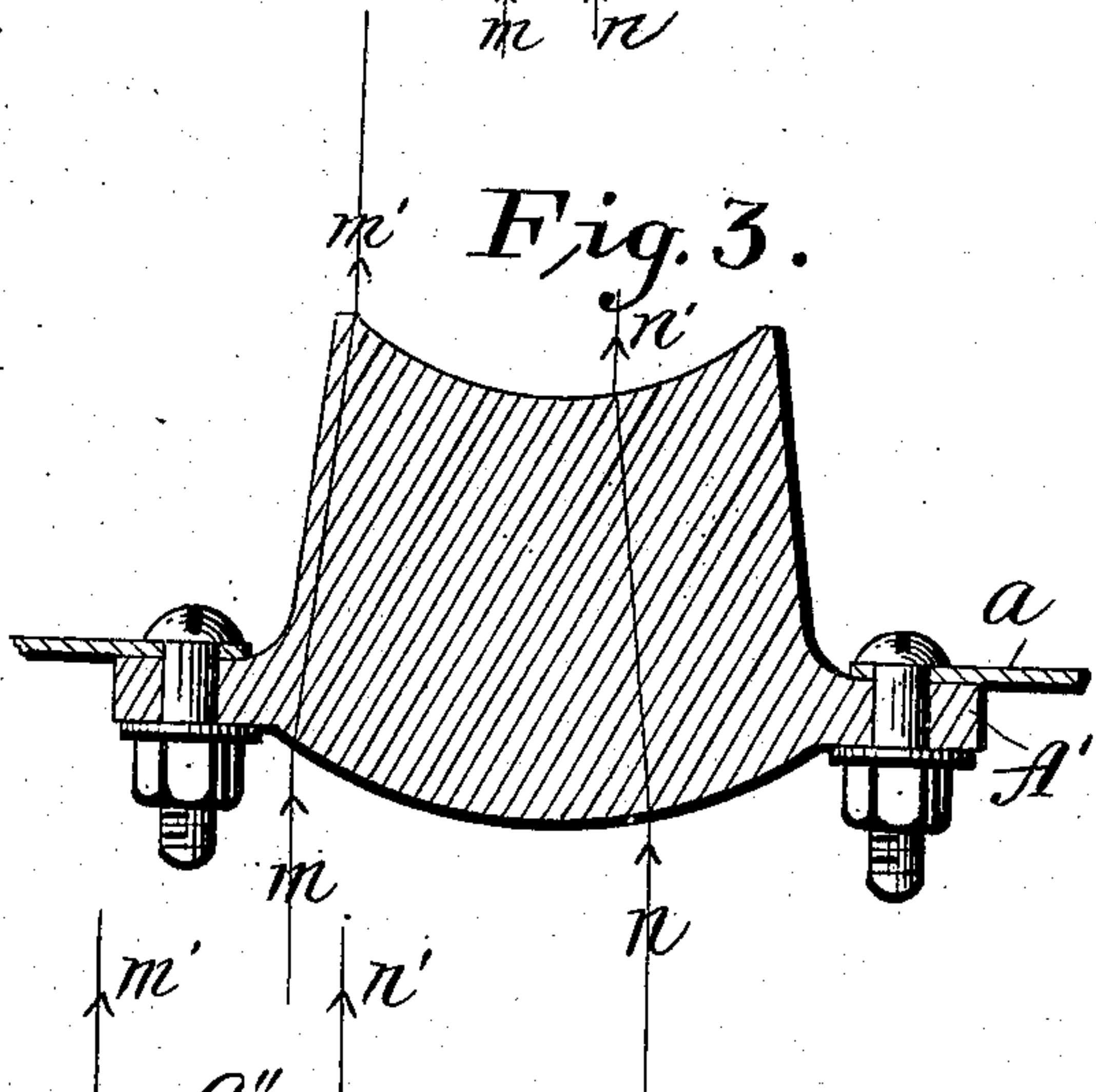


Fig. 4.

