

No. 644,139.

Patented Feb. 27, 1900.

J. J. LAASS.
WHEEL HUB.

(Application filed June 12, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

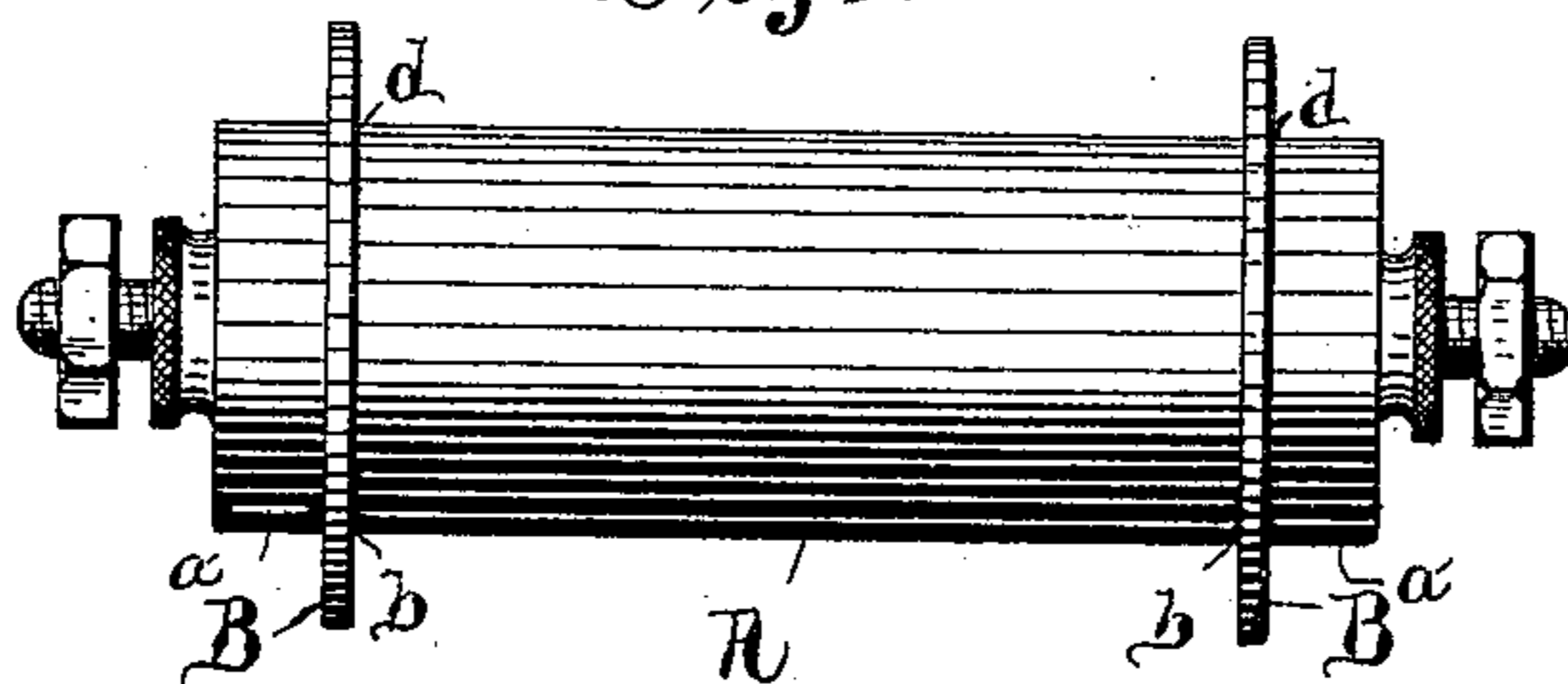


Fig. 2

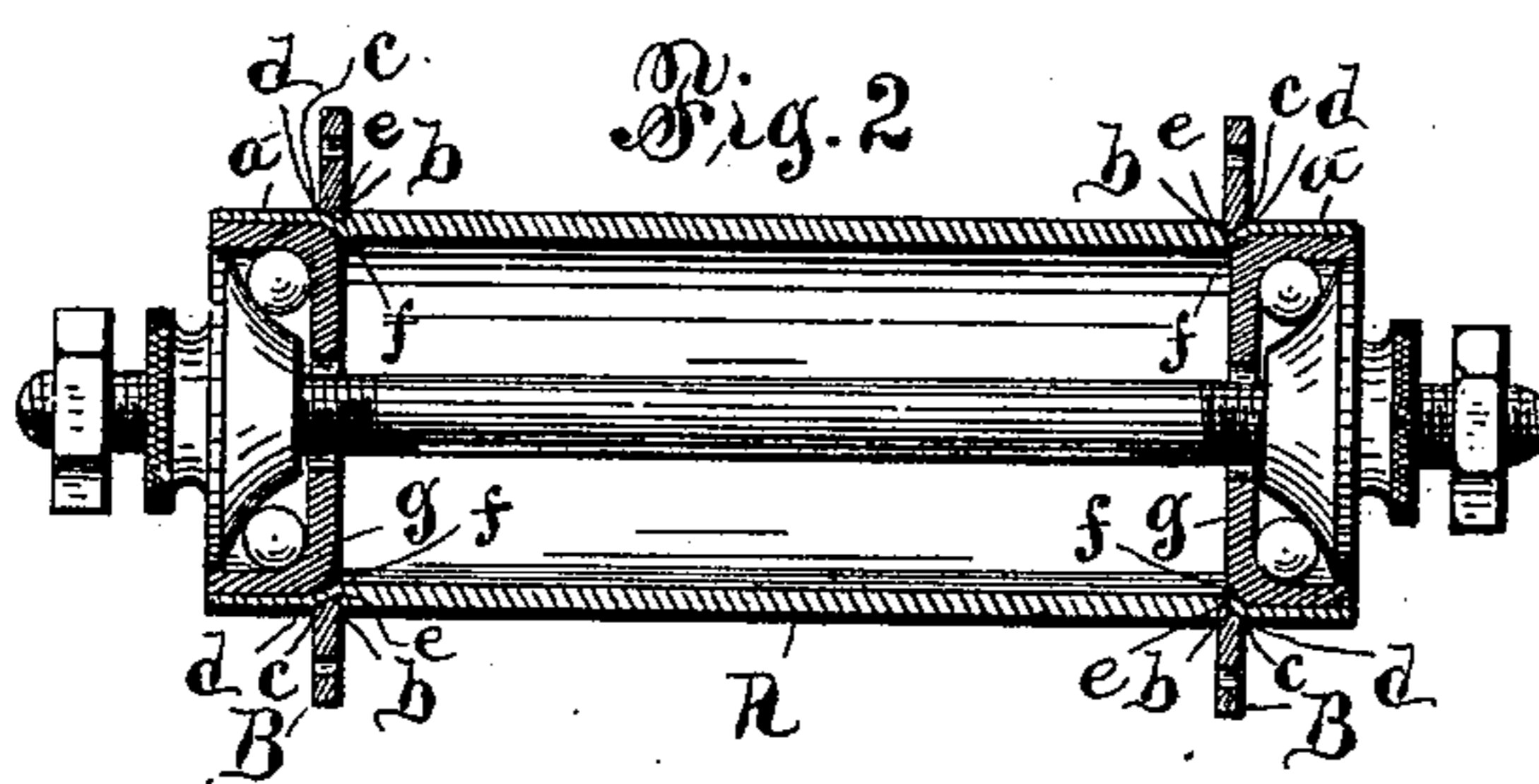


