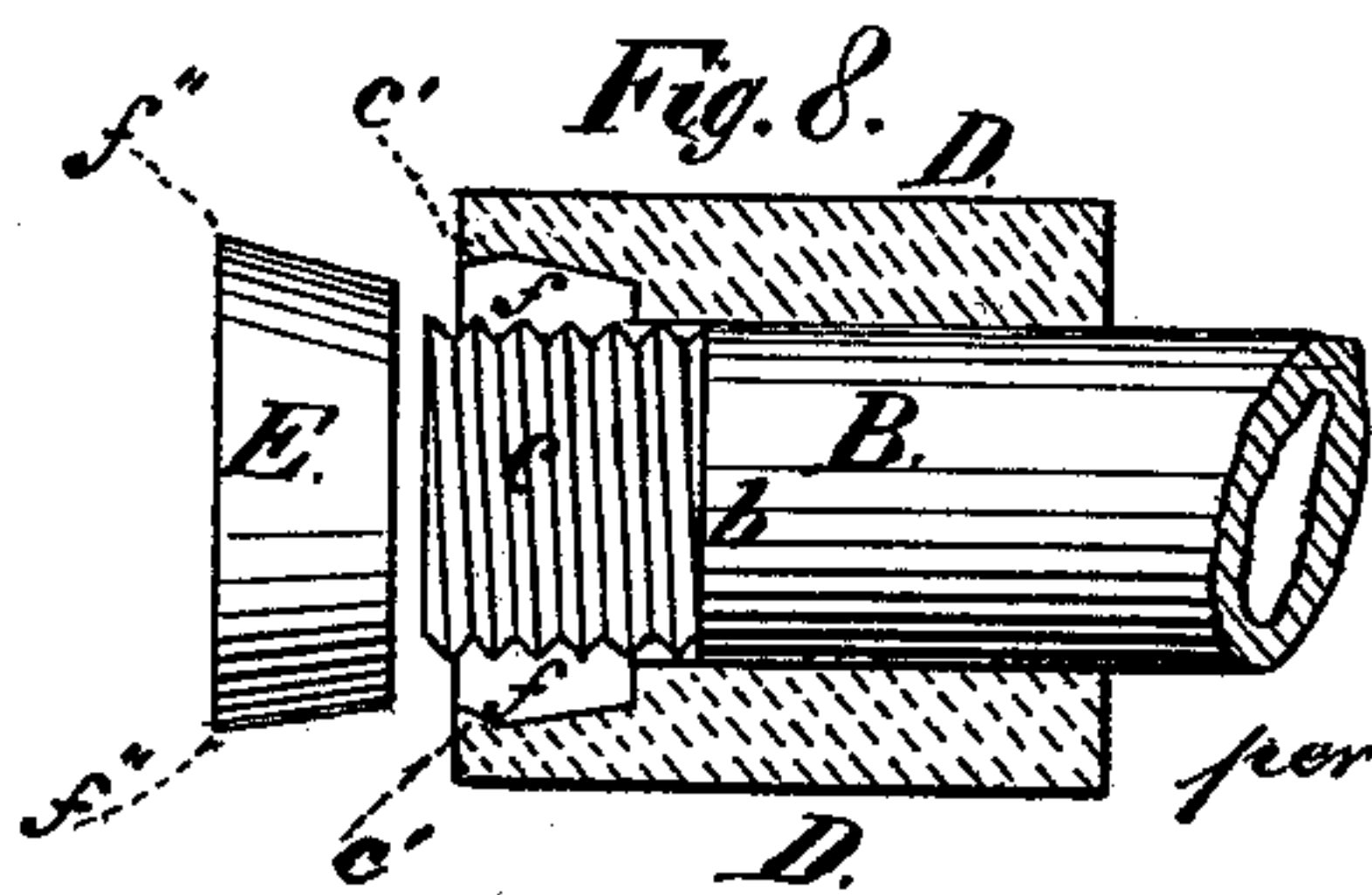
