

No. 753,230.

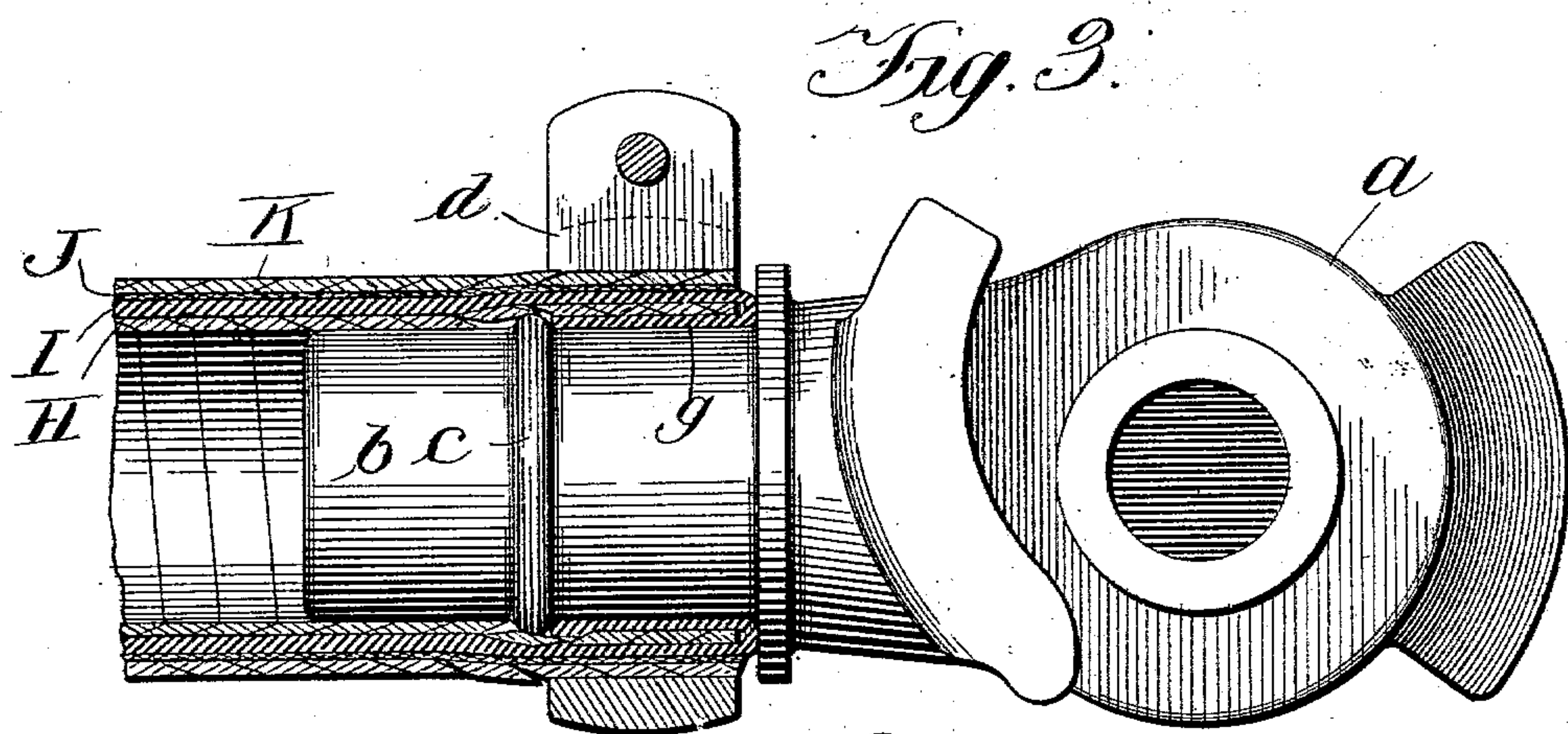
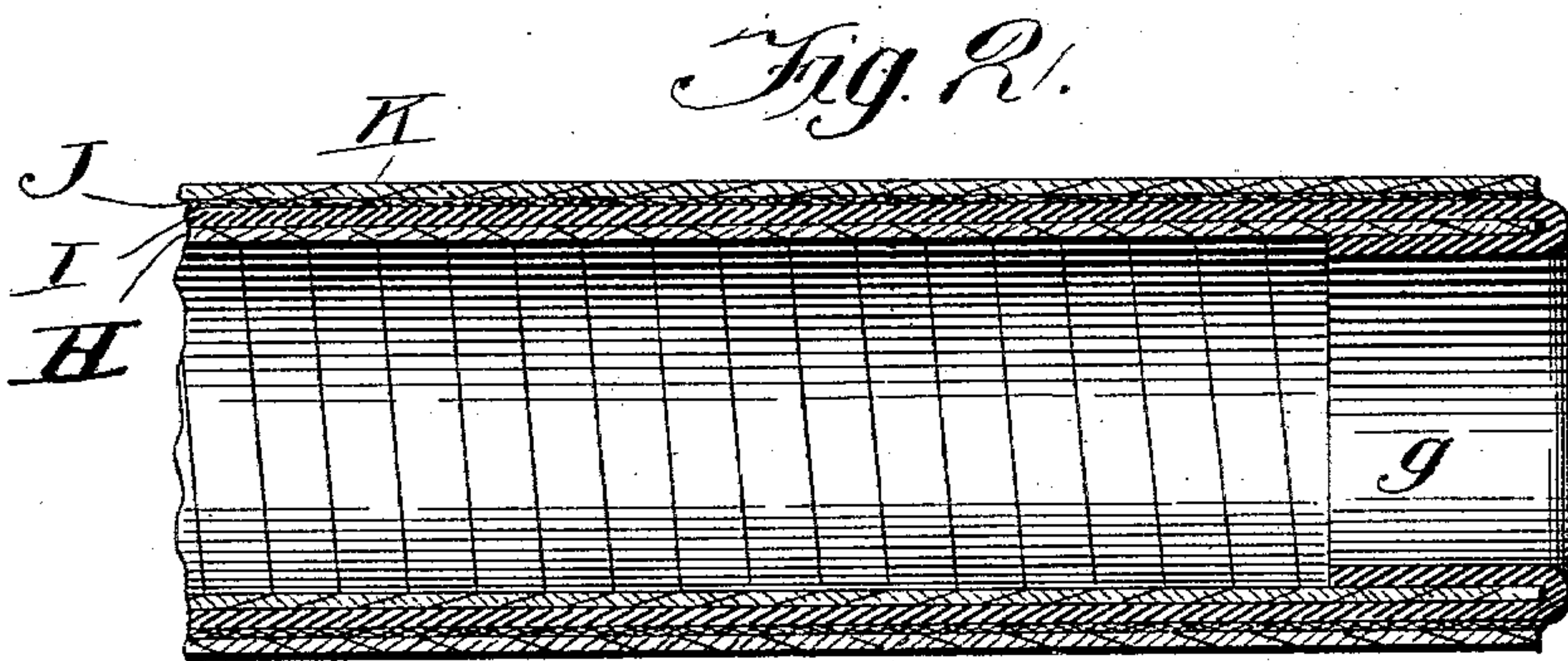