Fig. 3

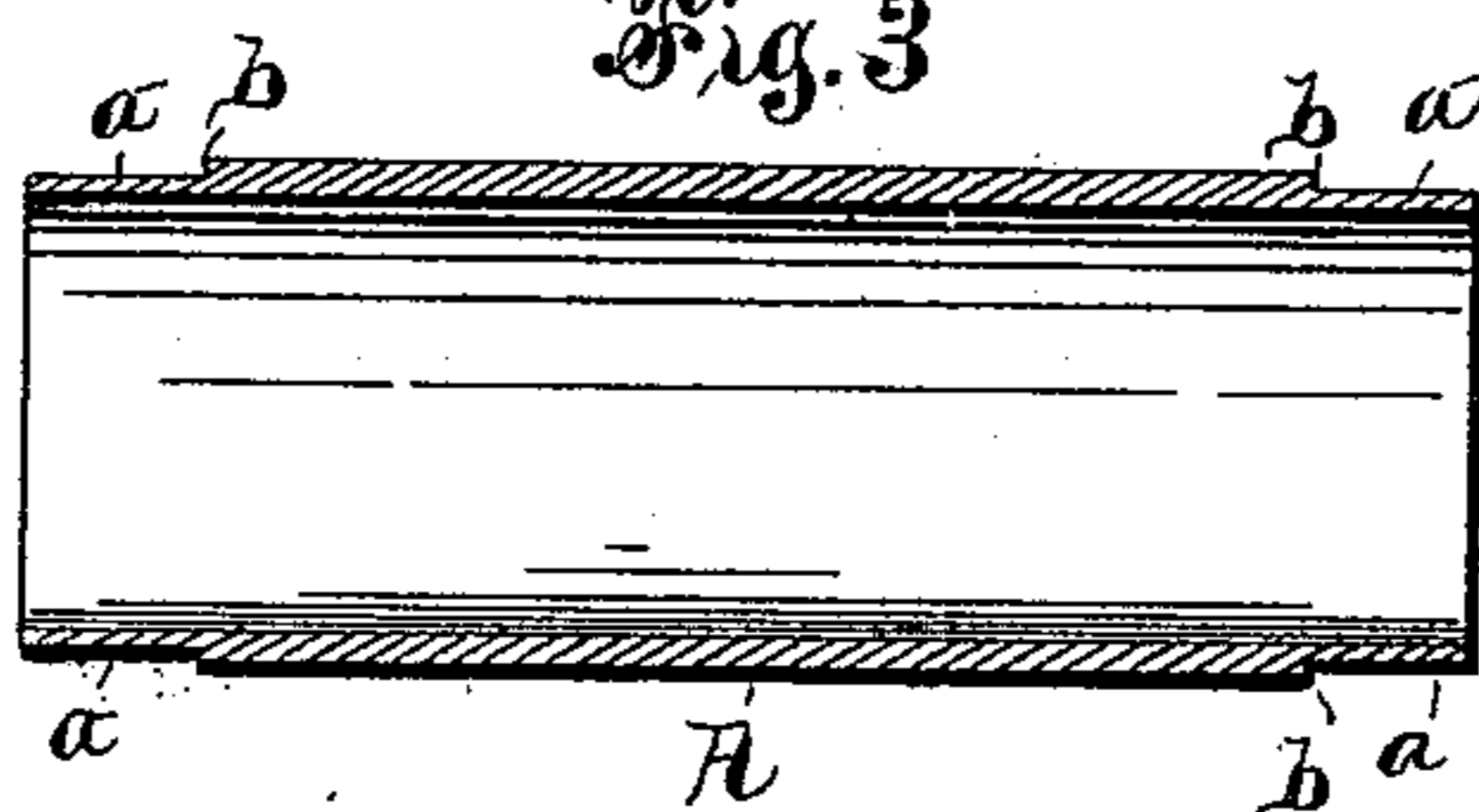


Fig. 4

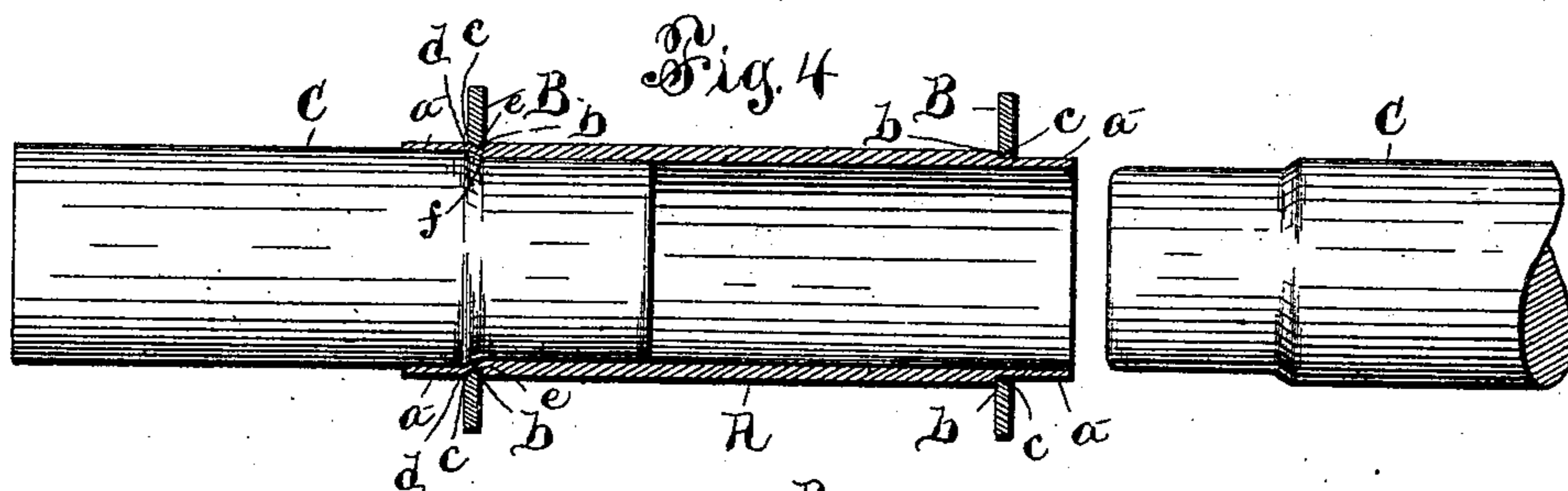


Fig. 5

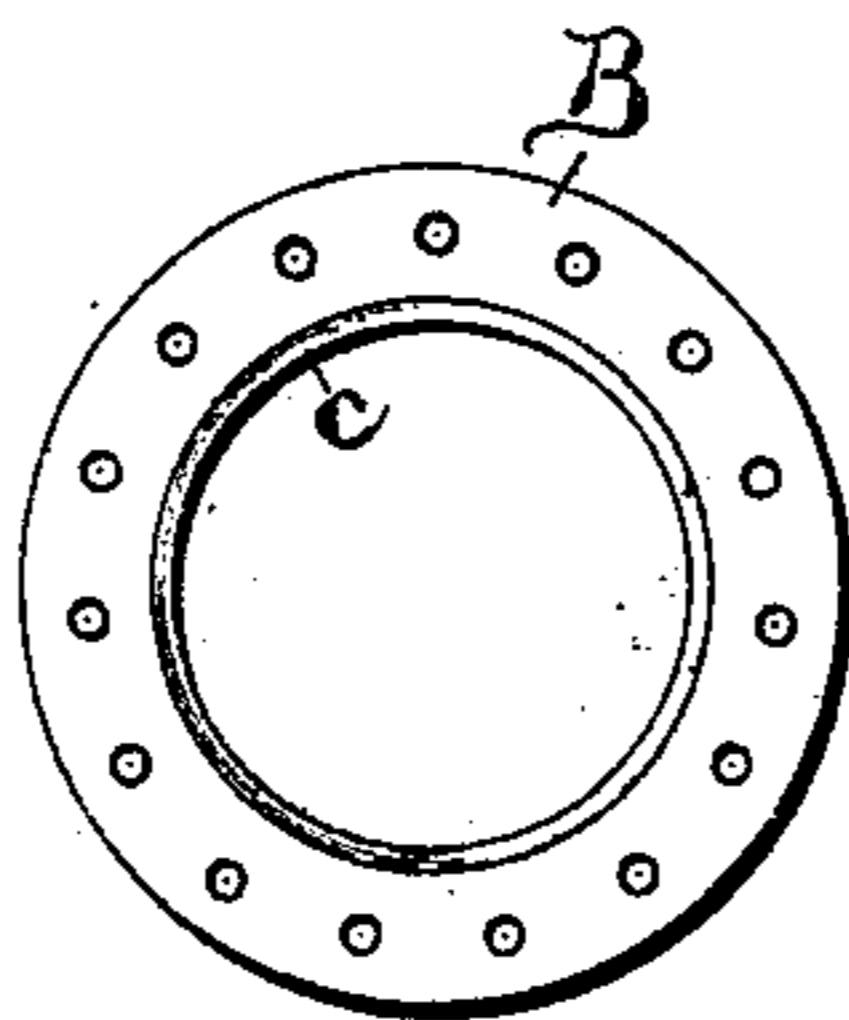


Fig. 6



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2 Sheets—Sheet 2.

