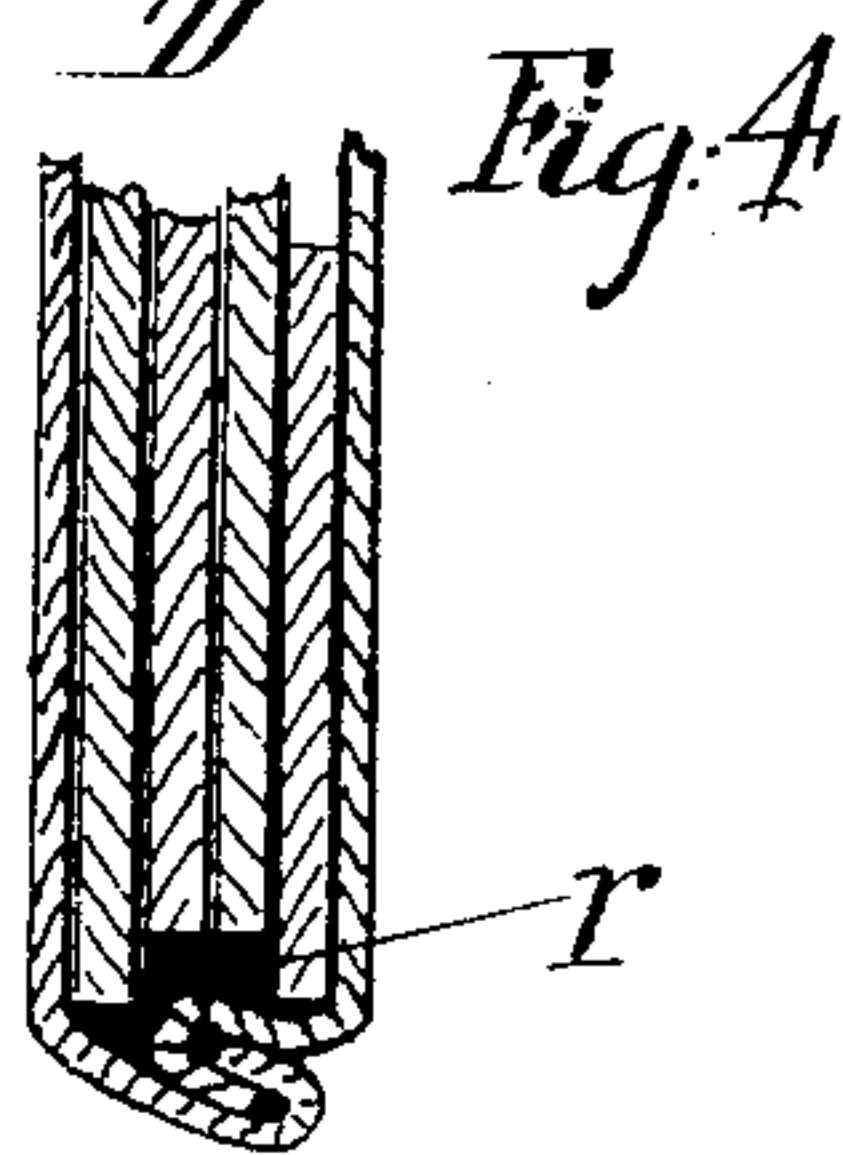
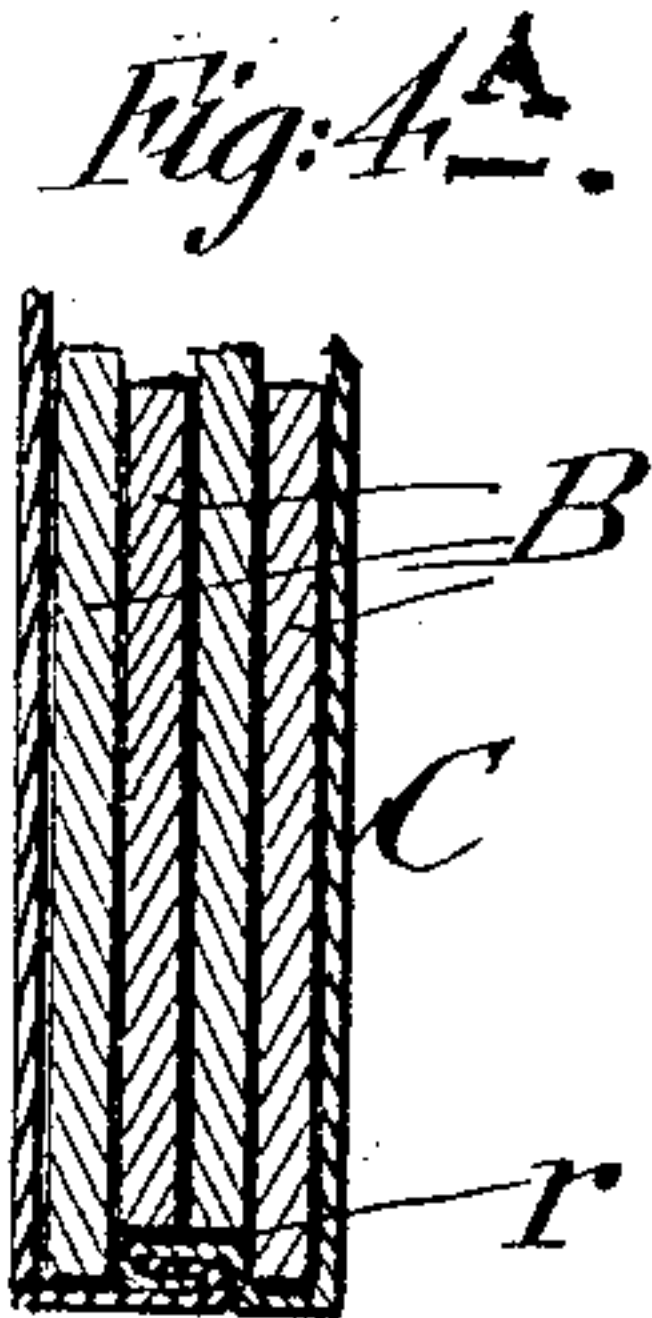