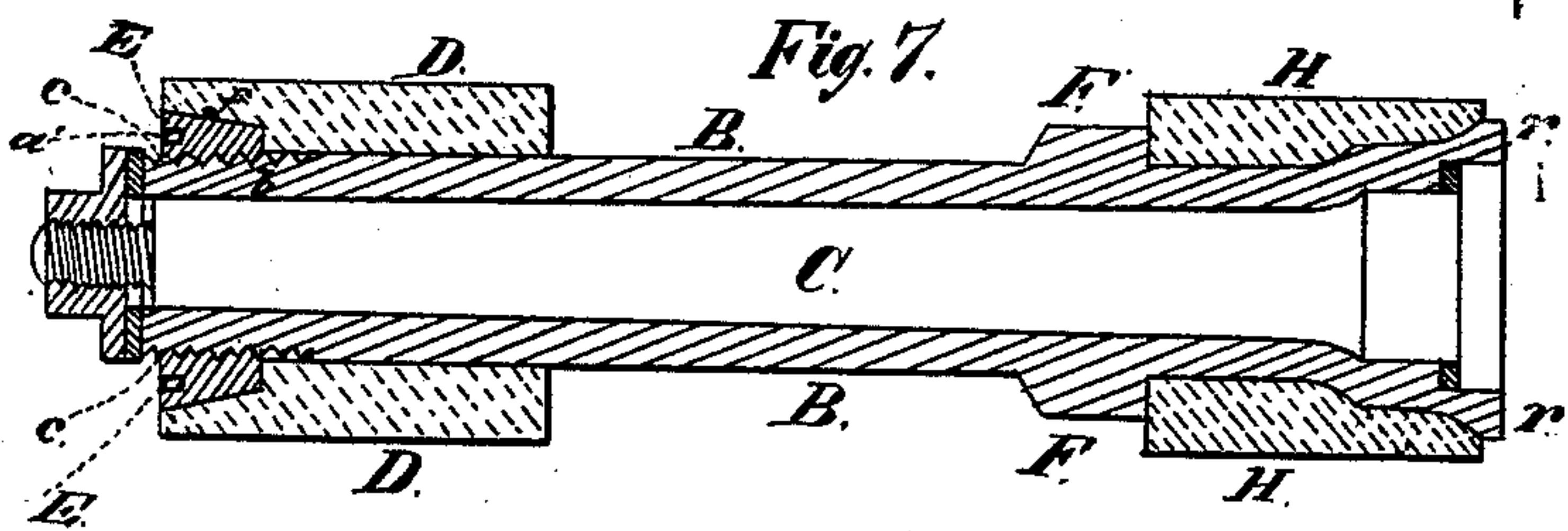
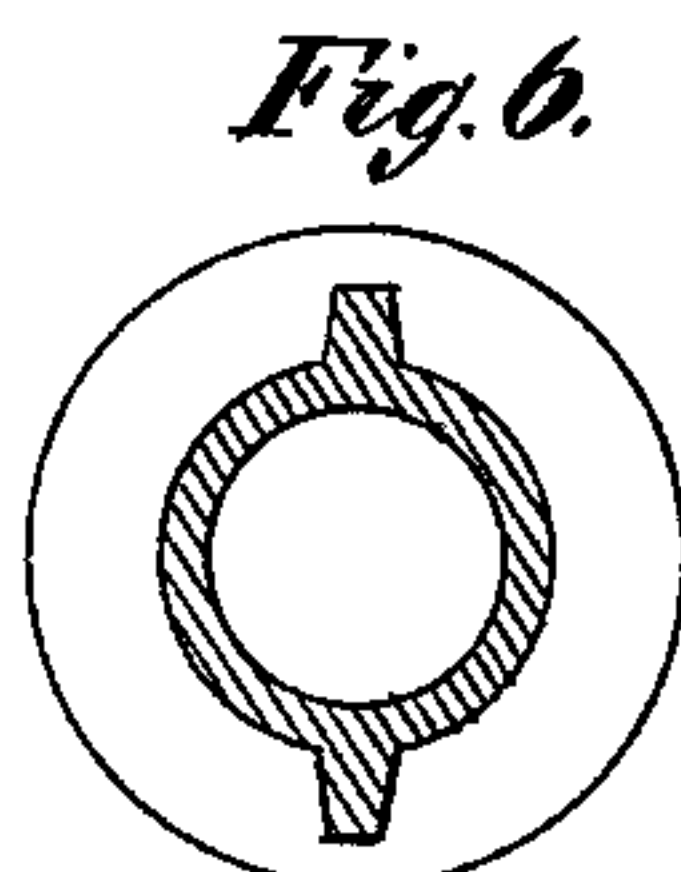