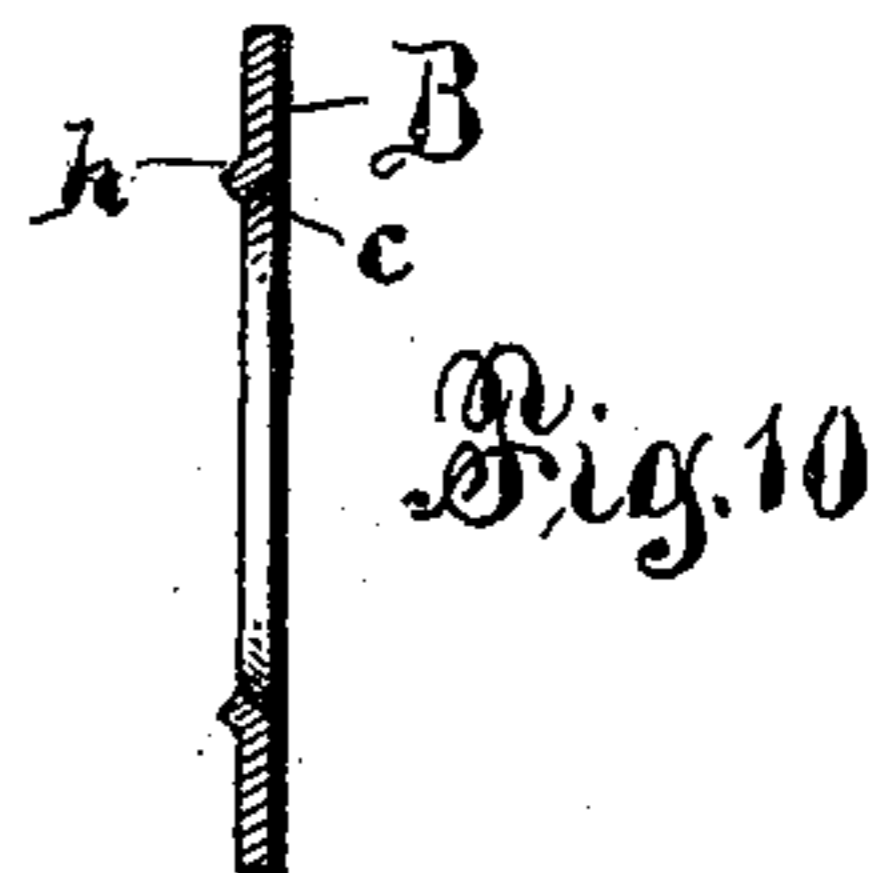
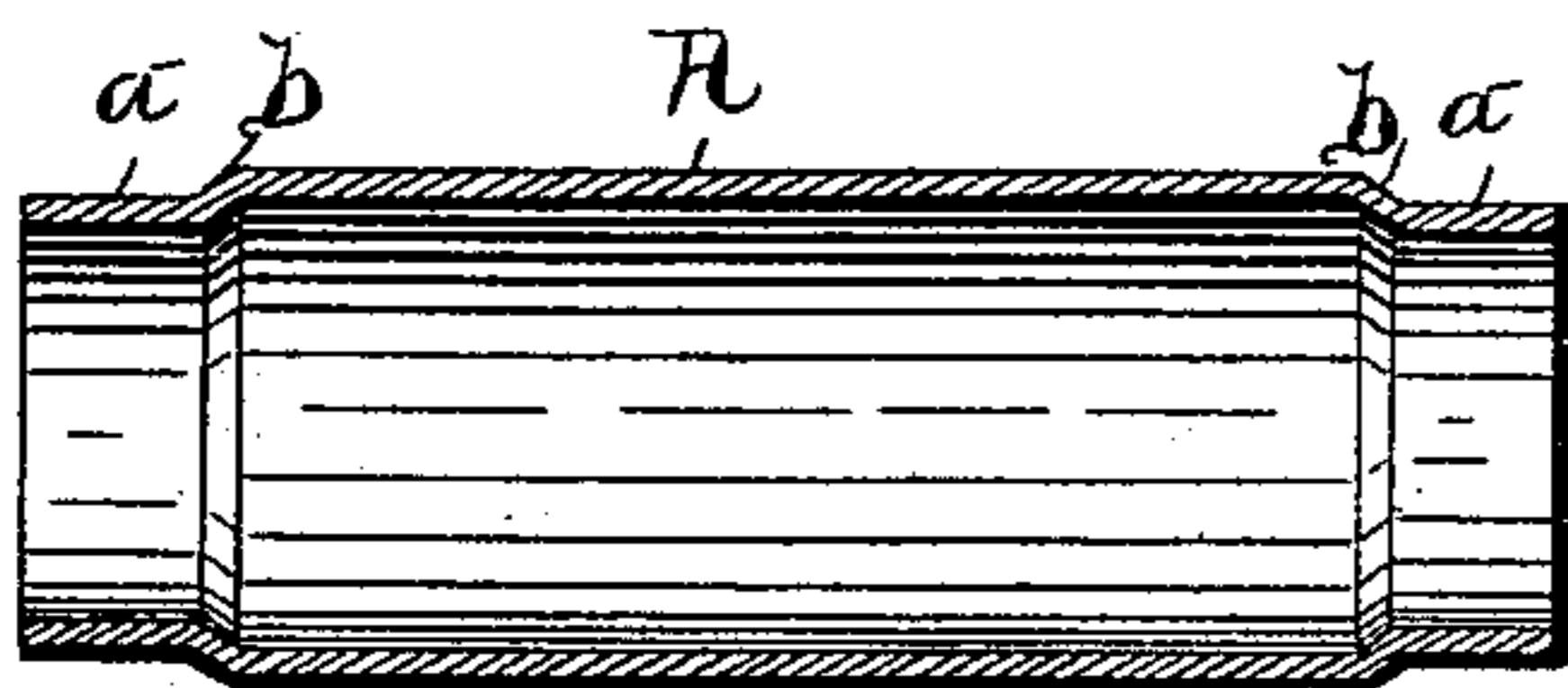