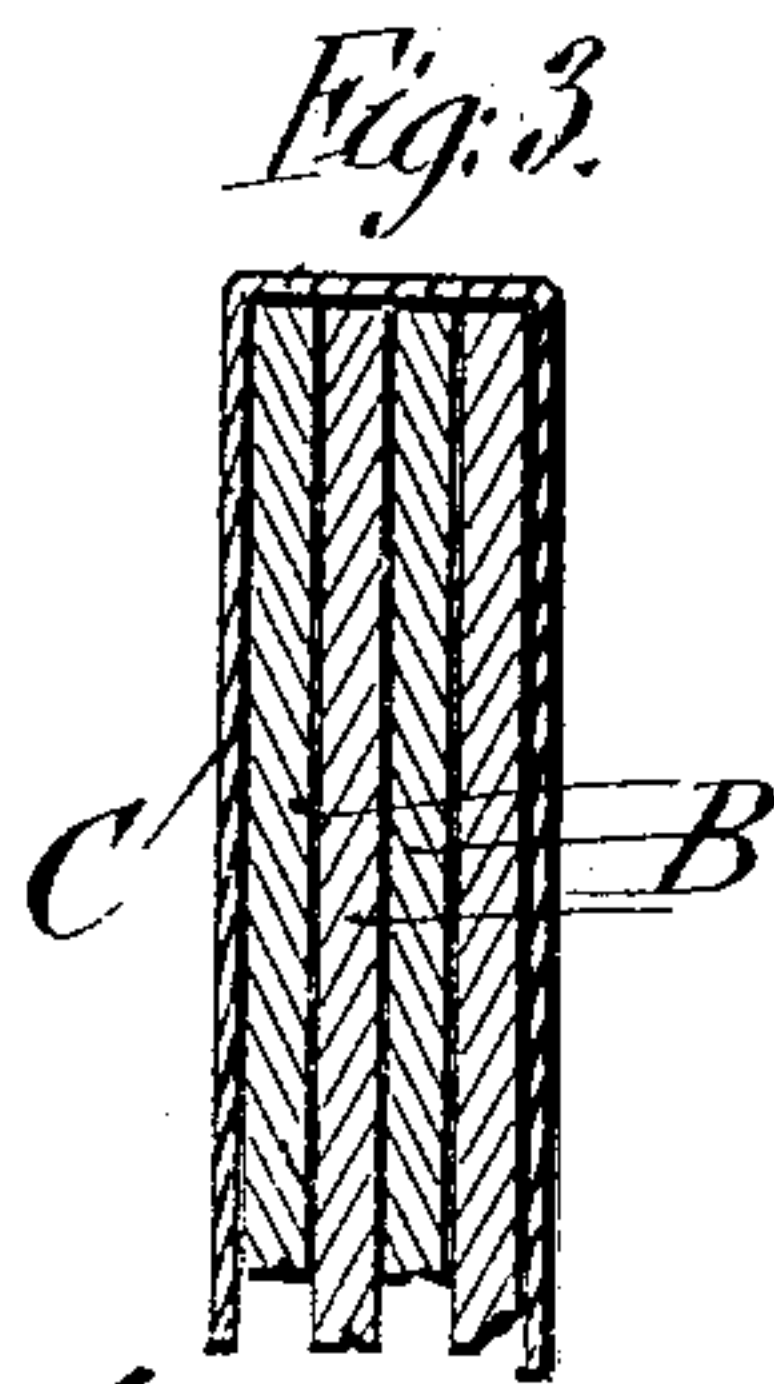