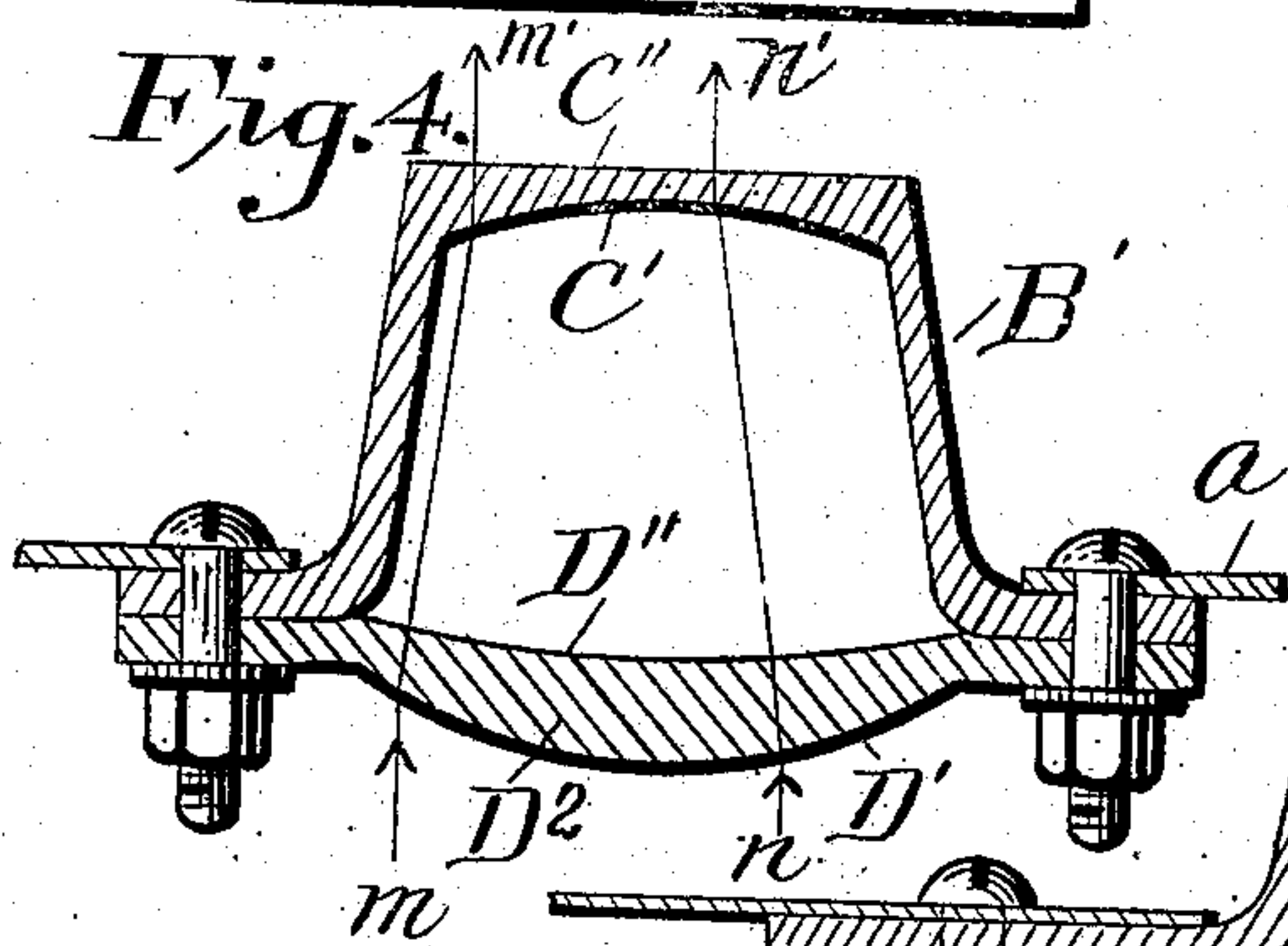
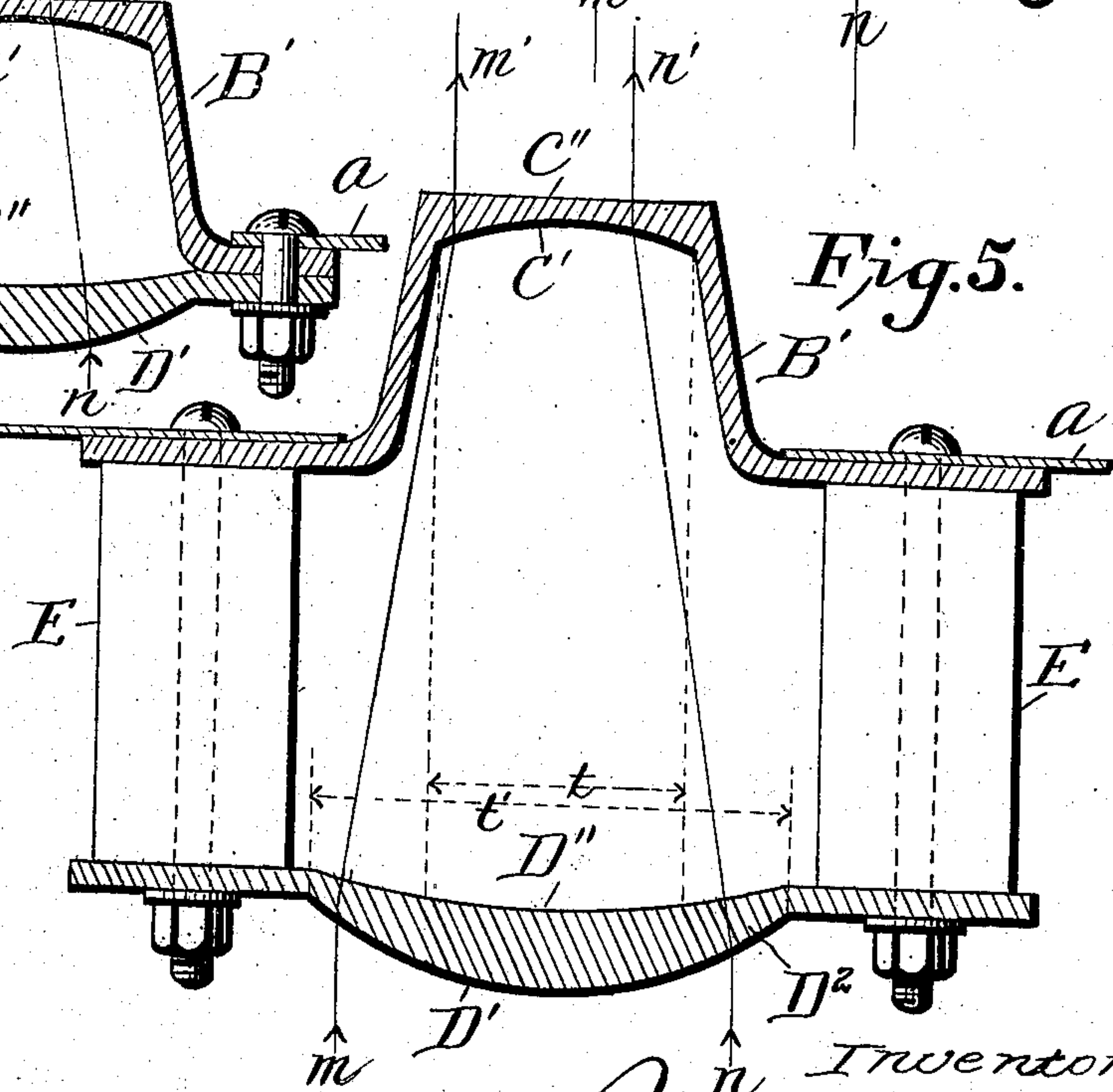