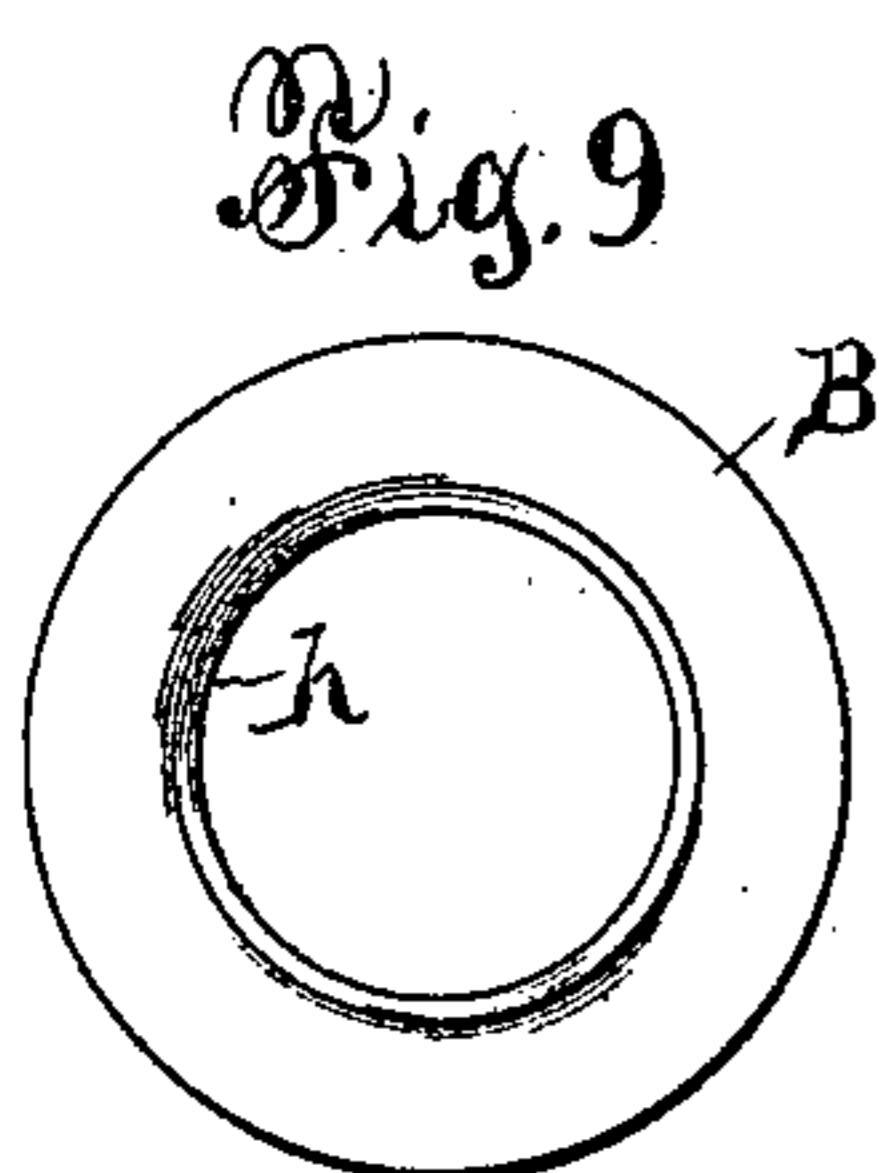
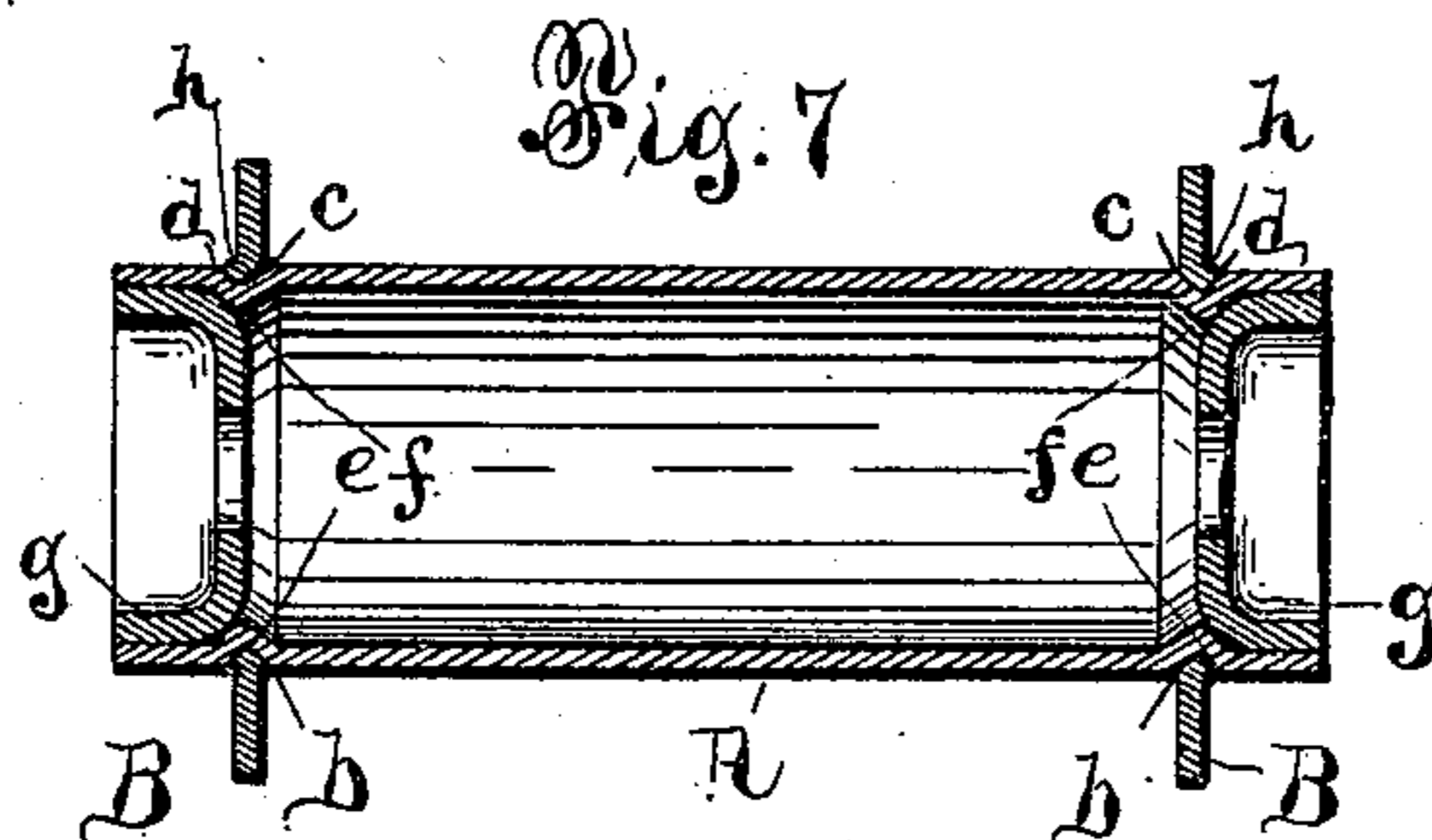