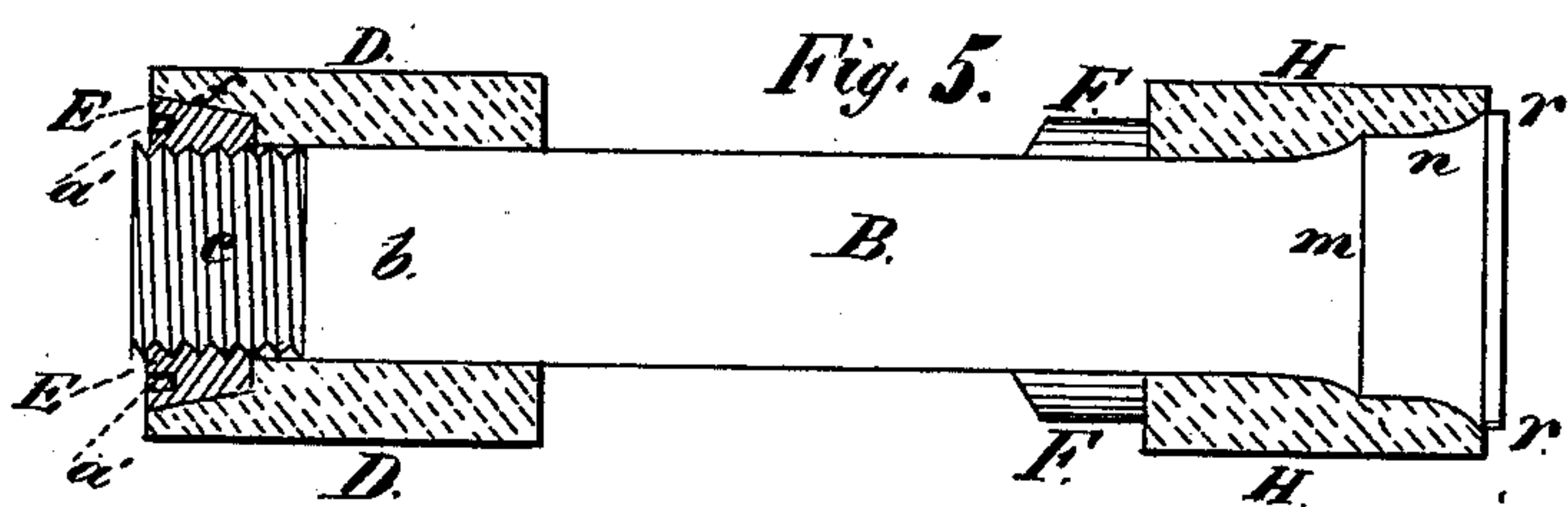
