

No. 786,749.

PATENTED APR. 4, 1905.

J. F. FRANCIA.  
REINFORCE.

APPLICATION FILED JULY 22, 1904.

FIG. 1.

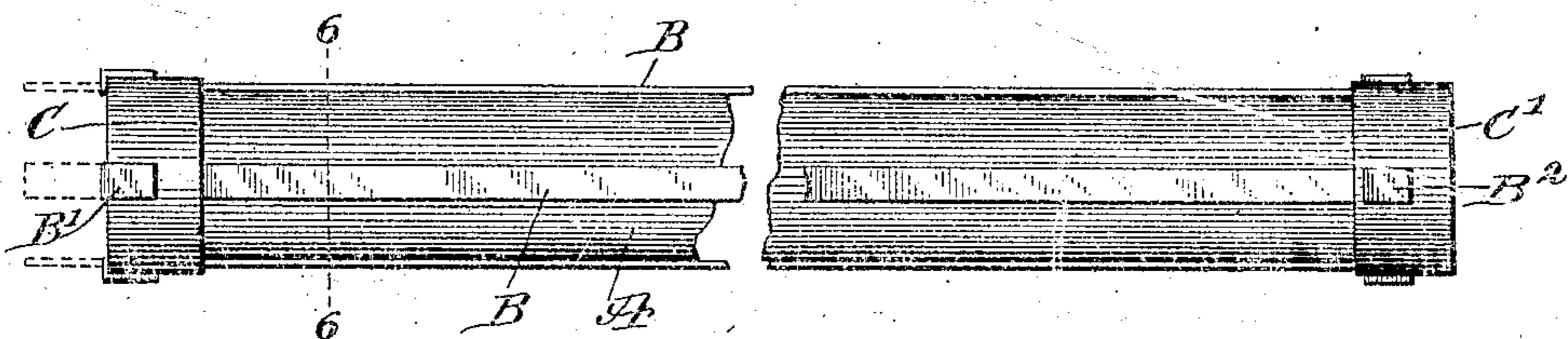


FIG. 2.

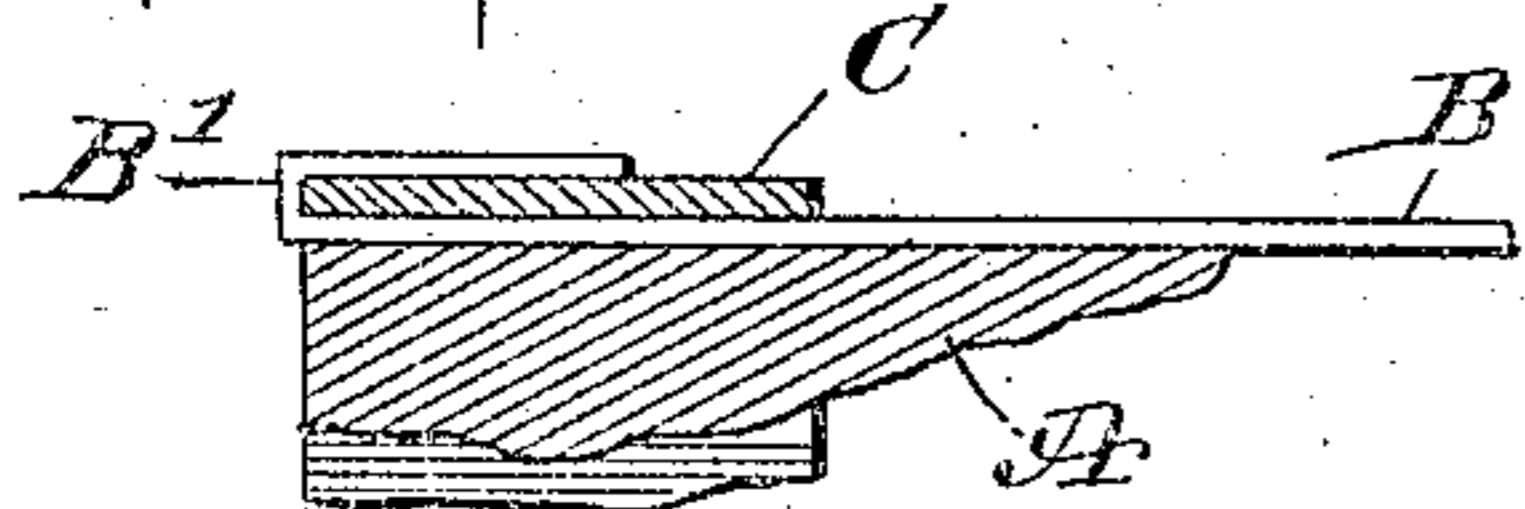


FIG. 3.