Fig. 8

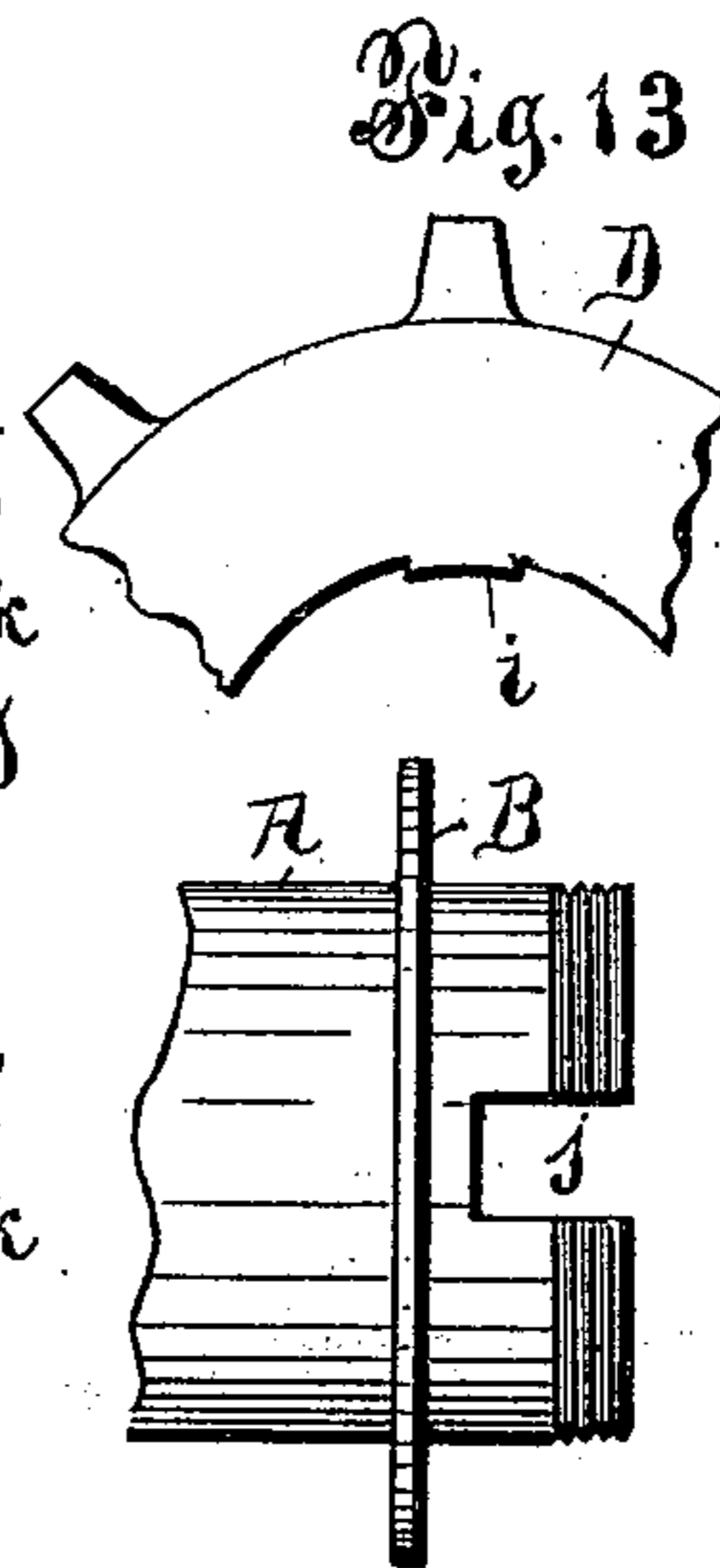
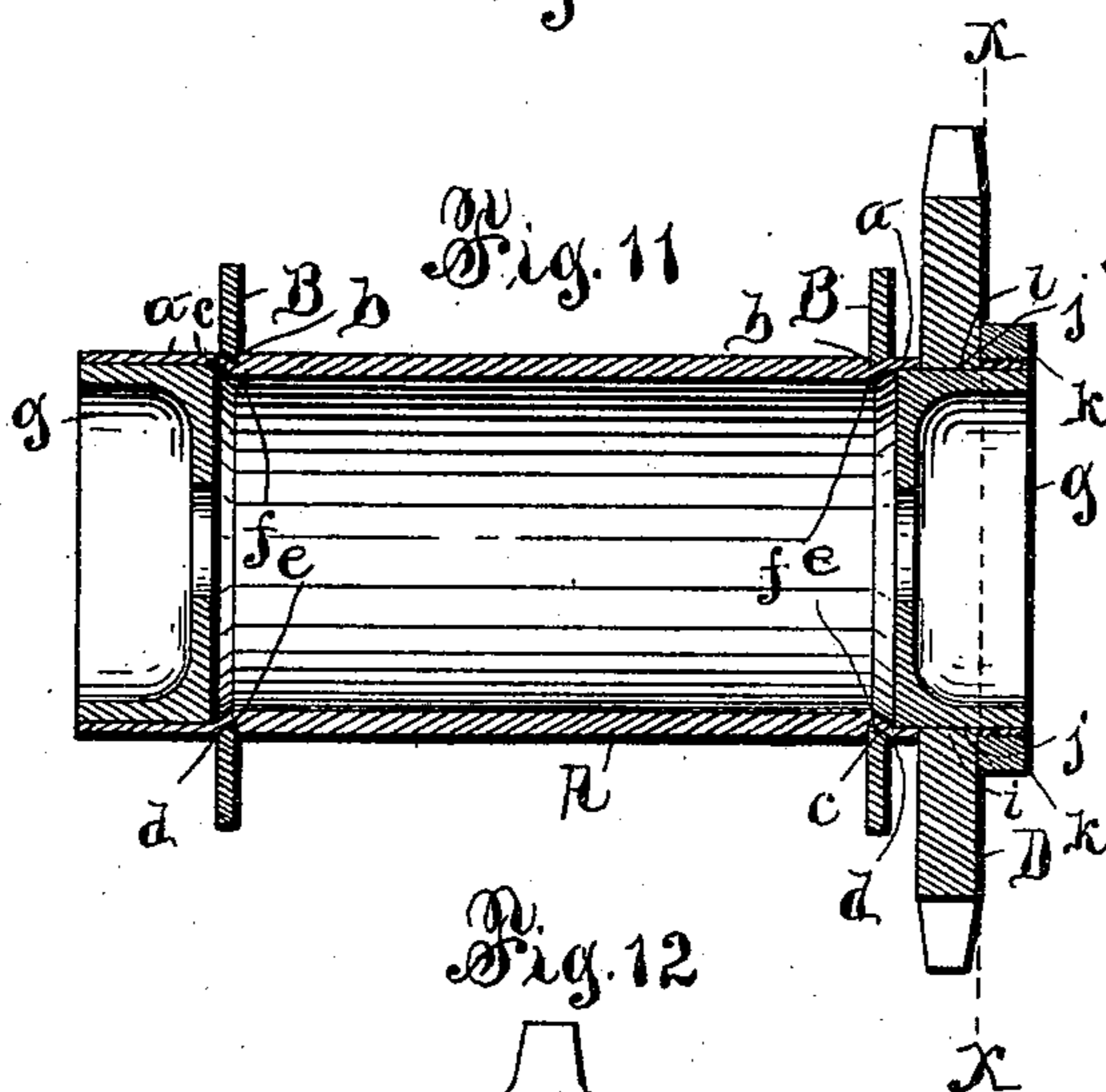
