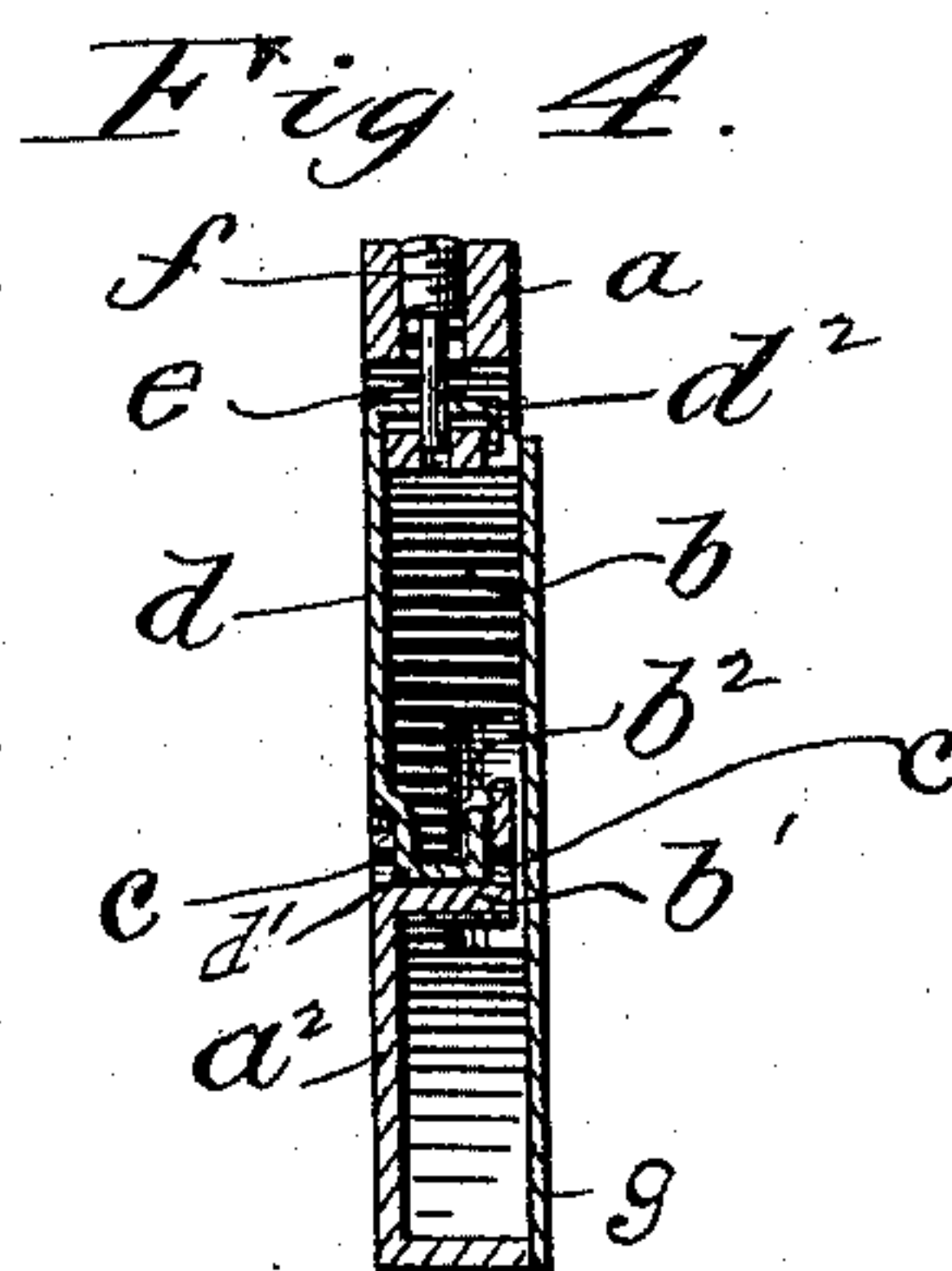