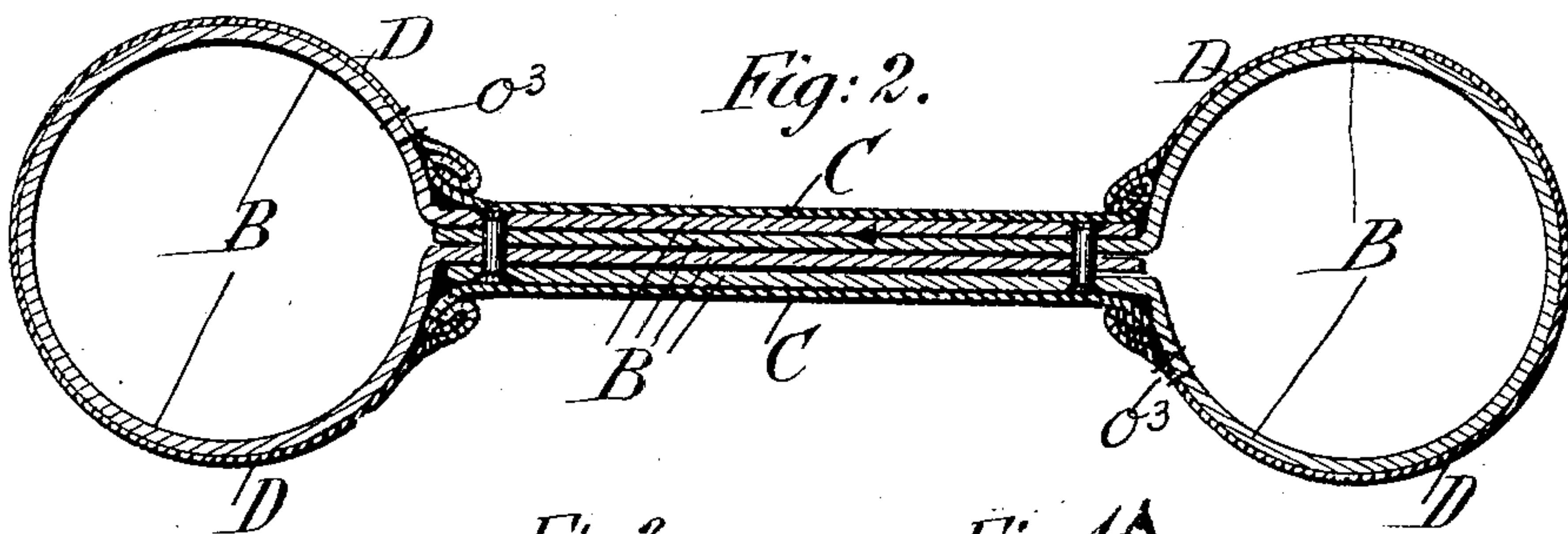
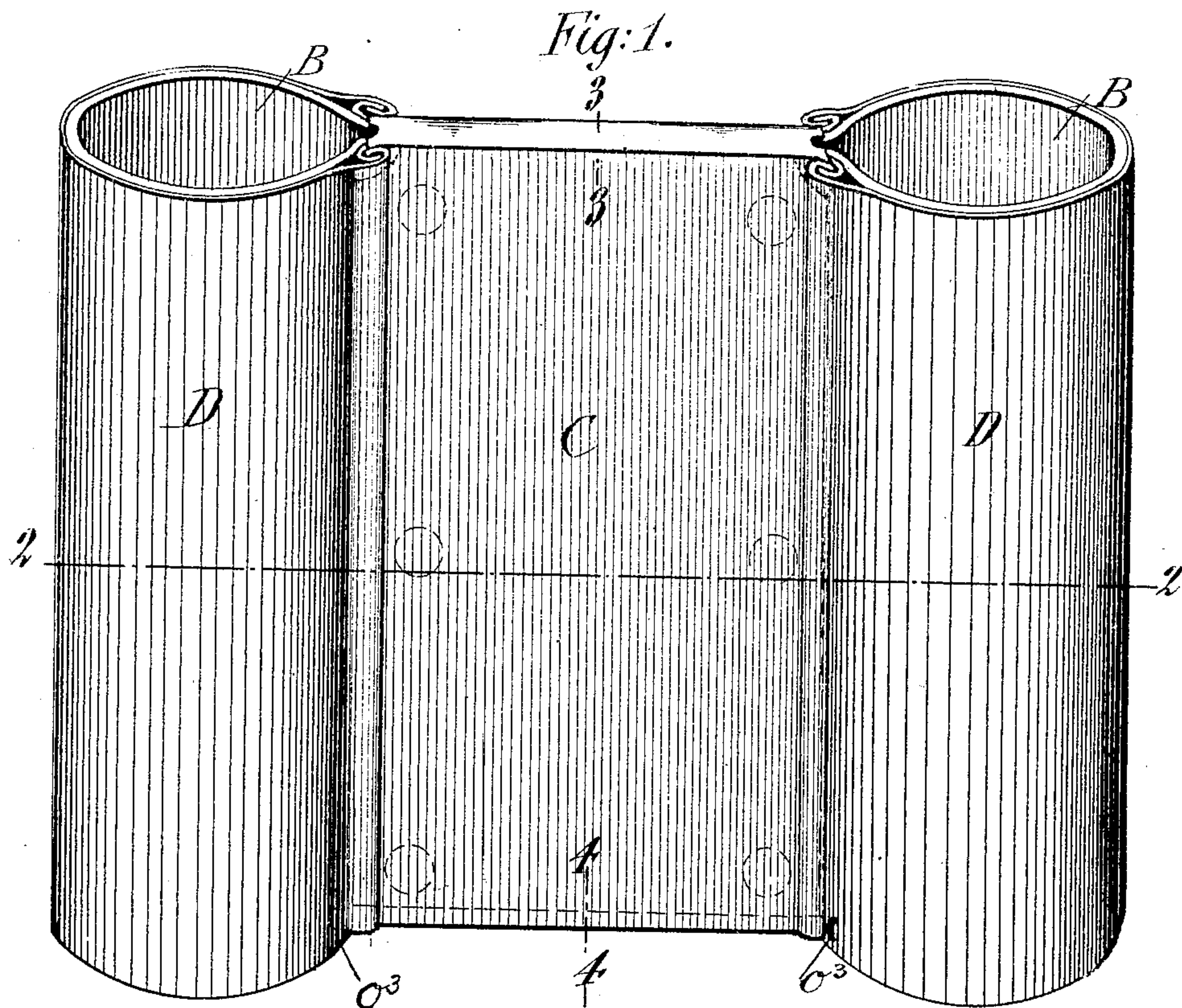