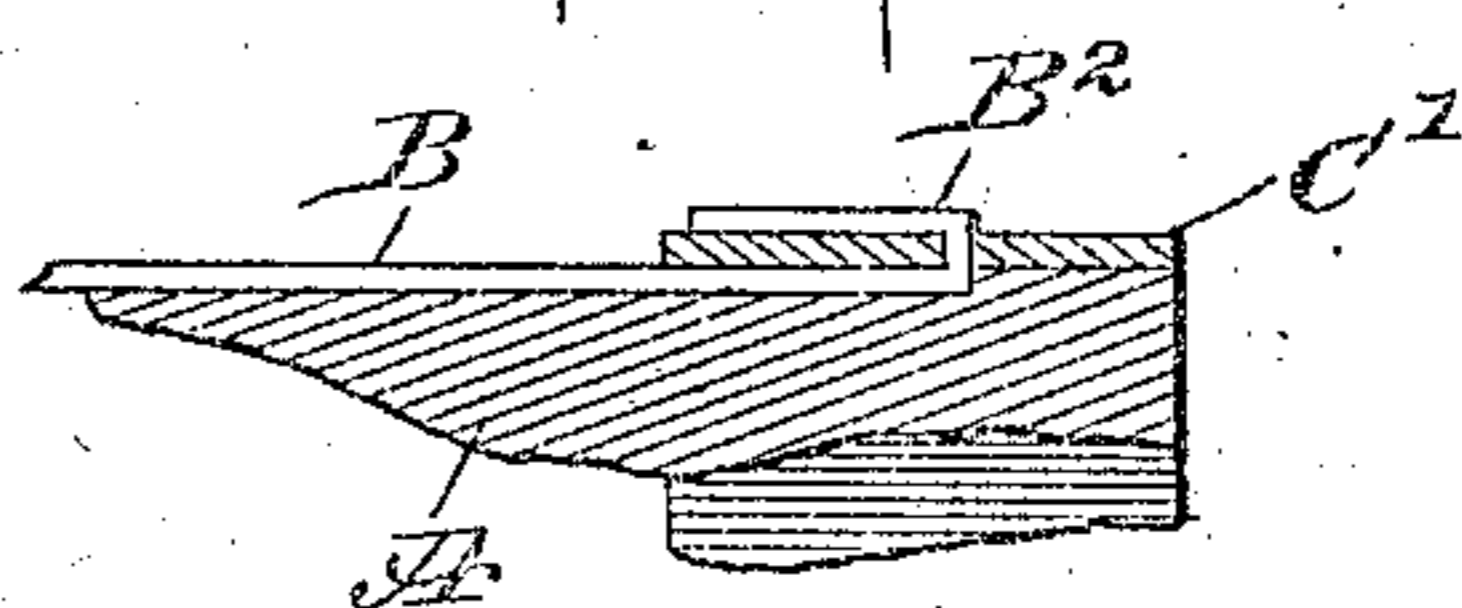


FIG. 4.