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## ILLUMINATED SIGN.

No. 885,118.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed October 23, 1906. Serial No. 340,189.

*To all whom it may concern:*

Be it known that I, ROY RODNEY WILEY, citizen of United States, residing at St. Catharines, Ontario, Canada, have invented new and useful Improvements in Illuminated Signs, of which the following is a specification.

My invention relates to illuminated advertising signs, name plates, numbers of houses, store signs and illuminated letters and numerals generally. I will show and describe a letter, as representative of numerals, letters and pictures.

The objects of my invention are to insure economy of light; to provide illuminating letters, which will be clear, brilliant and easily legible at comparatively long distances; to facilitate the assembling and removal of the letters; to provide letters which are legible either day or night; to secure maximum economy and simplicity of construction of this type of letters; and to furnish letters which are artistic, and certain to attract the attention of the public.

The invention includes the features of construction and arrangement and combination of parts hereinafter described and particularly set forth in the claims.

In the drawings, Figure 1 is a front view of the sign member or letter. Fig. 2 is a cross sectional view of the same. Fig. 3 is a cross sectional view of the sign letter adapted for small signs construction adapted for large letters. Fig. 4 is a modified form of letter in which the front and back are formed separately and are arranged with a space between those portions through which the light rays pass. Fig. 5 is a view similar to Fig. 4 but with the front and back portions of the letter spaced apart to secure a greater concentration of the light rays.