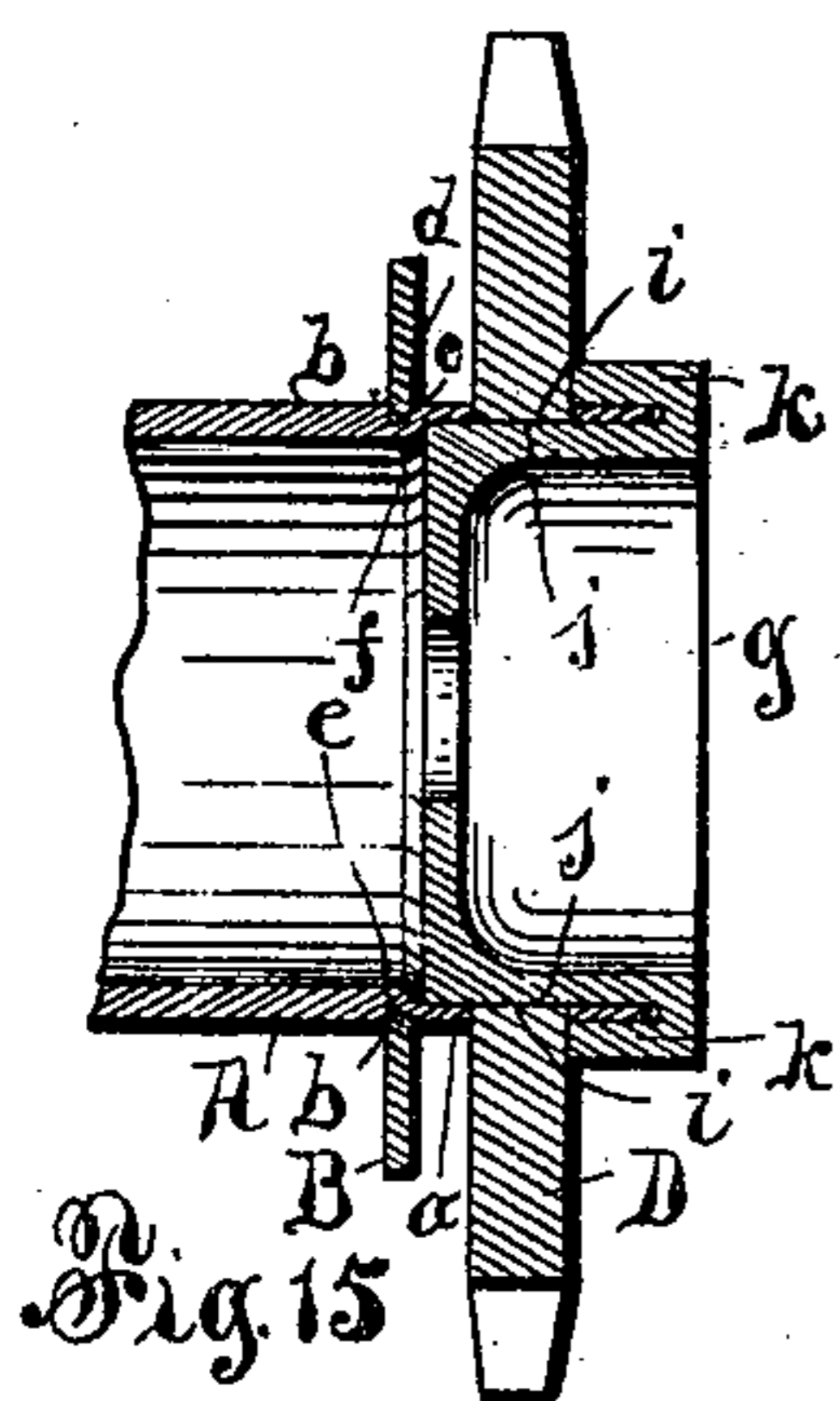
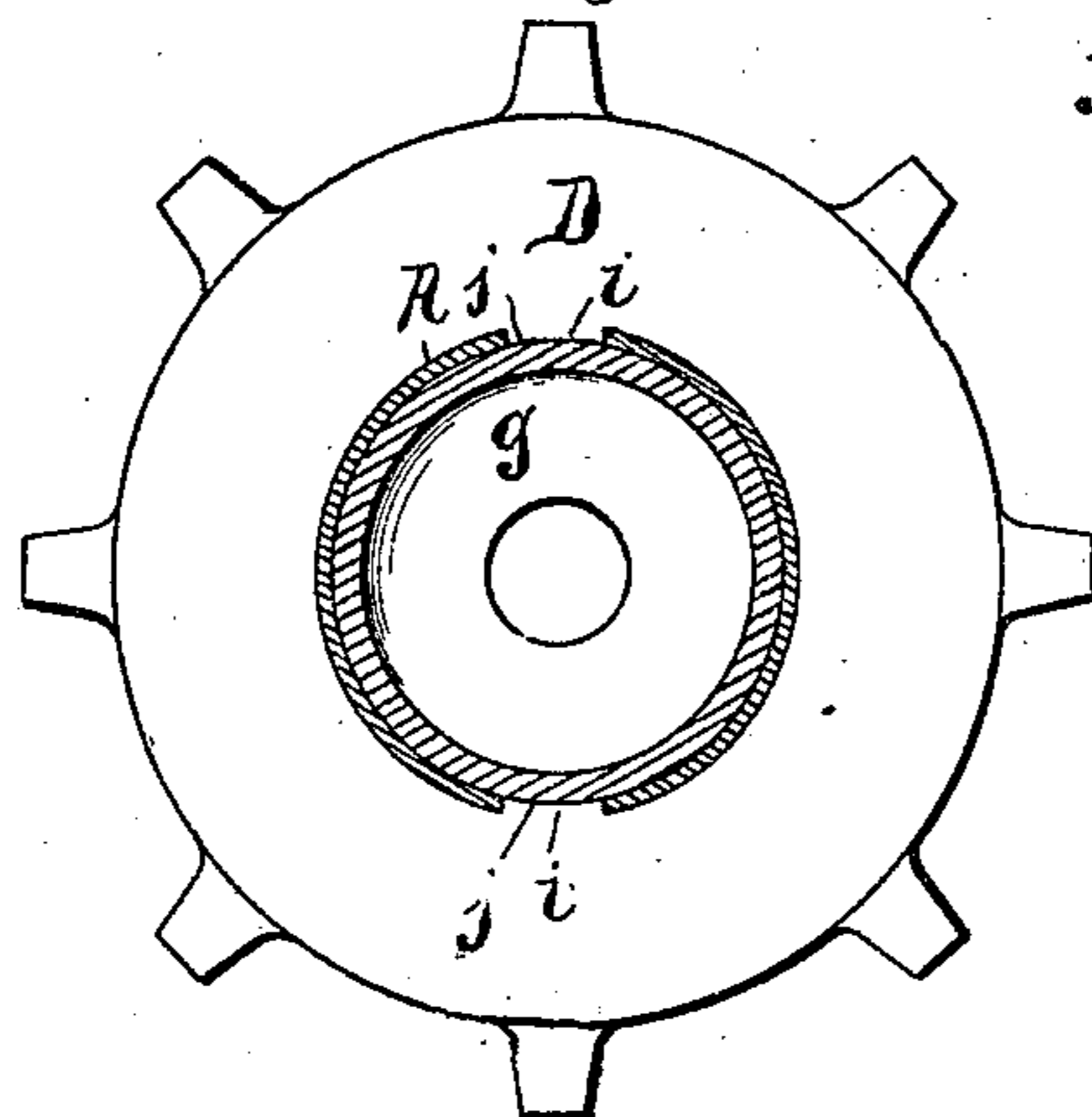