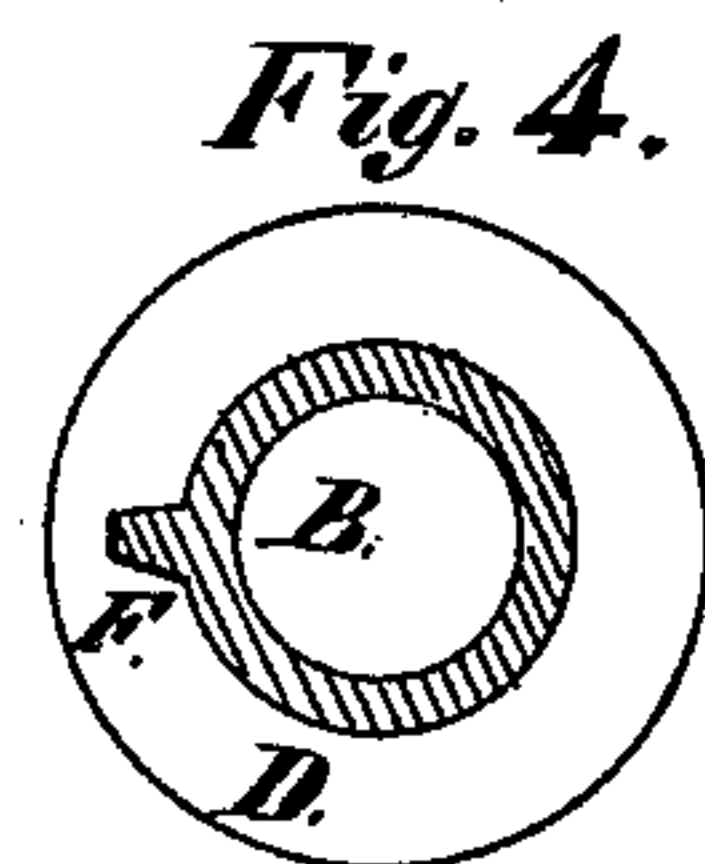