E. BOMMER.  
SPRING HINGE.

APPLICATION FILED JULY 22, 1904.

2 SHEETS—SHEET 1.



Witnesses  
*Henry J. Schubert.*  
*W. H. Lockwood*

Inventor  
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By *his Attorney* *James Niles*

No. 779,762.

PATENTED JAN. 10, 1905.

E. BOMMER.  
SPRING HINGE.

APPLICATION FILED JULY 22, 1904.

2 SHEETS—SHEET 2.

Fig: 6.

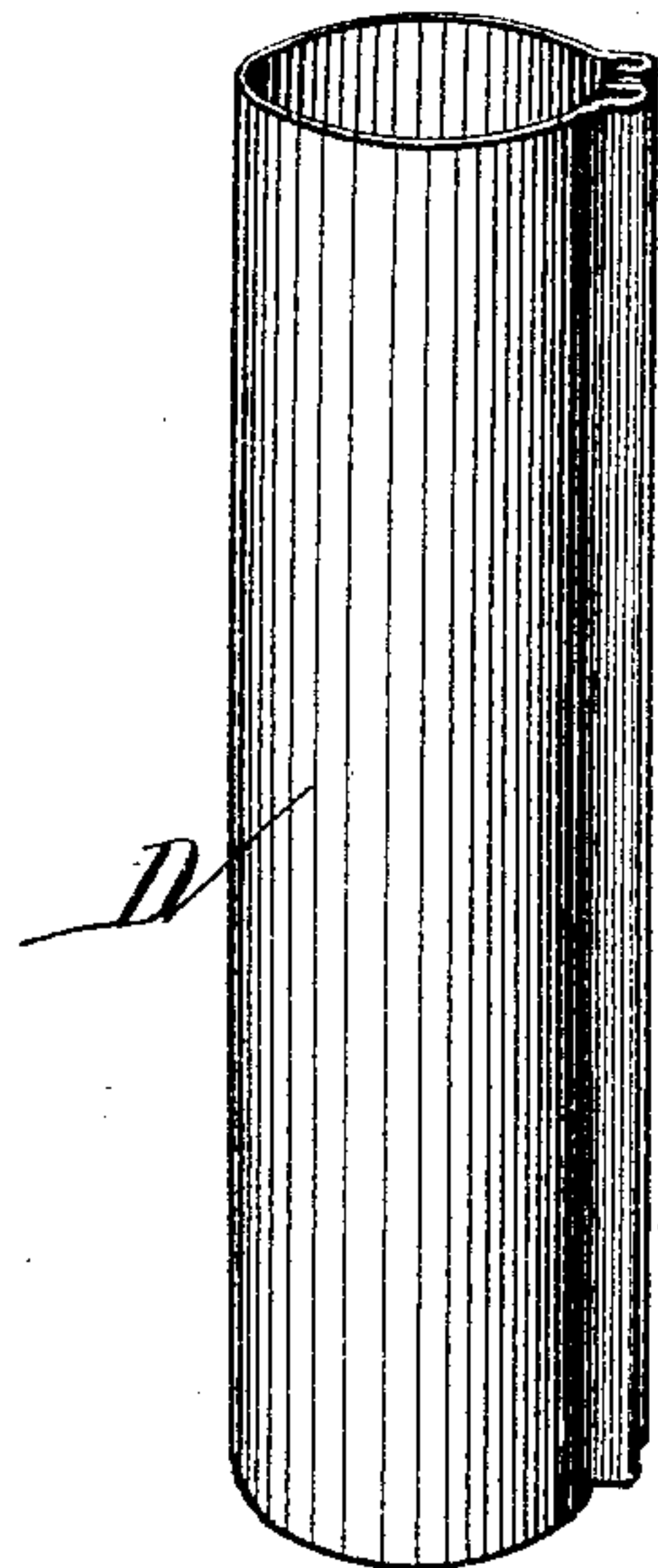


Fig: 5.