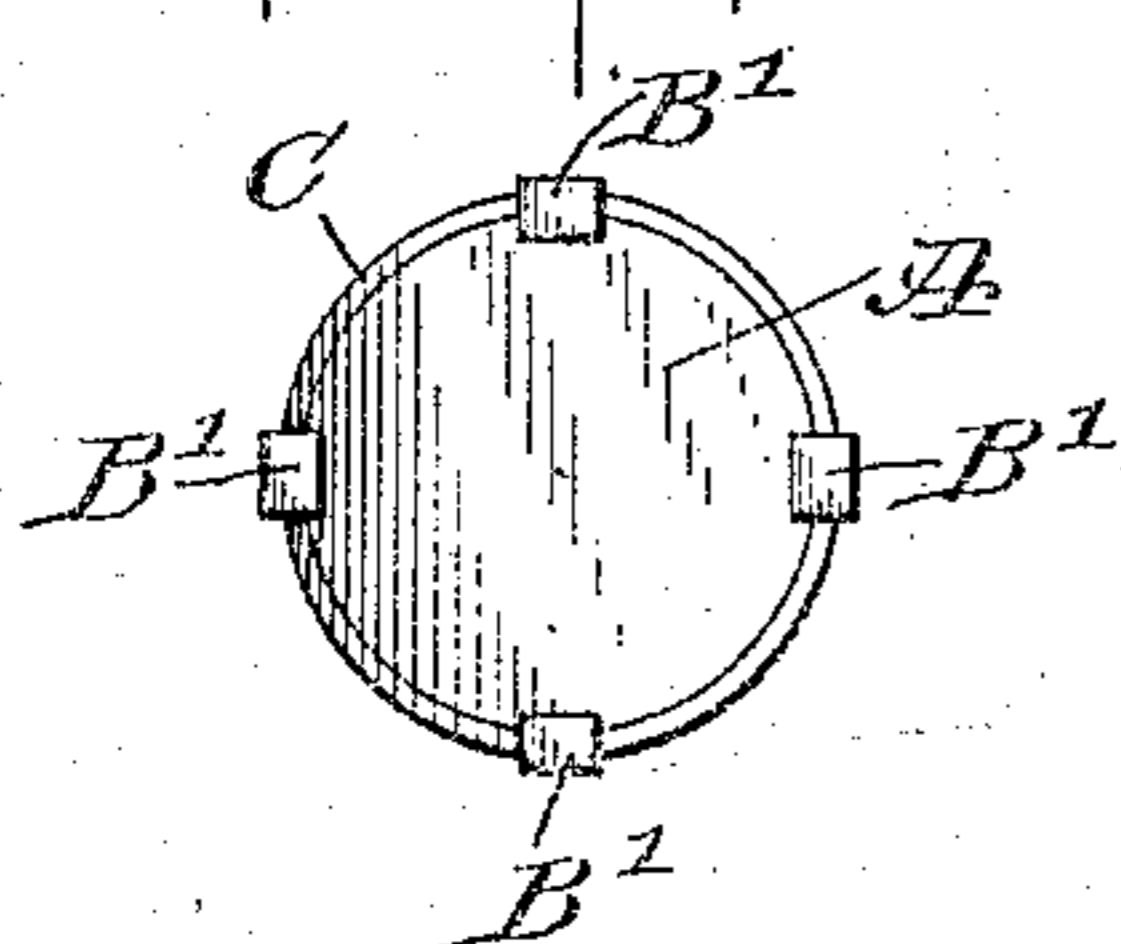


FIG. 7.

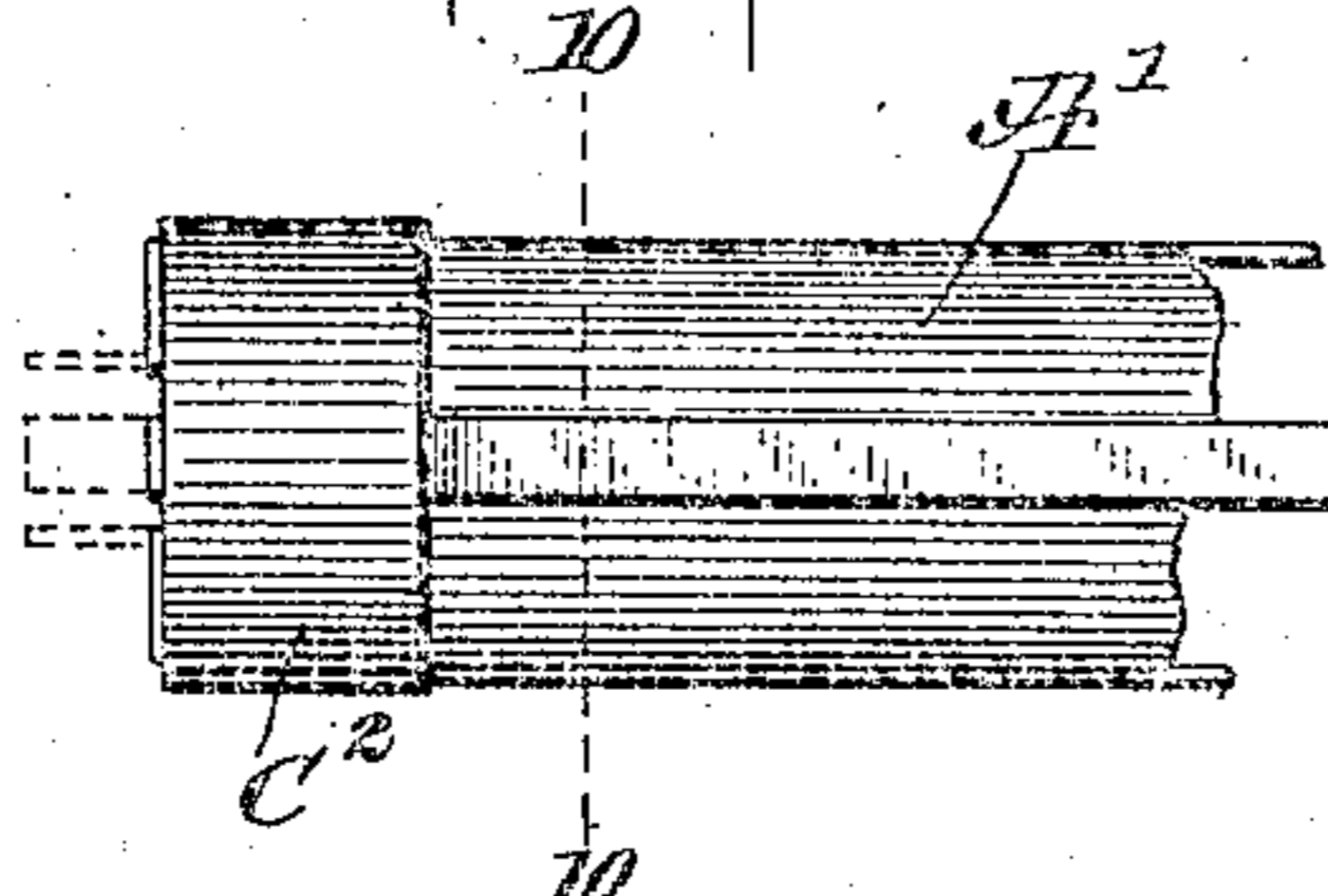


FIG. 5.