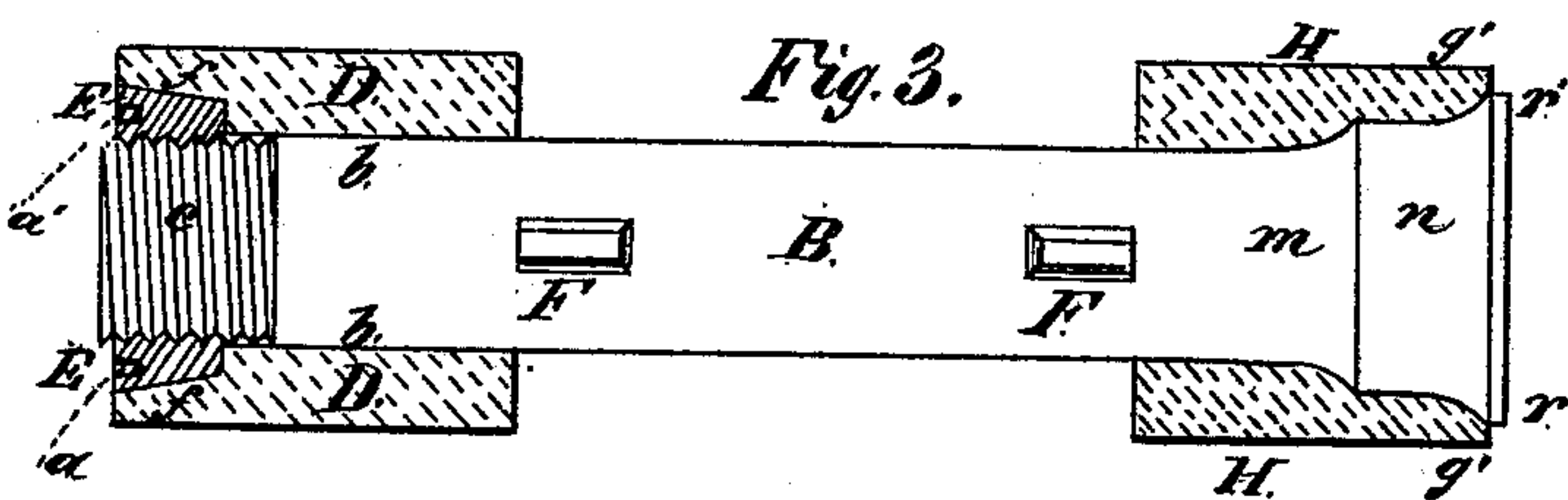
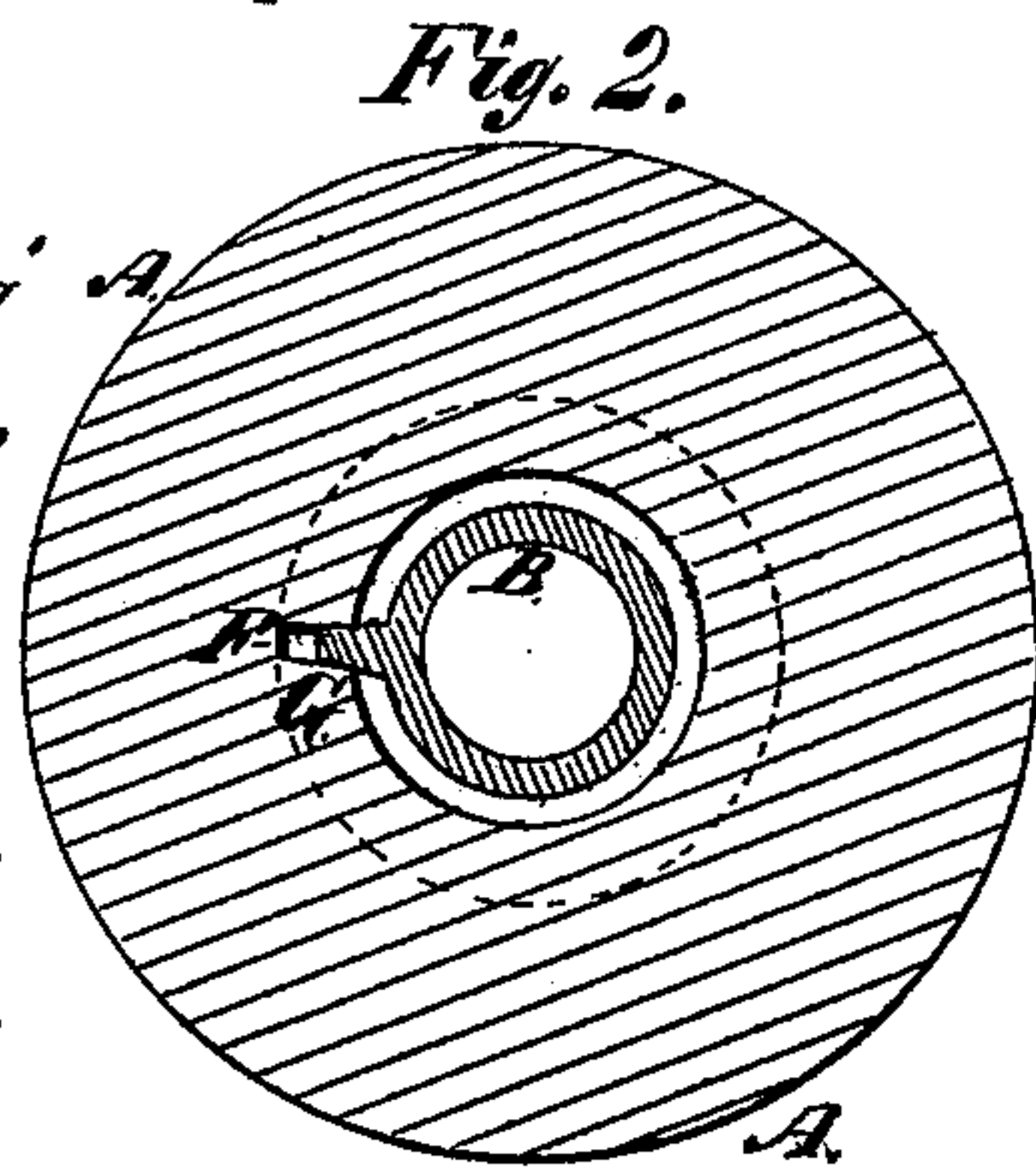