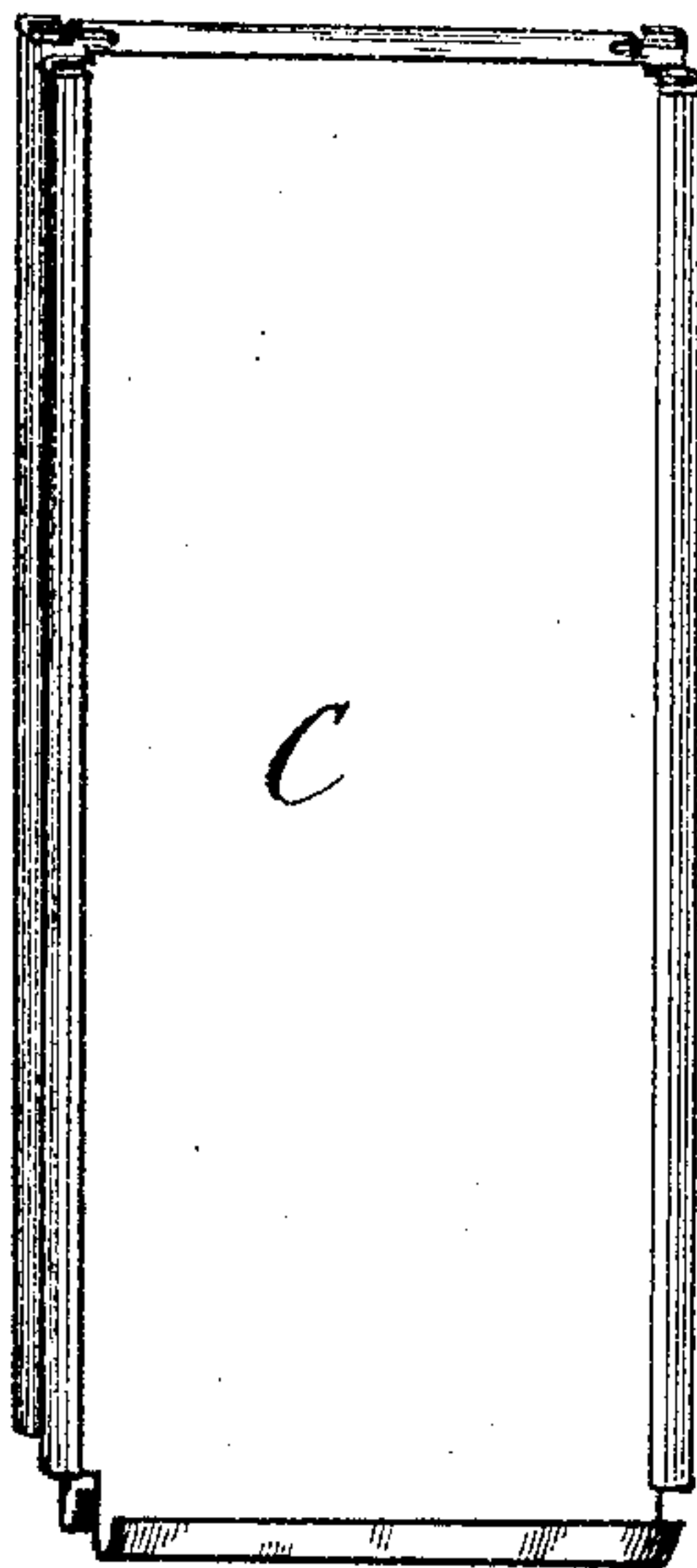


Fig: 7.