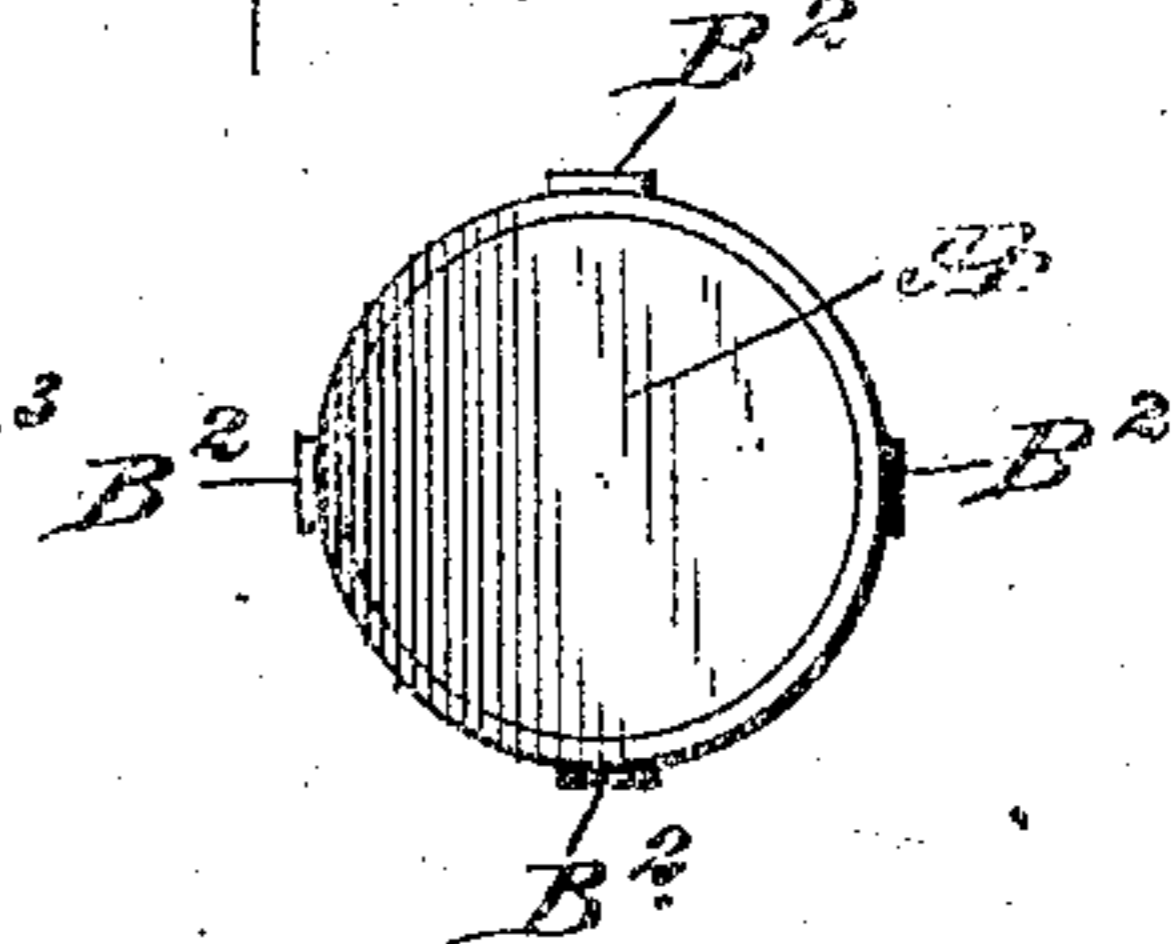


FIG. 8.