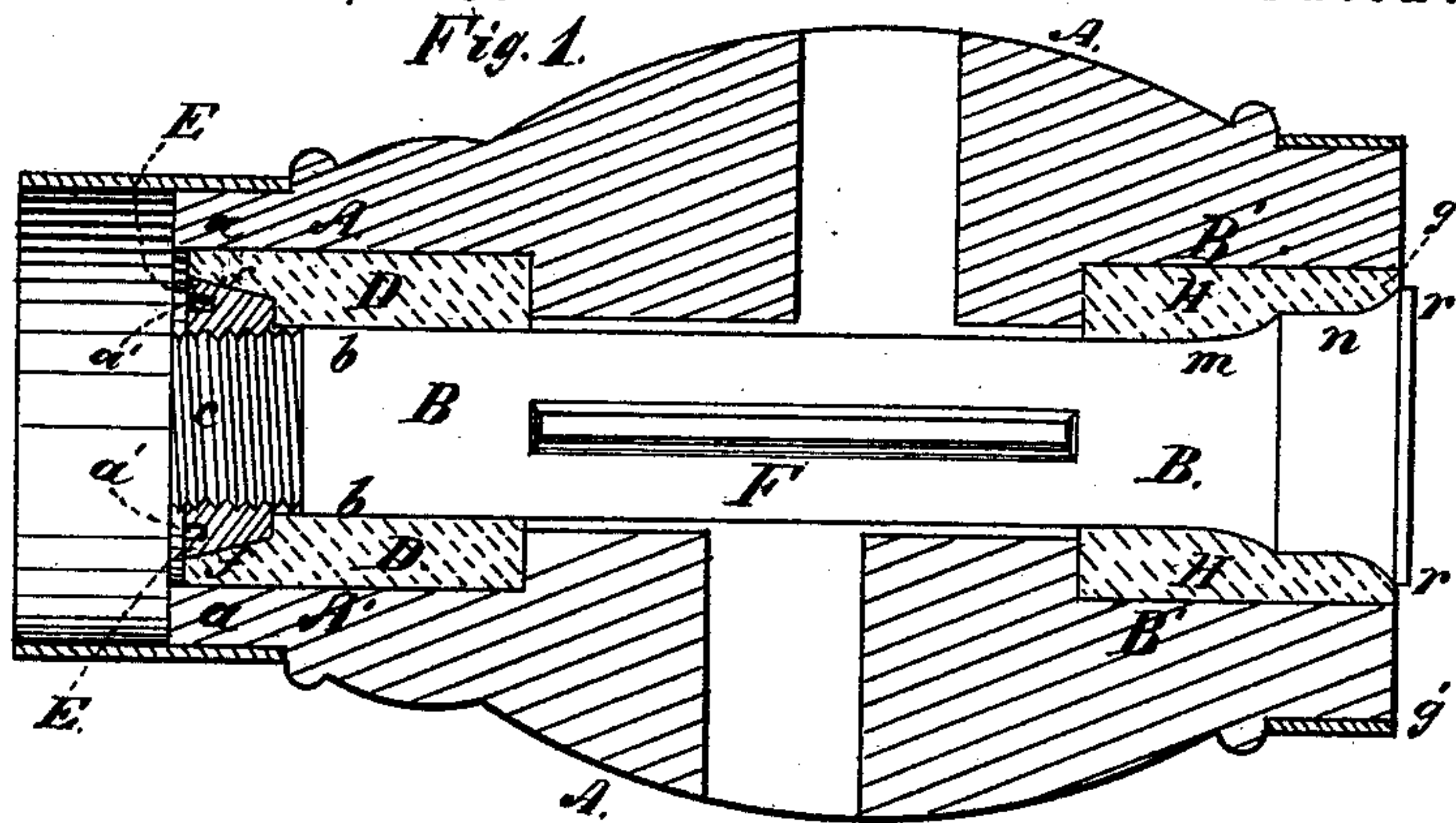