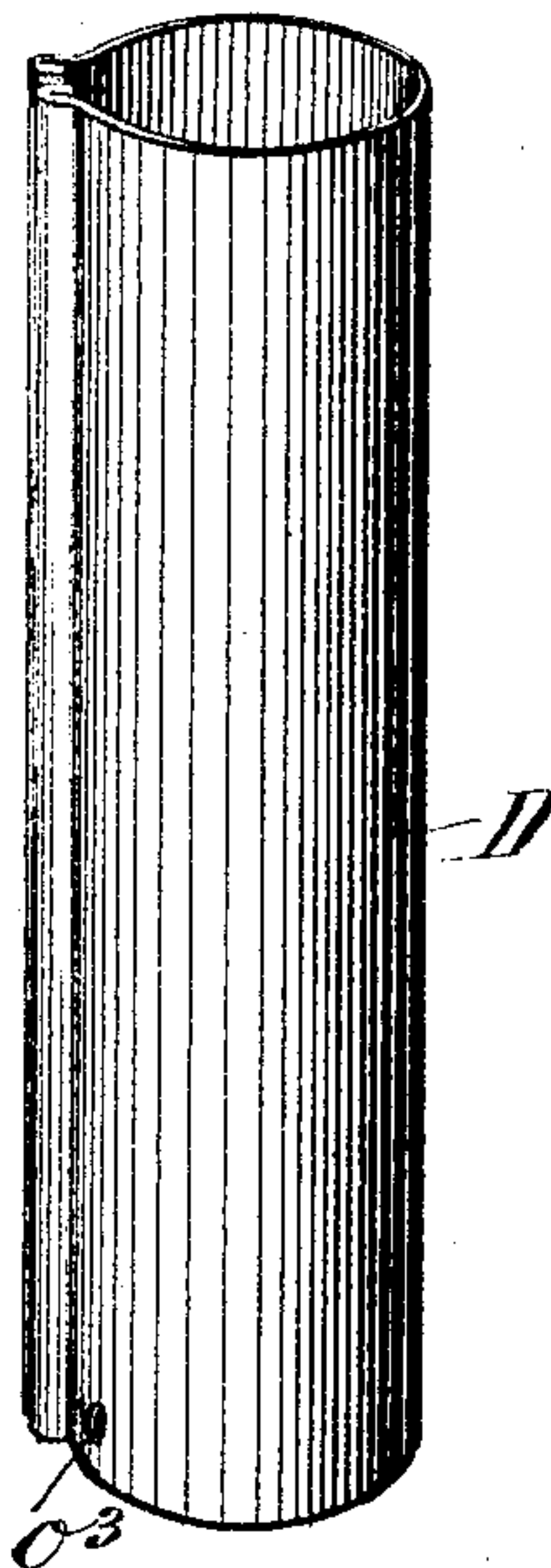
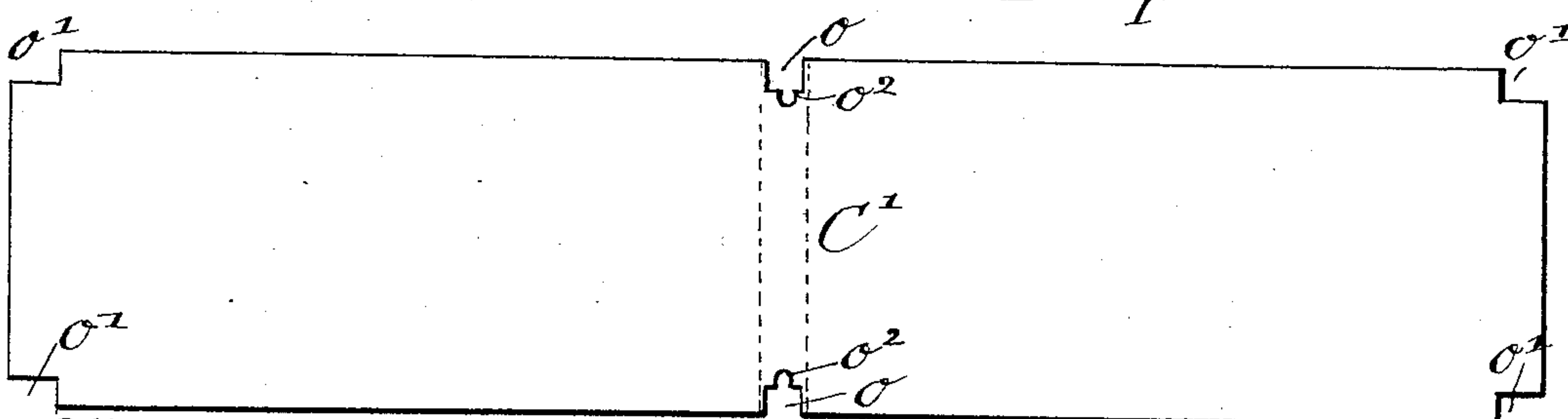
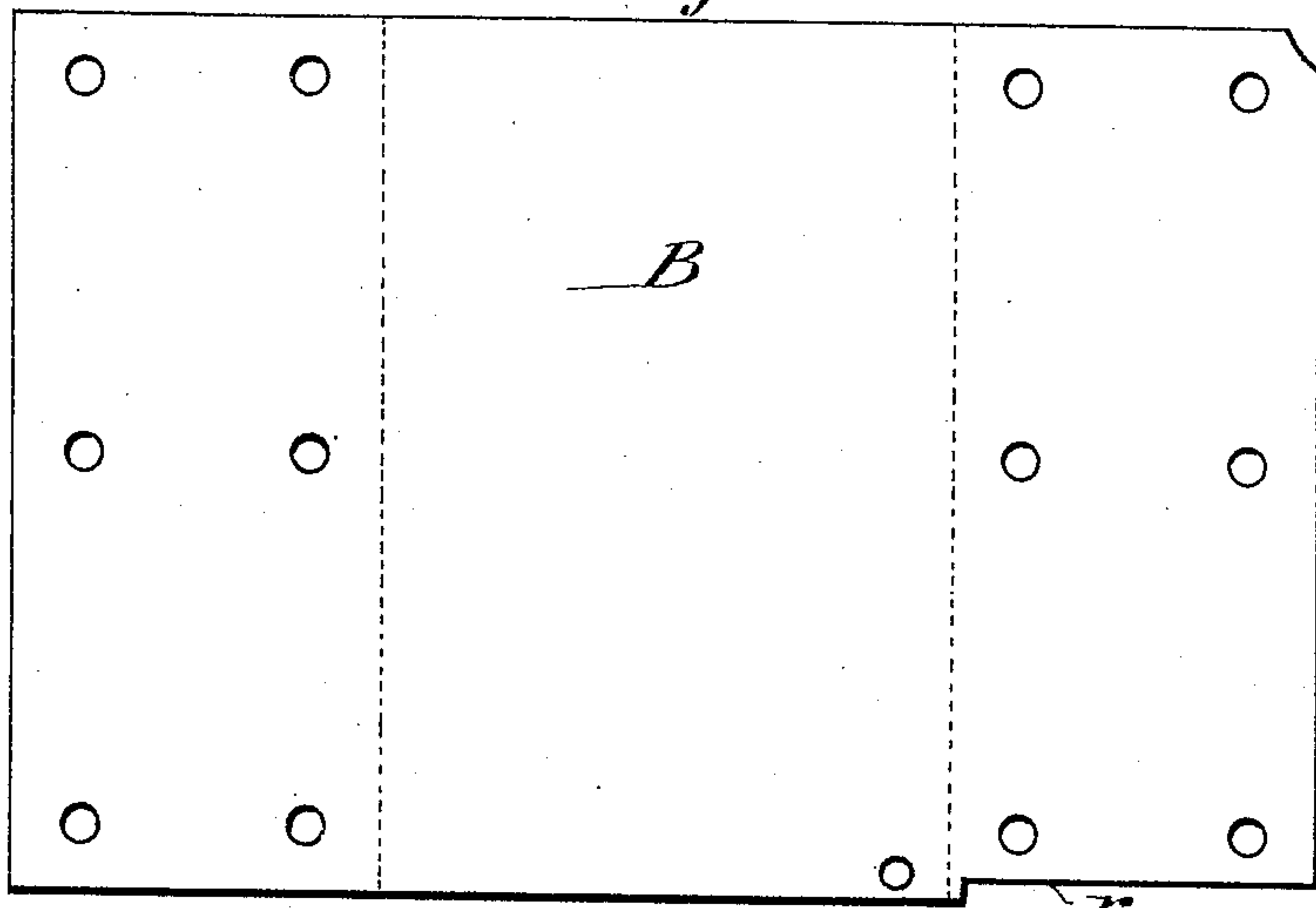


Fig: 8.