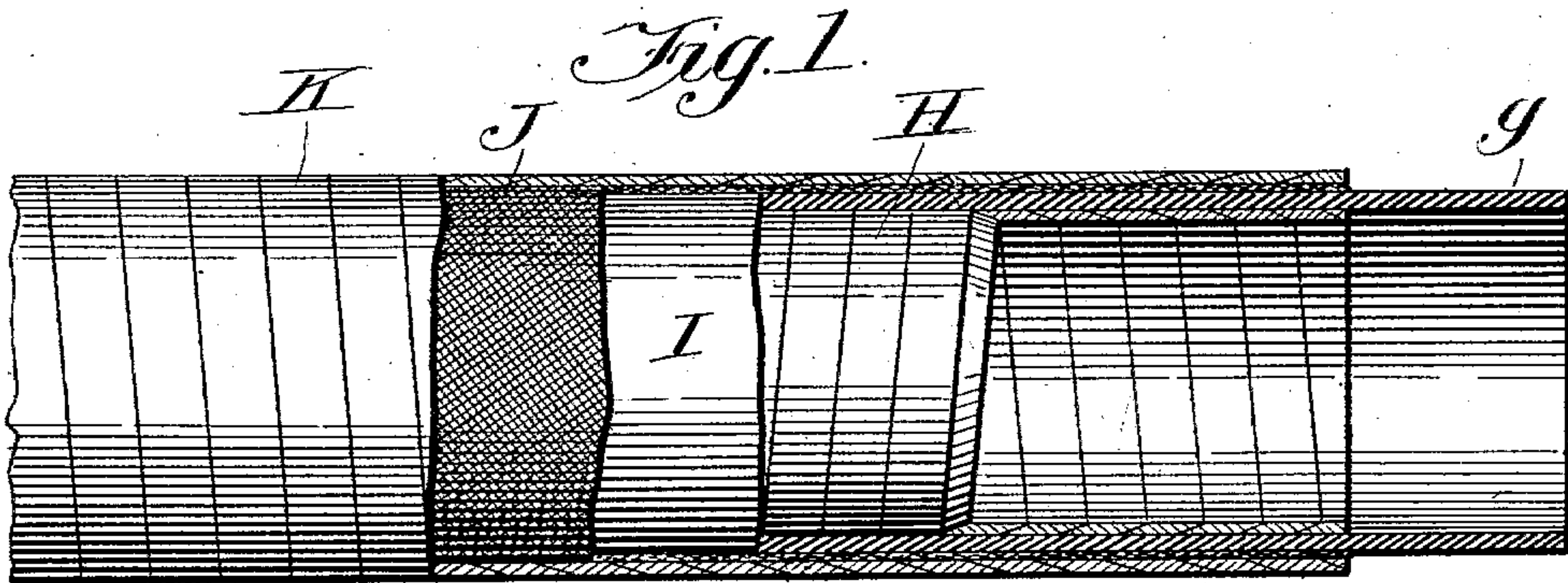
PATENTED MAR. 1, 1904.