Referring to these drawings, the whole character (B) and plate (A) is of glass pressed out in a mold; a mortise *b* being provided to fit the plates together. The rear curve *D* is convex and of the proper curvature to bend all perpendicular light rays into the concave front curve *C*. This front portion of the character is in relief from the plate to give the character prominence and to allow the maximum number of light rays to be bent into the front curve *C*. The relief portion of the letters permit them to be easily grasped when changing the wording of a sign. The curve *C* is concave of the proper curvature to cause the light rays to leave the character perpendicularly to the plate *A* or in the same

direction as the rays entering the letter. Thus the entering rays *m* and *n* are refracted towards the center and upon leaving curve *C*, they extend in perpendicular lines *m'* and *n'*. Ordinarily the lines of the mortise *b* (Fig. 1) and of the opposite edge *b'* will be parallel to those of the character on the plate, but I do not wish to confine myself to this form of mortise. In making larger letters the glass letter plate is done away with and there are merely flanges *A* Fig. 3 which are bolted to a metal plate *a* Fig. 3. The refraction in this letter is the same as in smaller letters the only difference being that we do away with the letter plate being molded with the sign character which would be very difficult in the case of large letters due to unequal strain in cooling.

In Fig. 4 is shown a construction which is used in still larger letters. This character is pressed out in two separate parts, a front portion *B'* and a rear portion *D'* which are bolted, welded or otherwise fastened together and the whole character mounted on a plate *a* (preferably of metal) by means of bolts or other convenient methods. This construction gives an extremely light letter which of course is of great advantage in large signs. Entering light rays are shown at *m* and *n*. At curve *D'* they are refracted towards the center. Curve *D''* does not refract the rays because it is of such a curvature that the rays strike it perpendicularly, that is, in the line of extended radii. Curve *C'* again refracts the rays sending them out perpendicular to the plane of the letter as *m'* and *n'*. Surface *C''* does not refract the rays because they leave it perpendicularly.

Of course the details of this construction could be slightly changed without altering the main idea, which is to concentrate light rays which come perpendicularly to the back of the character into a small area at the front of the character and emit them perpendicularly.

Fig. 5 shows the same construction as Fig. 4 except that the back portion instead of being fastened directly to the front portion is put further back by means of spacers *E*. This allows of a much wider curve at *D'* so that a still greater portion of light is concentrated into the front of the sign character. By means of the lines *t* and *t'* we have a graphical comparison of the amount of light which would go through surface *C''* without the rear portion and with it. The difference



in length of  $t$  and  $t'$  shows the increase in brilliancy due to the use of the rear portion less, of course, the loss due to absorption by the refractory medium. This rear portion  
 5  $D^2$  could be moved still further back thus giving greater brilliancy.

There are other obvious modifications of the invention within the scope of the appended claims which do not depart from the spirit  
 10 thereof.

I thus obtain sign characters which are very economical and efficient; which are extremely brilliant with small energy consumption and which are very legible, owing  
 15 to the approximately perpendicular direction of the light emitted.

I claim as my invention:

1. A sign letter having a convex back portion and a concave front portion of smaller  
 20 area the said portions being adapted to refract the light rays and emit said rays perpendicularly to the sign and concentrated with respect to the entering rays substantially as described.

25 2. A sign letter having a front and a back portion separated from each other and having curved surfaces adapted to refract the light rays and cause them to emerge perpendicular to the letter surface and concentrated with  
 30 respect to the entering rays substantially as described.

35 3. A sign letter comprising front and back portions the latter of which is of larger area and spacing means separating the said portions which portions are provided with curved surfaces adapted to receive the light rays at the back perpendicularly, refract

them and emit them in concentrated form and perpendicularly to the surface of the sign substantially as described. 40

4. A sign character having a convex back surface for incident light rays, a first concave surface in front of the back surface, a second concave surface in front of said first concave surface, and having a plane surface in front  
 45 of the second concave surface, smaller in area than said back surface.

5. A sign character of glass, having a convex back surface for incident light rays, a first concave surface in front of the back surface, a second concave surface in front of  
 50 said first concave surface, and having a plane surface in front of the second concave surface, smaller in area than said back surface, said surfaces being curved for first concentrating the incident light rays, and finally  
 55 emitting the same in parallel lines whose cross section is a letter.

6. A sign character having front and back glass portions separable from each other, and  
 60 having curved surfaces for refracting the light rays, and causing them to be emitted substantially parallel to each other and substantially perpendicular to the sign characters and concentrated with respect to the rays  
 65 incident to said back portions.

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

ROY RODNEY WILEY.

Witnesses:

A. W. MARQUIS,  
 W. STUART LANE.