J. B. SAMMIS & G. W. HAYES.

ELASTIC HUB.

No. 189,388.

Patented April 10, 1877.



Witnesses:

Henry Cidling?
Edward Holly

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UNITED STATES PATENT OFFICE.

JOHN B. SAMMIS AND GEORGE W. HAYES, OF NEW YORK, N. Y.; SAID
HAYES ASSIGNOR TO SAID SAMMIS.

IMPROVEMENT IN ELASTIC HUBS.

Specification forming part of Letters Patent No. 189,388, dated April 10, 1877; application filed
January 4, 1877.

To all whom it may concern:

Be it known that we, JOHN B. SAMMIS and GEORGE W. HAYES, both of the city, county, and State of New York, have invented certain Improvements in Elastic Hubs for Wheeled Vehicles, of which the following is a specification:

This invention relates to that class of hubs for wheeled vehicles in which the box is cushioned with india-rubber, or equivalent elastic material, to relieve the wheel from the effects of jar and concussion in the use of the vehicle; and the object of the invention is to provide against the destruction of the said cushions by the passage of oil, grit, &c., from the end of the hub between the box and the cushion, or between the cushion and the surrounding portion of the hub, to which end the invention comprises a nut of novel construction, in combination with the recessed end of the outermost cushion and the surrounding portion of the hub in which said cushion is placed, whereby a special compression of the outermost portion of the cushion is effected, which closes the joint between the adjacent portion of the box and the cushion, and between the cushion and the hub itself, with such tightness as to prevent the penetration of oil, grit, &c., therethrough, without necessitating any other compression of the cushion than that designedly applied to regulate the elasticity thereof in its bearing upon the box.

Another object of our said invention is to provide for the proper compression of the cushion at the inner end of the box, and against the entrance of oil, grit, &c., in the joints between said inner cushion and the hub and box, concentric therewith; and to this end our invention comprises double wedge-like surfaces provided upon the inner end of the box, in combination with the suitably-recessed inner cushion, and the hub in which the same is placed.

Another object of our said invention is to provide against the turning or axial displacement of the box within the hub by simple, cheap, and efficient means; and to this end our said invention also comprises a novel combination of a tubular box, constructed with

one or more radial projections, ribs, or spurs, with retaining grooves or recesses formed directly in the wood of which the hub is composed.

Figure 1 is a longitudinal sectional view, showing one construction of our said invention. Fig. 2 is a transverse section of Fig. 1. Fig. 3 is a longitudinal sectional view, representing a modification of our said invention. Fig. 4 is a transverse section thereof. Fig. 5 is a longitudinal sectional view, representing another modification of our said invention. Fig. 6 is a transverse section thereof. Fig. 7 is a central longitudinal sectional view of another modification of our said invention, and Fig. 8 a like view of still another.

A is the hub, of the usual external form, and made of any suitable wood, and bored centrally from end to end, in substantially the usual manner. B is the box, of tubular or thimble form, and having within it, when the wheel is in use, the usual axle C. In the outermost end *a* of the hub is formed a circular recess, *A'*, concentric with the adjacent portion *b* of the box B. In this recess *A'* is placed the annular cushion D, of india-rubber, said cushion being fitted snugly into said recess, and having snugly within it the adjacent part *b* of the box B. Upon the outer portion of the box B is provided the usual screw-thread *c*, upon which is screwed the nut E, said nut being made to turn preferably by the insertion of a suitable driver in cavities *a'*, formed in the end thereof, as indicated in Figs. 3, 5, and 7. This nut, instead of being formed with a compressing-flange, as has hitherto been done in some cases, or with the usual cylindric sides or circumference, is made in the shape of the frustum of a cone—in other words, of a tapered form, as shown in the sectional views thereof in Figs. 1, 3, 5, 7, and 8. The adjacent end portion of the cushion D is constructed with an annular recess, *f*, (more clearly represented in Fig. 8,) being of a shape more or less corresponding to the circumference of the nut E, but of such length and capacity that when the nut is screwed inward upon the box B, the thinned portion of the cushion D, between the nut and the surrounding portion of the

hub, will be pressed between the surface of said nut and the inner surface of the recess A'; this compression of said thinned portion of the cushion effectually packing the joints between the nut and said cushion, and the said cushion and the surrounding inner surface of the recess A' against any creeping of oil, dust, or grit through said joints, which creeping or passage of oil, &c., if permitted or occurring, would disintegrate the rubber, and, by destroying the integrity thereof, prevent the proper operation of the cushion in relieving the box, and consequently the axle and body of the vehicle, from jar or concussion exerted upon the wheel itself; there being also secured by this means this further advantage, that the percolation of oil to the central portions of the bore of the hub and spoke-mortises is effectually and thoroughly provided against, and consequent loosening of the spokes prevented.