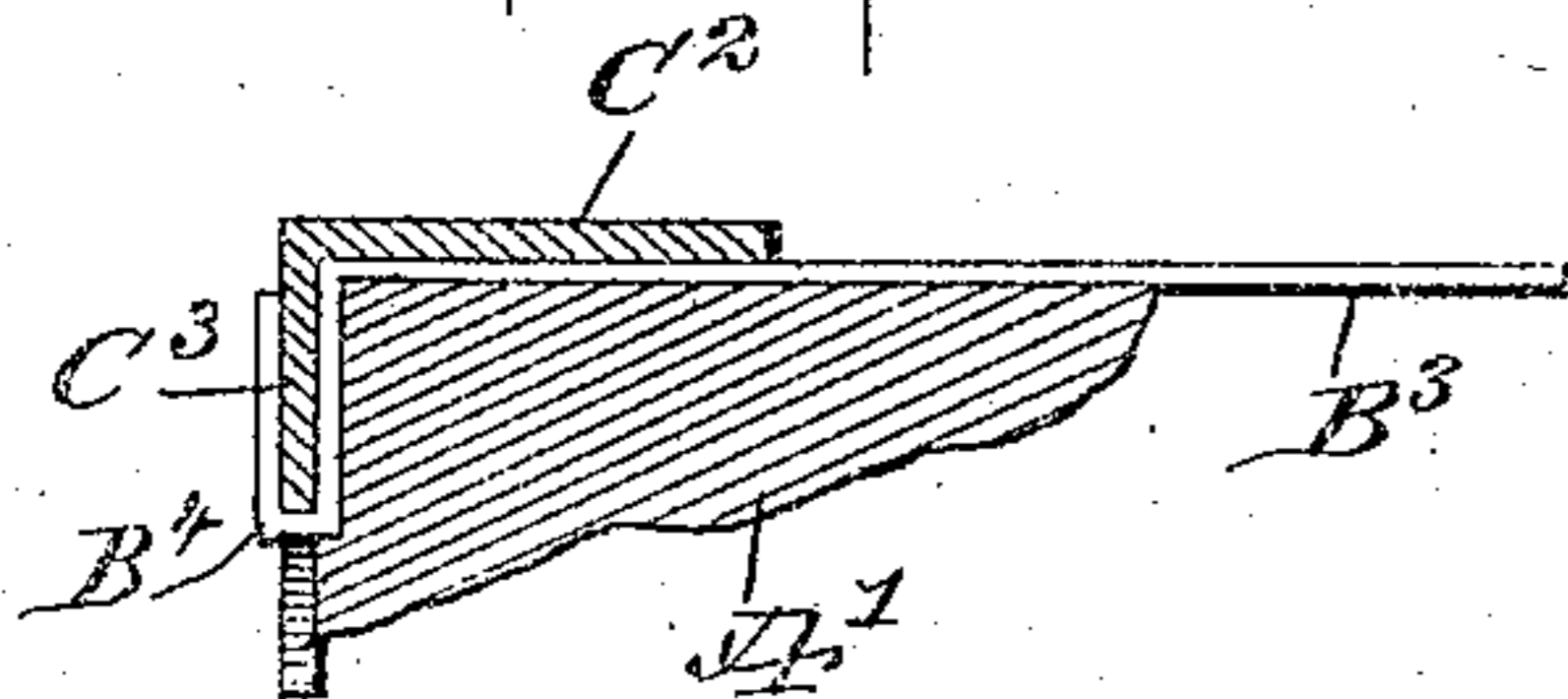


FIG. 6.

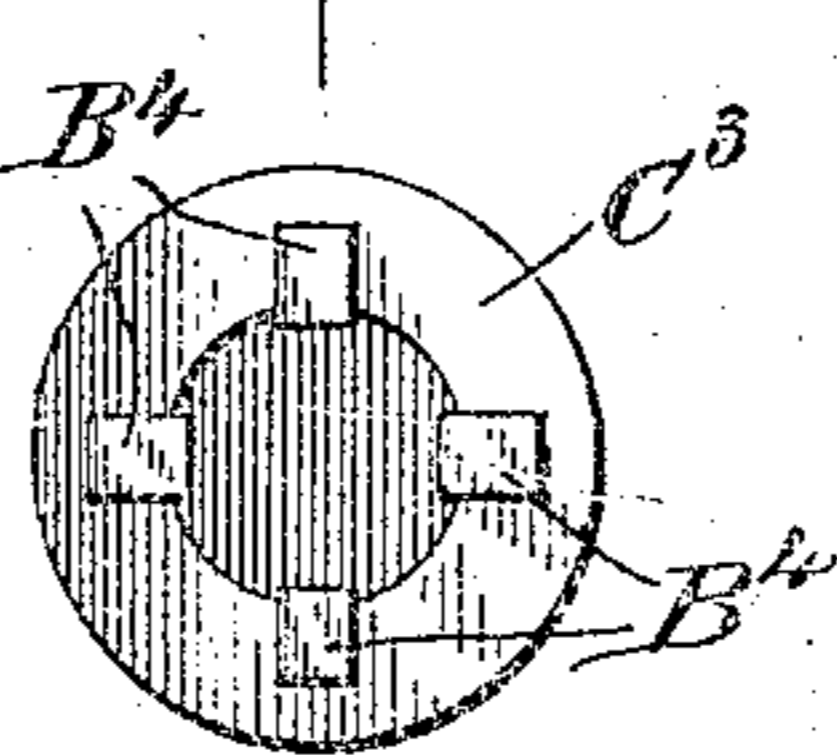


FIG. 10.