R. B. CALCUTT.  
HOSE.

APPLICATION FILED NOV. 6, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
*H. S. Gaither*  
*E. A. Lundy*

Inventor:  
*Reginald B. Calcutt*  
by *Frank D. Thomson*  
his attorney.



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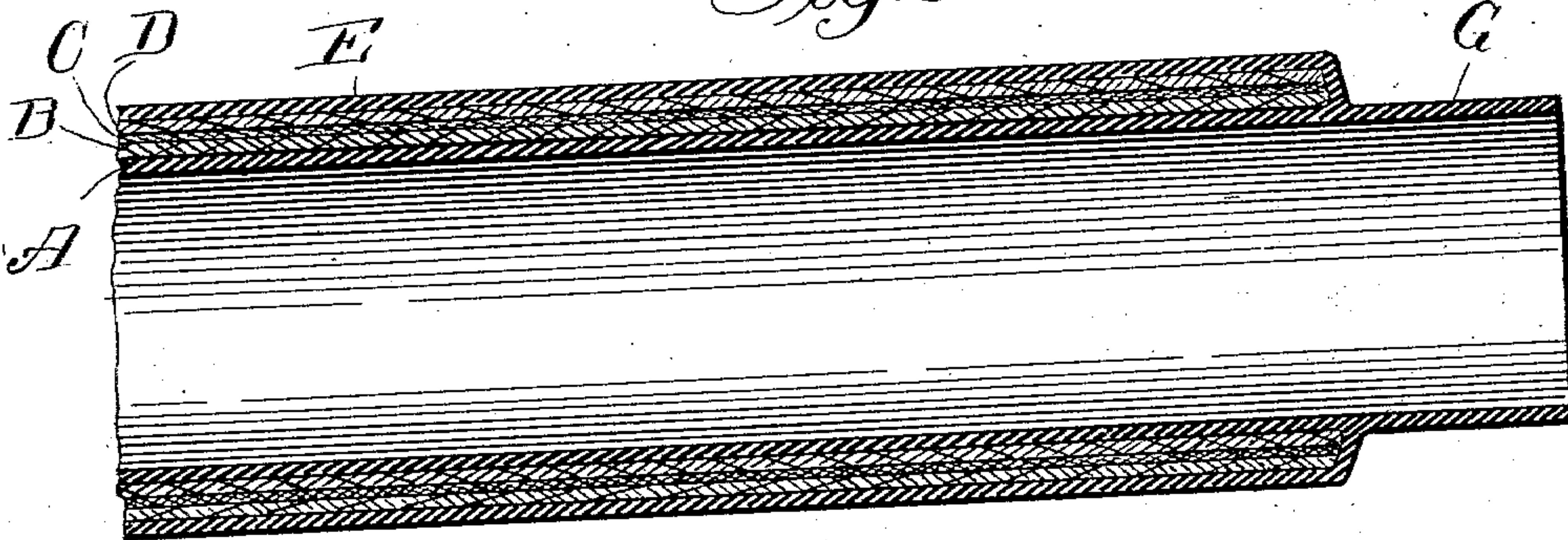
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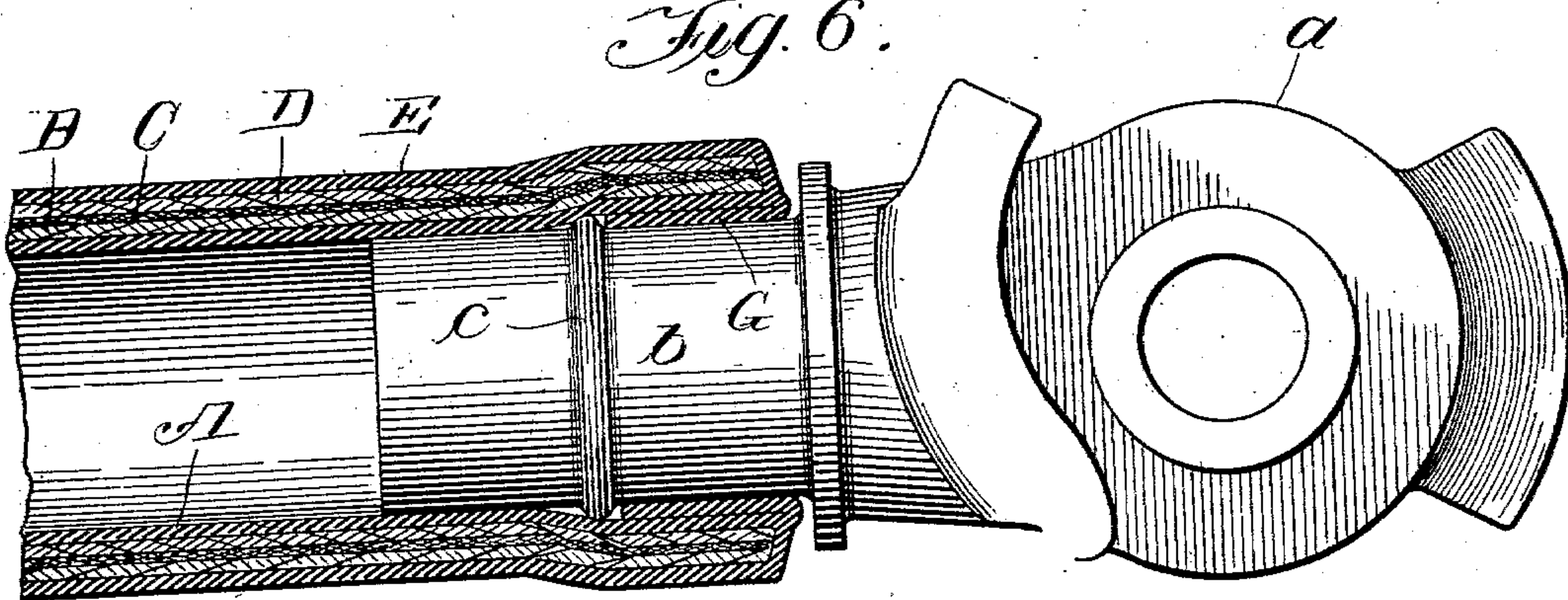
2 SHEETS—SHEET 2.

NO MODEL.