It is to be understood, moreover, that the recess *f* in the cushion D aforesaid is diminished in diameter at its entrance to form a lip, as shown at *c* in Fig. 8; so that when the nut E is screwed inward, as hereinbefore set forth, the outermost edge *f''* of the nut E passing inward beyond said lip, the latter springs snugly over said edge *f''* and forms a guard, which prevents even the approach of dust, grit, &c., to the joint between the cushion and the face of the recess A', and in a great measure that of oil also. Upon the inner end of the box B are formed two wedge-like or tapered surfaces, *m* and *n*, which are bedded in a correspondingly-shaped recess in the india-rubber cushion H at the inner end of the box B, said cushion being fitted into a recess, B', in the hub in the same manner that the cushion D is fitted into the recess A'.

When the tightening of the nut E exerts a longitudinal draft upon the box B, the surface compresses the cushion H into the recess B', to diminish its elasticity in proportion to the same result brought about with reference to the cushion D, simultaneous with which the surface *n* compresses the thinned portion *g'* of the cushion H, between the extremity *r* of the box and the inner surface of the recess B', to so firmly close the joints between the said nut and the cushion H, and also between the latter and the inner surface of the recess B', as to effectually prevent any access of oil, grit, &c., to said cushion H at the inner end portion of the box B. Upon the box B, preferably formed in one therewith, is provided one or more radial projections, (indicated in the drawings by the reference-letter F.) This projection may, as represented in Fig. 1, comprise a single rib extending along a greater or less portion of the length

of the box; or, if preferred, this longitudinally-extending rib may be duplicated, and there being one such on each side of the box, or even more may be used, if desired. If preferred, however, instead of the continuous longitudinal rib, there may be provided, in like manner, upon the box two spurs, as indicated in Fig. 3 by the same reference-letter, F, said spurs being placed at any suitable distance apart, and, if desired, duplicated upon the opposite side of the box. In lieu of this, however, one of such spurs (also indicated by the same reference-letter, F, in Fig. 5) may be placed upon opposite sides of the box, near one end thereof, and adjacent to the inner end of the elastic cushion at the innermost end of such box, should such be used. In any modification of the form just described the projection is fitted into a groove, G, formed directly in the wood of the inner surface or bore of the hub, as shown in Fig. 2, the projection or spur F (one or more, as the case may be) being adapted to said groove G in such manner that the box B will be retained by the wood of the hub from turning around within the latter—in other words, from having the axial movement with reference to the hub itself; or, to use another phrase, the movement of the box will depend upon that of the hub, and the two will be united in proper relation with each other.

What we claim as our invention is—

1. In an elastic hub, the tapering nut E, combined in such relation with the outer end of the elastic cushion D and the adjacent portions of the hub as to compress the said outer end of the elastic cushion between the circumference of the nut and the concentric inner surface of the recess formed in the hub, in the manner described, for the purpose specified.
2. In an elastic hub and axle-box, B, constructed with the double wedge-like surfaces *m n*, in combination with the recessed inner elastic cushion H, substantially as and for the purpose herein set forth.
3. The combination of the box B, constructed with one or more radial projections, ribs, or spurs, and fitting loosely in the bore of the hub, with one or more elastic cushions, and a frame, G, formed internally in the wood of which the hub is composed, whereby provision is made for the action of the cushion or cushions in relieving the box B, without danger to the cushion or cushions from torsion exerted by the turning of the box within the hub, substantially as set forth.

JOHN B. SAMMIS.
GEO. W. HAYES.

Witnesses:

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H. WELLS, Jr.