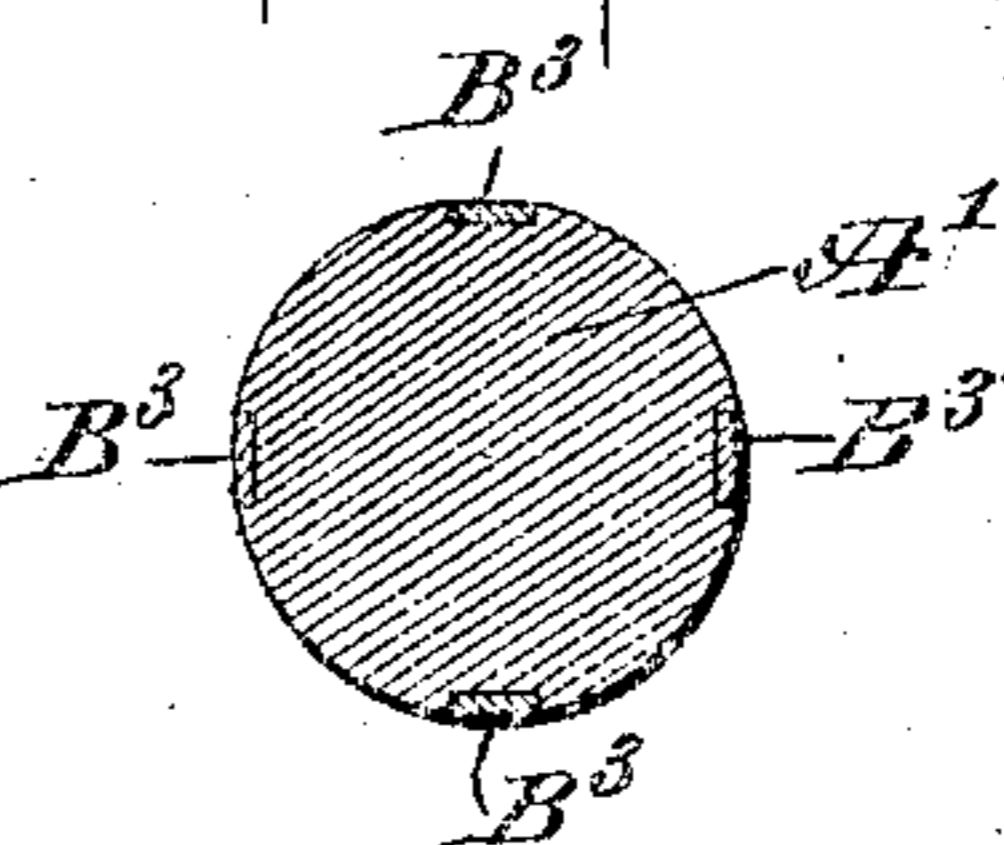


FIG. 11.

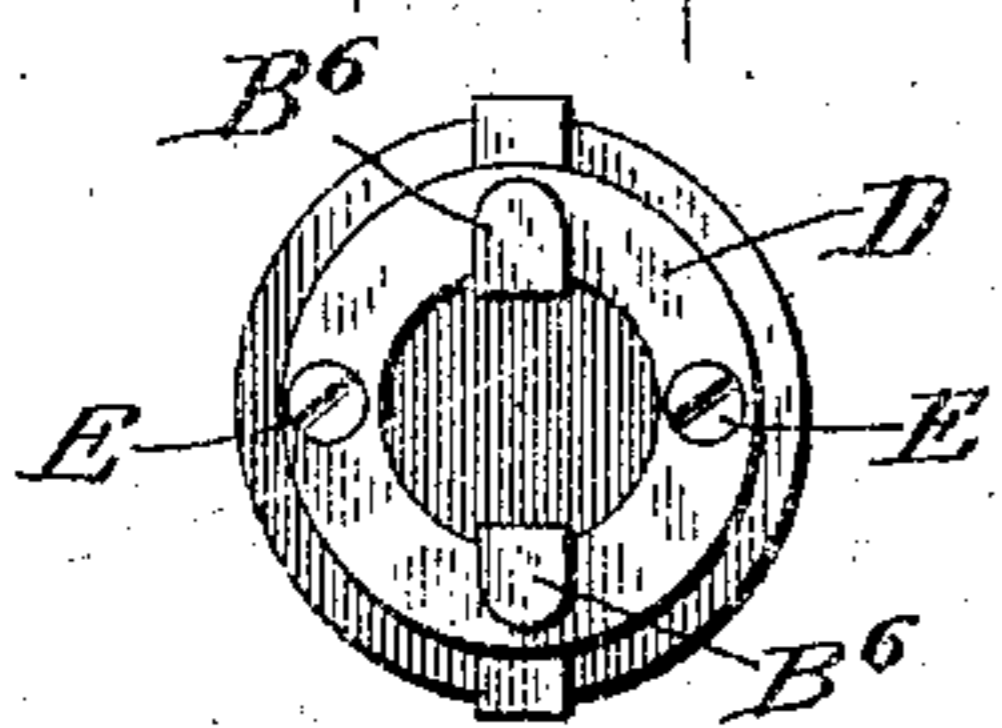


FIG. 12.