Witnesses  
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Fig: 9.

Inventor  
Emil Bommer  
By his Attorneys  
Gauze Niles



# UNITED STATES PATENT OFFICE.

EMIL BOMMER, OF NEW YORK, N. Y.

## SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 779,762, dated January 10, 1905.

Application filed July 22, 1904. Serial No. 217,705.

*To all whom it may concern:*

Be it known that I, EMIL BOMMER, a citizen of the United States, residing in New York, borough of Brooklyn, in the State of New York, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

In the manufacture of the higher grade of spring-hinges, more especially the so-called "double-acting" spring-hinges of larger size which are made of bronze, brass, or like metal, the high price has been a serious objection to their more general introduction. Another objection is that bronze and brass hinges lack the strength of the spring-hinges made from sheet-steel and must therefore be made of greater thickness.

The ordinary spring-hinges made of sheet-steel or cast-iron, on the other hand, have the disadvantage that they quickly rust, whereby the finish is soon destroyed, thereby marring the appearance of the door to which they are applied. For this reason bronze and brass spring-hinges are better adapted for most purposes, especially for outside doors exposed to the weather.

The object of this invention is to so improve spring-hinges, and more especially the double-acting spring-hinges, that they will combine the advantages of the more expensive metals with the strength of spring-hinges made of sheet-steel or cast-iron; and to this end the invention consists, primarily, in covering the hinge-body, which is made of sheet-steel or of cast-iron, with a covering or jacket made of sheet metal, said covering or jacket being composed of an oblong section made of inverted-U shape and adapted to cover the web of the spring-hinge and of cylindrical sections for covering the barrels of the spring-hinge, the web-covering and barrel-coverings being interlocked along their longitudinal meeting edges, while the web-covering is interlocked at its lower ends and crowded up into a recess in the lower edge of the web or into a groove corresponding thereto when the barrels and web are made of cast-iron.

The invention consists, further, in certain improvements in the blanks employed for the web and barrels of the spring-hinge, so that

the proper interlocking of the covering or jacket of the web with the jackets for the barrels is obtained and means for the proper lubrication of the bearings are provided; and the invention consists, lastly, in the improved construction of the blanks for the web and the blank for the covering or jacket for the web, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of the web and barrel portions of a double-acting spring-hinge covered or plated according to my improved construction. Fig. 2 is a horizontal section on line 2 2, Fig. 1. Fig. 3 is a vertical transverse section through the upper portion of the web on line 3 3, Fig. 1. Fig. 4 is a vertical transverse section at the lower portion of the web on line 4 4, Fig. 1, showing the covering before being crowded into the recess at the lower part of the web. Fig. 4<sup>A</sup> is a like section through the lower part of the web, also on line 4 4, Fig. 1, after the covering is crowded into the lower part of the web. Fig. 5 is a perspective view of the covering or jacket for the web, showing the same before it is applied to the web. Figs. 6 and 7 are perspective views of the coverings or jackets for the barrels. Fig. 8 is a plan view of one of the blanks used for the web and barrels of my improved spring-hinge, and Fig. 9 is a plan view of the blank used for the covering or jacket of the web portion.

Similar letters of reference indicate corresponding parts.

The body of my improved spring-hinge is made of two blanks of sheet-steel in the manner fully set forth in the Letters Patent granted to Lorenz Bommer on August 31, 1886, No. 348,312, and to Emil and Anthony J. Bommer on May 7, 1895, No. 538,891, in which by the employment of two blanks B for the spring-barrels provided with parallel extension-plates and the interlocking of the four extension-plates and riveting or otherwise fastening together of the same a four-ply connecting-web for the barrels is obtained. The blanks B used for making the web and barrels of the improved spring-hinge are recessed at the lower web-forming portions at



one side, as shown in Fig. 8, so that when the web-plates are riveted together a recess  $r$  is formed at the lower ends of the intermediate web-plates, while the outer web-plates are of full length, so as to cover the recessed portion of the intermediate web-plates, as shown clearly in Figs. 1, 4, and 4<sup>A</sup>. The upper corner of the blanks B for making the web and barrels is further cut away, as shown in Fig. 8, in order to provide an oil-channel to lubricate the bearings, (constructed as shown in Patent No. 538,891,) the path of the oil being first to lubricate the upper edge of the barrel and the top bearing between the steel washer supported by the inside steel tube and the lower face of the adjustable tension-collar, it passing then to the pintle and running down along the same to the lower bearing, so as to lubricate the latter between the lower spring-holder and lower end of the barrel and the lower pintle-socket.