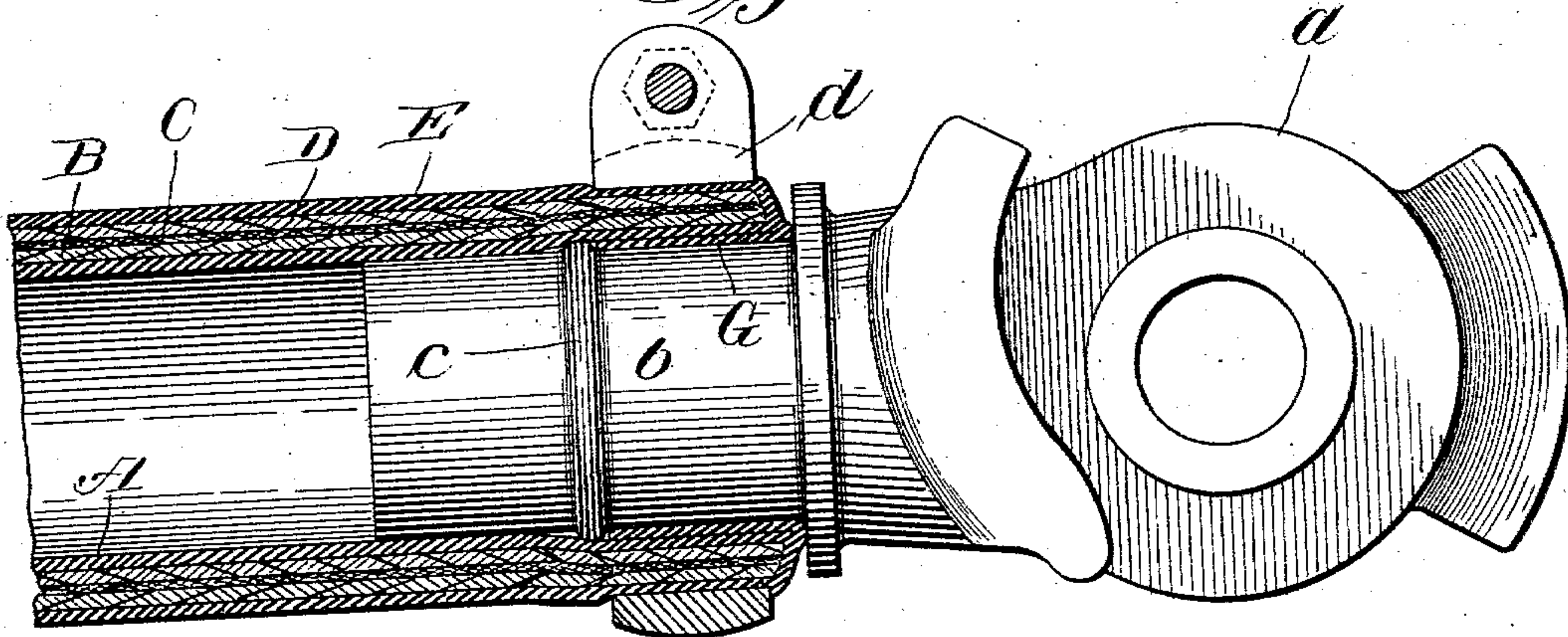
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

REGINALD B. CALCUTT, OF CHICAGO, ILLINOIS.

## HOSE.

SPECIFICATION forming part of Letters Patent No. 753,230, dated March 1, 1904.

Application filed November 6, 1903. Serial No. 180,084. (No model.)

*To all whom it may concern:*

Be it known that I, REGINALD B. CALCUTT, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hose, of which the following is a full, clear, and exact description.