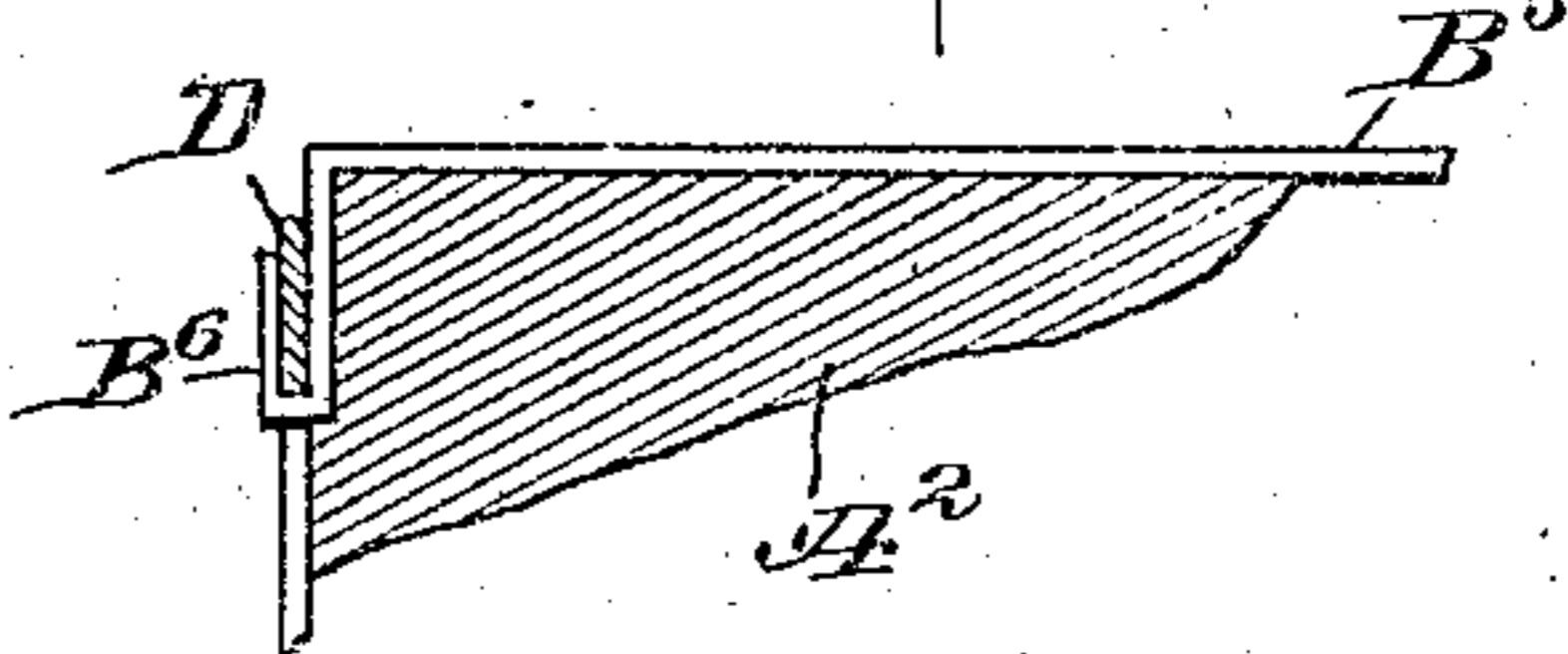
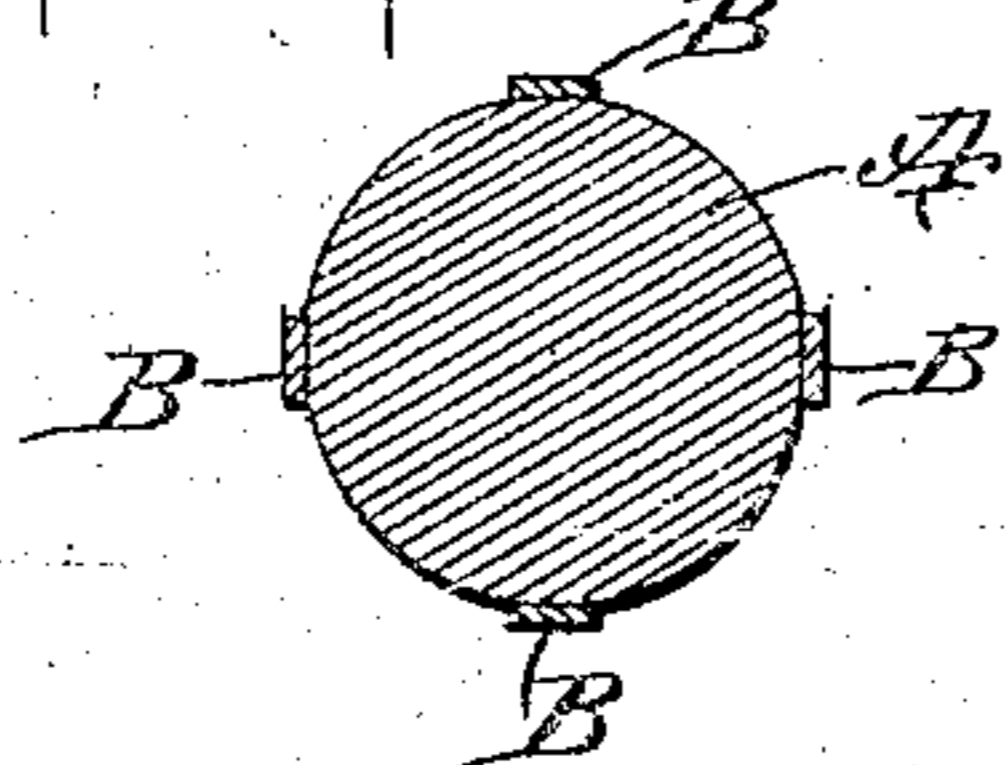


FIG. 9.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH F. FRANCIA, OF PARIS, FRANCE.

## REINFORCE.

SPECIFICATION forming part of Letters Patent No. 786,749, dated April 4, 1905.

Application filed July 22, 1904. Serial No. 217,687.

*To all whom it may concern:*

Be it known that I, JOSEPH F. FRANCIA, a subject of the King of Great Britain, and a resident of Paris, France, have invented a new and Improved Reinforce, of which the following is a full, clear, and exact description.

The invention relates to reinforces such as shown and described in the Letters Patent of the United States granted to me on the 16th day of August, 1904, No. 767,932.