For covering the hinge-body composed of a web and spring-barrels of my improved spring-hinge three separate covering parts are employed—a covering or jacket C for the web and two coverings or jackets D for the spring-barrels. These coverings or jackets are made of sheet metal—such as bronze, brass, or other metal—while the body of the hinge is made of sheet-steel, as shown in Patent No. 348,312, or of cast-iron in the well-known manner. The covering or jacket C for the web is made from the blank C', (shown in Fig. 9,) which is provided midway of its length with recesses  $o$  and at the corners with recesses  $o'$ , as shown in Fig. 9, so that along the sides and ends of the blank narrow strips are formed which are bent up into the shape of hooks by means of suitable folding devices, after which the blank is bent on its transverse center portion into inverted-U shape, as shown in Fig. 5, and then placed over the web with the closed upper end fitting over the top upper edge of the four-ply web, while the lower ends of the covering or jacket extend below the lower edge of the web. The longitudinal side strips of the blank are bent in outward direction and the lower end strips into inward and outward direction, respectively, in the shape of hooks, so that the lower ends can be locked together and crowded up by means of suitable dies into the interior recess  $r$  at the lower edge of the web, so as to retain thereby the covering or jacket C of the web tightly in position on the web without showing either at the top or bottom the method of attaching the jacket to the web. When the jacket C is thus placed in position on the web by the lock-seam described, the coverings or jackets D for the barrels of the hinge-body are slipped in downward direction over the same. The oblong blanks for covering the barrels are bent inwardly at the longitudinal edges, so as to form hooks, as shown in Figs. 6 and 7, which slide along with the outwardly-bent hook-shaped

side strips of the jacket C of the web, so as to interlock therewith, and which are then crowded up by means of suitable dies or rolls into the angles formed between the barrels and web, so as to form, in connection with the web, snugly-fitting coverings for the barrels, as shown clearly in Figs. 1 and 2. The center recesses  $o$  of the blank C' for the web are provided with central semicircular extensions  $o^2$ , which register with the curved corner recesses of the intermediate web-plates of the web, so as to permit the introduction of lubricating-oil to the ducts or channels formed by said recesses. The coverings for the barrels of the hinge-body are provided with holes  $o^3$ , which register with the holes in the spring-barrels into which the pins for locking the lower or stationary spring holders or sockets are inserted. As the web-covering is snugly attached to the web and retained thereon by the lock-seam at its lower end, which is crowded into the recess at the lower end of the web, and as the barrel-coverings are snugly retained by their lock-seams with the web-covering on the barrels of the hinge-body, being crowded into the corners formed between the web and the barrels, and as the covering for the web is wrapped longitudinally around the web, while the covers for the barrels are wrapped transversely thereof around the barrels—that is to say, at right angles to the covers of the web—a very effective covering or plating for the hinge-body is obtained without the use of rivets or brazing. The sheet-metal covering of the hinge-body has the advantage that the connecting-rivets of the web of the spring-hinge are entirely covered and that the plating of sheet metal adds not only to the appearance, but also to the strength, of the web.

My improved spring-hinge combines the strength of the sheet-steel spring-hinge with the freedom from rust of the bronze and brass hinges. The joints of the coverings being not visible, the exterior appearance of the hinge is not marred, while by the secure attachment of the coverings to the web and barrels of the body owing to the lock-seams employed and the close conformation of the coverings to the surface of the hinge-body a superior finish is imparted to the hinge and durability and strength added thereto.

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

1. A spring-hinge, the body of which is composed of a web and spring-barrels made of sheet-steel or cast-iron, and a covering or jacket for the same made of three parts, a web-covering attached by a lock-seam to the web portion of the hinge-body, and two cylindrical coverings connected by lock-seams at their edges with the web-covering.

2. A spring-hinge, the web and barrel portions of which are made of sheet-steel or cast-iron and provided with a covering placed lon-



gitudinally over the web portion, cylindrical coverings placed transversely thereto around the barrel portions, and means, comprising lock-seams, for connecting the adjacent longitudinal edges of the web-covering and barrel-covering with each other.

3. A spring-hinge the body of which is composed of a web provided with a recess in its lower edge and barrels at the ends of said web, and a sheet-metal covering or jacket for said hinge-body composed of three parts, a web-covering extending over the upper edge of the web of the hinge and connected by a lock-seam to the lower edge of the same, and two coverings for the barrels connected by longitudinal lock-seams at their sides with the sides of the web-covering.

4. In a spring-hinge, a blank for the hinge-body, provided with a recess at the lower edge of one of its web portions.

5. In a spring-hinge, a blank for the hinge-body, one corner of which is cut away so as to form an oil-channel to lubricate the bearings of the hinge.

6. In a spring-hinge, a blank for the web-covering, provided with corner recesses, and center recesses in its longitudinal sides midway between said corner recesses.

7. In a spring-hinge, a blank for a spring-barrel covering having a hole for registering with the hole in the spring-barrel of the hinge into which the pin for holding the stationary spring-collar is placed.

8. In a spring-hinge, a blank for the web-covering, provided with corner recesses and center recesses midway between said corner recesses, said center recesses having semicircular extensions registering with the cut-away corners of the web-plates of the hinge-body for lubricating purposes.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

EMIL BOMMER.

Witnesses:

PAUL GOEPEL,

HENRY J. SUHRBIER.