Fig. 14



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UNITED STATES PATENT OFFICE.

JOHN J. LAASS, OF SYRACUSE, NEW YORK.

WHEEL-HUB.

SPECIFICATION forming part of Letters Patent No. 644,139, dated February 27, 1900.

Application filed June 12, 1899. Serial No. 720,141. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. LAASS, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful
5 Improvements in Wheel-Hubs, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to an improvement
10 in wheel-hubs for bicycles and analogous vehicles.

The chief object of the invention is to produce a wheel-hub which shall be simple, strong, and durable in construction and at the same
15 time inexpensive in its manufacture; and to that end the invention consists, first and essentially, of a wheel-hub comprising a metallic tube forming the body of the hub and having its end portions reduced circumferen-
20 tially, thereby producing two annular shoulders, spoke-attaching collars embracing said end portions and abutting against said shoulders, and annular wedging retaining-shoulders formed on said end portions and press-
25 ing said collars firmly against the abutment-shoulders to rigidly lock the collars to said tube.

Secondly, the invention consists in the process of constructing the herein-described wheel-
30 hub, which is as follows: I provide a piece of tubing of the desired dimensions and circumferentially reduce the end portions of the same, which reductions may be made either by cutting the tube on a lathe or by compress-
35 ing the tube, and thereby two annular shoulders are produced. I then provide two spoke-attaching collars, preferably of the form of the well-known washer, which collars are placed on said end portions of the tube so as
40 to abut against said shoulders. I then expand said end portions to their original diameters, thereby producing thereon wedging retaining-shoulders which press said collars tightly against the abutment-shoulders, and
45 thus the collars are rigidly locked to the tube, as aforesaid.