The object of the present invention is to provide a new and improved reinforce for sticks, poles, masts, and other articles made of wood or like material and arranged to give the article great strength and rigidity to withstand heavy strains without danger of breaking or impairing the wooden core or the shape or strength of the article and to allow of conveniently securing the ends of the reinforcing-strips to the ends of the wooden core without danger of weakening either the strips or the core.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is an enlarged longitudinal sectional elevation of one end of the same. Fig. 3 is a like view of the other end of the improvement. Figs. 4 and 5 are end views of the same. Fig. 6 is a cross-section of the same on the line 6 6 of Fig. 1. Fig. 7 is a side elevation of a modified form of the improvement. Fig. 8 is an end elevation of the same. Fig. 9 is an enlarged longitudinal sectional elevation of one end of the modified form shown in Fig. 7. Fig. 10 is a cross-section of the same on the line 10 10 of Fig. 7. Fig. 11 is an end view of another modified form of the improvement, and Fig. 12 is an enlarged longitudinal sectional elevation of the same.

In the arrangement shown in Figs. 1 to 6, inclusive, the core A of the article to be re-

inforced is made of wood, cane, bamboo, or a similar material, and on the exterior surface thereof fit strips B of steel or other flexible material, the strips extending throughout the length of the core A, and the strips are spaced apart, as illustrated in Figs. 1, 4, 5, and 6, and symmetrically distributed around the surface of the core, so as to render the same uniformly reinforced in all directions.

The ends of the strips B terminate in bent portions B' and B<sup>2</sup>, engaging ferrules C C', held on the ends of the core A, so as to securely fasten the ends of the strips B in position to properly hold the strips against the sides of the core A. As illustrated in Figs. 1 and 2, the strips B extend under the inner surface of the ferrule C, and the return-bend portions B' engage the outer edge of the ferrule to then lie flat on the outer surface thereof. The other end of each strip B extends partly under the ferrule C', and the return-bend portions B<sup>2</sup> pass through openings in the side of the ferrule C' to then extend inwardly on the outer surface of the ferrule C'.

It is understood that either of the fastenings for the strips B may be used on a single core, if desired, and the fastenings for the ends of the strips may be varied without deviating from the spirit of my invention. For instance, as shown in Figs. 7, 8, 9, and 10, the ferrule C<sup>2</sup> at each end of the core A' is provided with an inwardly-extending annular flange C<sup>3</sup>, abutting against the under face of the core A'. The bent portion B<sup>4</sup> of each strip B<sup>3</sup> engages the flange C<sup>3</sup>, as plainly indicated in Fig. 9, so as to firmly attach the strip B<sup>3</sup> to the ferrule C<sup>2</sup>, and as the latter is held against inward movement on the core A' it is evident that the strips B<sup>3</sup> are firmly fastened in place on the side of the core A'.

The flexible strips B<sup>3</sup> may be laid along the outer surface of the core A, as shown in Fig. 6, or the strips may extend in longitudinal grooves, as indicated in Fig. 10, so that the entire exterior surface of the core A' remains unbroken, and lateral shifting of the strips B<sup>3</sup> is prevented by the strips fitting the longitudinal grooves in the core A'.

In the modified form shown in Figs. 11 and 12 the ferrules are dispensed with, and a ring

D is secured by screws E to the end face of the core A<sup>2</sup> and the bent portions B<sup>6</sup> of the flexible strips B<sup>5</sup> engage the ring D at each end of the core, so as to securely fasten the strips  
5 B<sup>5</sup> in position on the external surface of the core A<sup>2</sup>.

By the arrangement described the core is greatly reinforced by the flexible strips B, B<sup>3</sup>, and B<sup>5</sup>, and the ends thereof are securely fastened in position on the core without weakening or otherwise injuring the core or the  
10 strips, so that when the article is subjected to a strain it bends slightly in the direction of the strain and when the strain is removed  
15 the strips immediately flex the core back to its normal position.

From the foregoing it will be seen that the flexible reinforce for the core can be easily applied and securely fastened in place, and  
20 the reinforce is so arranged as to render the article exceedingly strong and rigid and fit to withstand heavy strains without danger of breaking or impairing the shape, substance, or strength of the article.

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

1. A reinforced article of the character described, comprising a core, flexible strips on the sides of the core, and means engaged by  
30 portions of the strips independently of the core, for securing the strips in place.

2. A reinforced article of the character described, comprising a core, flexible strips on the sides of the core, provided at their ends  
35 with bent portions, and fastening means held

on the ends of the core and engaged by the said bent portions, to fasten the strips in position on the core.

3. A reinforced article of the character described comprising a core, flexible strips on  
40 the sides of the core, provided at their ends with return-bend portions, and fastening devices held on the ends of the core and engaged by the said return-bend portions, to fasten the strips in position on the core. 45

4. A reinforced article of the character described, comprising a core, flexible strips on the sides of the core, and ferrules on the ends of the core, engaged by the ends of the said strips, to hold the latter in position on the core. 50

5. A reinforced article of the character described, comprising a core, ferrules on the ends of the core, and flexible strips on the sides of the core, extending between the outer surface of the core and the inner faces of the said  
55 ferrules, the strips having return-bend portions engaging the ferrules.

6. A reinforced article of the character described, comprising a core having longitudinal grooves, flexible strips fitting in said  
60 grooves, and fastening means for securing the ends of the said flexible strips to the ends of the said core.

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

JOSEPH F. FRANCIA.

Witnesses:

HANSON C. COXE,  
JOHN BAKER.