My invention relates to the construction of flexible hose similar to that set forth in an application filed by me October 1, 1903, Serial No. 175,258, and particularly the construction of the end of the hose, to enable it to be attached to the coupling of an air-brake or similar coupling; and its object is to make a metal-bound flexible hose the ends of which are so constructed that they can be connected to the projecting stub of the coupling by an ordinary clip or clamp, such as is used in connection with an air-brake hose, and without necessitating the use of rivets or the soldering of metal of the hose to said coupling. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of a section of my invention, showing a portion thereof stripped, so as to expose to view the successive layers of material of which it is composed and showing the end thereof in section. Fig. 2 is a longitudinal central section of the same, showing the end extension of one of the layers turned back into the bore of the hose. Fig. 3 is a similar view showing my invention applied to an air-brake-hose coupling. Fig. 4 is a detail view showing a section through several coils of the inner metal winding in section. Fig. 5 is a longitudinal central section of one end of a modification of my improved hose. Fig. 6 is a similar view showing the extension of its inner layer of rubber intumed and said end fitted over the stub of an air-brake-hose coupling. Fig. 7 is a similar section showing the end of the hose clamped to said coupling.

In the drawings, H represents an inner spirally-wound strip of metal or wire, which extends from end to end of the hose. I represents a rubber tube inclosing the said spiral metallic winding H, which has its ends g extended about an inch beyond the end of the

winding H and the outer circumference of the portion thereof inclosing said winding preferably covered with a layer J, of fibrous fabric. This layer J may extend the entire length of tube I; but I prefer to have its ends terminate at about the same points as the winding H, so as to leave the extension g uncovered.

Surrounding and inclosing the tube I and fibrous layer J, enveloping the same, is an outer spirally-wound strip of metal or wire K, which is wound, preferably, in the opposite direction in which the coils of the inner metallic winding H are wound. The coils of these metallic windings H and K are wound so close that the edges of one coil will come in contact with the edges of the coils immediately preceding and following it, and in order that these edges may always be in contact and not open up when the hose is bent in one direction or another the edges of the strips are beveled or made so that the outline thereof in cross-section will describe a rhomboid and so that the edge of one coil will lap over the edge of the coil next following, or, if the hose be reversed end for end, next preceding it, according as the case may be. While the width of the metal strips composing the windings H and K may be the same, it is preferred that the width of the outer winding be slightly greater than the inner winding.

When flat metal bands of the same width are used, the points of intersection of the two respective strips are generally arranged in a straight line running exactly longitudinally of the length of the hose, and therefore the hose would be weakest in a direction in which it would be easiest for it to yield to the exterior pressure; but when different widths are employed their points of intersection are in a spiral order running around the hose, and thus, being more scattered, the outward strain is not appreciably felt by and does not seriously affect the hose.

In the drawings I have shown my improvements as applied to an air-brake-hose coupling of the usual construction. These couplings have a tubular shank or stub b projecting longitudinally therefrom that enters the end of the hose and is provided about midway its length with a circumferential rib c. Now



when the end of the hose is slipped over these stubs past the rib *c* and as far as the shoulders of the coupling the coils of the metallic winding are caused to expand, and without  
 5 my improvement when clamped by the clip *d* into the seat between the rib *c* and the shoulder of the coupling the joint would not only be leaky, but in order to keep it from slipping the inner metal winding would have to  
 10 be riveted or soldered to the coupling. When my improved hose is applied to the coupling, the end extension of the inner rubber tube *A* is pushed back into the bore of the tube substantially as shown in the drawings, thus re-  
 15 ducing the diameter of the bore of the mouth of said hose, and then the end of the hose is pushed over the stub *b* until the edges of the inturned extension *G* pass over the rib *c*. The clip *d* is then slipped over the end of the  
 20 hose thus connected to the coupling *a* and tightened. This tightening compresses the hose, so that the extension is reduced in thickness and elongated in both directions, so as to fill its seat on the stub *b* of the coupling  
 25 between the rib *c* and the shoulder of said stub so tightly as to absolutely prevent its displacement therefrom and at the same time make a perfectly-packed joint. The coils of the metallic windings which have been ex-  
 30 panded by being slipped over the rib *c* are also reduced in diameter by the tightening of the clip, not enough to cut through the rubber tube and its extension, but simply enough to restore them almost to their original diam-  
 35 eters except just at the point where they pass over rib *c*, and thus avoid the possible tearing and breaking of the rubber and fibrous fabrics of the hose.