Thirdly, the invention consists in the improved manner of attaching the sprocket-wheel to the rear hub; and, furthermore, the
50 invention consists in the novel details of con-

struction, as hereinafter fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a side view of a front wheel-hub embodying my invention. Fig. 2 is a longitudinal section of
55 said hub. Fig. 3 is a longitudinal section of the tube before the spoke-attaching collars have been applied. Fig. 4 illustrates the means for expanding the end portions of the tube. Fig. 5 is an outer face view of one of
60 the spoke-attaching collars. Fig. 6 is a transverse section of said collar. Fig. 7 is a longitudinal section of a hub, illustrating a modification of the same. Fig. 8 is a longitudinal section of the tube employed in the modified
65 construction. Fig. 9 is an outer face view of one of the spoke-attaching collars employed in the latter construction. Fig. 10 is a transverse section of said collar. Fig. 11 is a longitudinal section of a rear-wheel hub, illustrating my improved sprocket-wheel attach-
70 ment. Fig. 12 is a vertical transverse section on line X X in Fig. 11. Fig. 13 is a detail face view of a portion of the sprocket-wheel. Fig. 14 is a detail plan view of a portion of the rear hub minus the sprocket-wheel, and Fig. 15 is a longitudinal section
75 of a portion of a rear-wheel hub, illustrating a modification of the sprocket-wheel attachment.

Referring to the drawings, A represents the metallic tube which is employed in my improved construction and constitutes the body of the hub. Said tube has its end portions reduced circumferentially, as indicated at *a*
85 *a*, which reductions are made either by cutting the tube, as shown in Fig. 3 of the drawings, or by compression of the tube, as shown in Fig. 8 of the drawings, and in either case producing two annular shoulders *b b*.
90

B B denote the two spoke-attaching collars, which I prefer to make in the form of the well-known washer. Said collars are placed on the aforesaid end portions of the tube and made to abut against the shoulders *b b* and
95 have their inner peripheral edges formed beveled, as indicated at *c* in Figs. 2, 4, and 6 of the drawings.

The end portions *a a* of the tube A are expanded after placing the collars B B thereon,
100

preferably by suitably-shaped mandrels C C, inserted in said ends, thereby forming wedging retaining-shoulders $d d$, which press firmly against the beveled edges of the collars, and thereby rigidly lock the collars to the tube A.

It will be seen that by forming both shoulders $b b$ and $d d$ annular grooves $e e$ are produced, in which the collars are seated, as clearly shown in Figs. 2 and 4 of the drawings.

It will also be observed that by said operations annular ribs $f f$ are formed within the tube A, upon which ribs the bearing-cups $g g$ are seated, and are thereby prevented from shifting inward, as shown in Fig. 2.

In referring to Figs. 7, 8, 9, and 10 of the drawings, illustrating modifications of the hub, the tube A is of a uniform thickness throughout its length and has its end portions reduced circumferentially by compression, as shown at $a a$, and thereby producing the hereinbefore-described shoulders $b b$. In reducing the end portions of the tube A by the latter principle the abutment-shoulders $b b$ are not as abrupt as in the preferred construction. Therefore I form the spoke-attaching collars in this case flaring at their inner peripheries, as indicated at h , to conform to the shape of the shoulders $b b$ and to form the bevel c , as clearly shown in Figs. 7 and 10.

In expanding the end portions of the tube A in the modified construction the mandrels are necessarily made of a slightly-different form (not necessary to be shown) and are inserted in the ends of the tube in manner hereinbefore stated.

Referring to Figs. 11, 12, 13, and 14 of the drawings, illustrating a rear-wheel hub constructed in the preferred form, D represents the sprocket-wheel, which is formed on its inner periphery with two lugs $i i$. Said sprocket-wheel is placed onto the end portion of the tube A, with its lugs entering or engaging two longitudinal slots $j j$, cut in the end of the tube, and is thereby locked to the tube and prevented from turning thereon.

The extreme end portion of the tube A is screw-threaded externally, to which is applied a screw-threaded ring k , which serves as a nut and bears against the sprocket-wheel to prevent the same from shifting outwardly.

In Fig. 15 I have illustrated a modification of the sprocket-wheel attachment, in which case the retaining-ring k is formed integral with the bearing-cup g . In this construction it will be seen that the screw-threads can be dispensed with, as the ring is held firmly against the sprocket-wheel by providing the bearing-cup with a tight fit to the tube A.

What I claim is—

1. In a wheel-hub, the combination with a metallic tube constituting the body of the hub and provided on each end portion with an annular shoulder produced by circumferentially reducing said end portions, of spoke-attaching collars embracing said end portions and abutting against said shoulders, and wedging

retaining-shoulders pressing the collars firmly against the abutment-shoulders and produced by expansion of said reduced end portions to their original diameters substantially as described.

2. In a wheel-hub, the combination with a metallic tube constituting the body of the hub and provided on each end portion with an annular shoulder produced by circumferentially reducing said end portions, of spoke-attaching collars having their inner peripheries flaring and embracing said end portions, and abutting against said shoulders, a bevel produced by said flaring of the collars, and wedging retaining-shoulders pressing against said bevel and produced by expansion of said end portions to their original diameters substantially as described.

3. In a wheel-hub, the combination with a metallic tube forming the body of the hub, and having its end portions reduced circumferentially and thereby producing annular shoulders thereon, of spoke-attaching collars embracing said end portions and abutting against said shoulders, wedging retaining-shoulders formed on said end portions and pressing said collars firmly against the abutment-shoulders, annular ribs produced within the tube by the formation of the wedging-shoulders, and the bearing-cups inserted in the ends of the tube and seated on said ribs substantially as described.

4. In a wheel-hub, the combination with a metallic tube forming the body of the hub, and having its end portions reduced circumferentially thereby producing annular shoulders, of spoke-attaching collars embracing said end portions and having their inner peripheral edges formed beveled, wedging retaining-shoulders formed on the end portions of the tube and pressing against said beveled edges of the collars to grip the collars between the latter shoulders and abutment-shoulders to lock said collars to the tube, annular ribs produced within the tube by the formation of the wedging-shoulders, and the bearing-cups inserted in the ends of the tube and seated on said ribs substantially as described.

5. The combination with a hub provided in one end portion with a series of longitudinal slots and screw-threaded externally on said end, of a sprocket-wheel embracing said end portion and provided on its inner periphery with a series of lugs engaging the aforesaid slots, and a screw-threaded retaining-ring applied to the screw-threaded portion of the hub and bearing against the sprocket-wheel substantially as described.

6. The combination with a hub provided in one end portion with a series of longitudinal slots, of a sprocket-wheel embracing said end portion and provided on its inner periphery with a series of lugs engaging the aforesaid slots, the bearing-cup inserted in the end of the hub and having a retaining-ring formed

integral therewith and bearing against the sprocket-wheel substantially as described.

5 7. The combination with a wheel-hub, of a sprocket-wheel mounted non-revolubly thereon and adapted to be shifted longitudinally to apply it to and remove the same from the hub, a bearing-cup secured in the end of the hub, and a retaining ring or nut formed in-

tegral with the cup, and bearing against the sprocket-wheel substantially as described and 10 shown.

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Witnesses:

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LUTHER L. WELLER.