In Figs. 5, 6, and 7 I show a modified con-  
 40 struction of my invention, which comprises an inner tube *A*, of rubber or other suitable material, that is inclosed in a spirally-wound strip of metal or flat wire *B*, extending from within about one inch of one end of  
 45 the tube *A* to within about the same distance from the opposite end thereof, substantially the same as that shown in the first four figures of the drawings. This spiral metallic winding *B* is covered by a suitable cloth fab-  
 50 ric *C*, and immediately surrounding this fabric is another spirally-wound strip of metal or wire *D*, and inclosing the metallic winding is an exterior envelop of thin rubber *E*.

I do not desire to be confined in the con-  
 55 struction of my invention to the use of the fabric layers in connection with the metallic windings, as shown and described, nor do I wish to confine myself to the use of both an inner and outer metallic winding because one  
 60 may be omitted, or, if desired, both omitted altogether; nor do I want to be understood as confining myself to the application of my invention to an air-brake coupling, as it is ob-  
 65 vious the said metallic windings may be dispensed with and the extension of the rubber

layer be used in connection with hose for other purposes, although my invention is peculiarly adapted for use as an air-brake hose. The extension which constitutes the principal  
 70 feature of my invention may be used in connection with any coupling to furnish a tight and secure junction between the hose and coupling; but it even could be dispensed with and the hose with the peculiar metallic wind-  
 75 ing be employed without it in some cases.

What I claim as new is—

1. As an article of manufacture, a flexible hose having a layer of spirally-wound flat metal therein, and a layer of rubber one end of which extends beyond the adjacent end of  
 80 the body of the hose.

2. As an article of manufacture, a flexible hose having an inner and an outer layer of spirally-wound flat metal bands, and a layer of rubber one end of which extends beyond  
 85 the adjacent end of the body of the hose.

3. As an article of manufacture, a flexible hose having a layer of spirally-wound flat metal therein; a layer of rubber one end of which extends beyond the adjacent end of the  
 90 body of the hose, and a fabric envelop for the latter.

4. As an article of manufacture, a flexible hose having an inner and an outer layer of spirally-wound flat metal bands, and an inter-  
 95 mediate layer of rubber one end of which extends beyond the adjacent end of the body of the hose.

5. As an article of manufacture, a flexible hose comprising an inner and an outer layer  
 100 of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber one end of which extends beyond the  
 105 adjacent end of the body of the hose.

6. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, hav-  
 110 ing overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber one end of which extends beyond the ad-  
 115 jacent end of the body of the hose.

7. As an article of manufacture, a flexible hose comprising an inner layer and an outer  
 115 layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber.

8. As an article of manufacture, a flexible  
 120 hose comprising an inner and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less  
 125 width than the outer, and a layer of rubber.

9. As an article of manufacture, a flexible hose having an inner and an outer layer of spirally-wound flat metal bands, wound in op-  
 130 posite directions, and an intermediate layer of rubber.



10. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, and an intermediate layer of rubber.

11. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, and an intermediate layer of rubber.

12. As an article of manufacture, a flexible hose having an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, an intermediate layer of rubber, and a fabric envelop inclosing said layer of rubber.

13. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, an intermediate layer of rubber, and a fabric envelop inclosing said layer of rubber.

14. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, an intermediate layer of rubber, and a fabric envelop inclosing said layer of rubber.

15. As an article of manufacture, a flexible hose having an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, a layer of rubber one end

of which extends beyond the adjacent end of the body of the hose, and a fabric envelop inclosing said layer of rubber.

16. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, a layer of rubber one end of which extends beyond the adjacent end of the body of the hose, and a fabric envelop inclosing said layer of rubber.

17. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, a layer of rubber one end of which extends beyond the adjacent end of the body of the hose, and a fabric envelop inclosing said layer of rubber.

18. As an article of manufacture a flexible hose comprising a layer of spirally-wound flat metal having overlapping edges.

19. As an article of manufacture a flexible hose comprising an outer layer of spirally-wound flat metal having overlapping edges.

20. As an article of manufacture, a flexible tube comprising an inner and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and having overlapping edges.

In testimony whereof I have hereunto set my hand this 29th day of October, 1903.

REGINALD B. CALCUTT.

Witnesses:

E. K. LUNDY,

FRANK D. THOMASON.