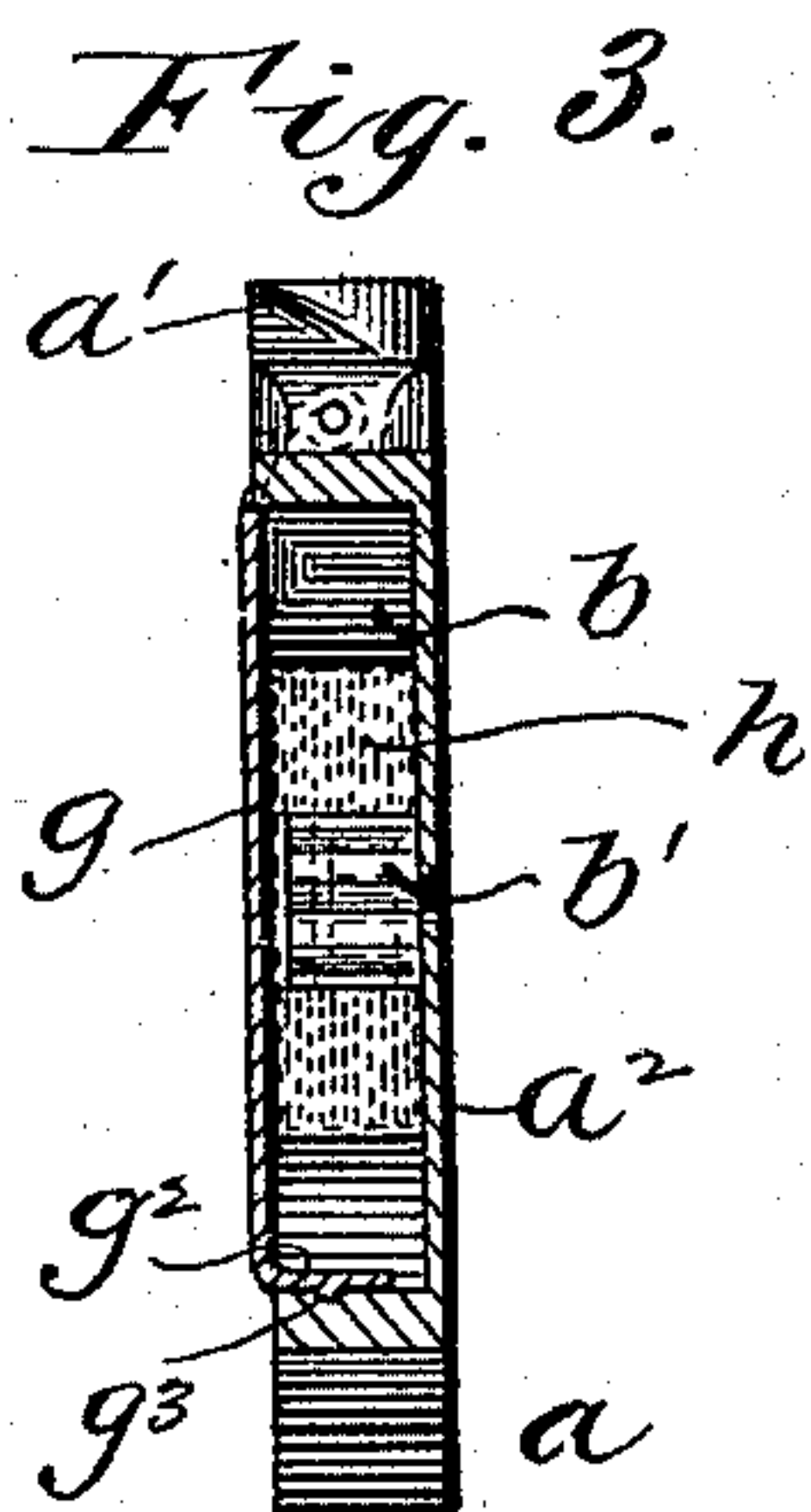
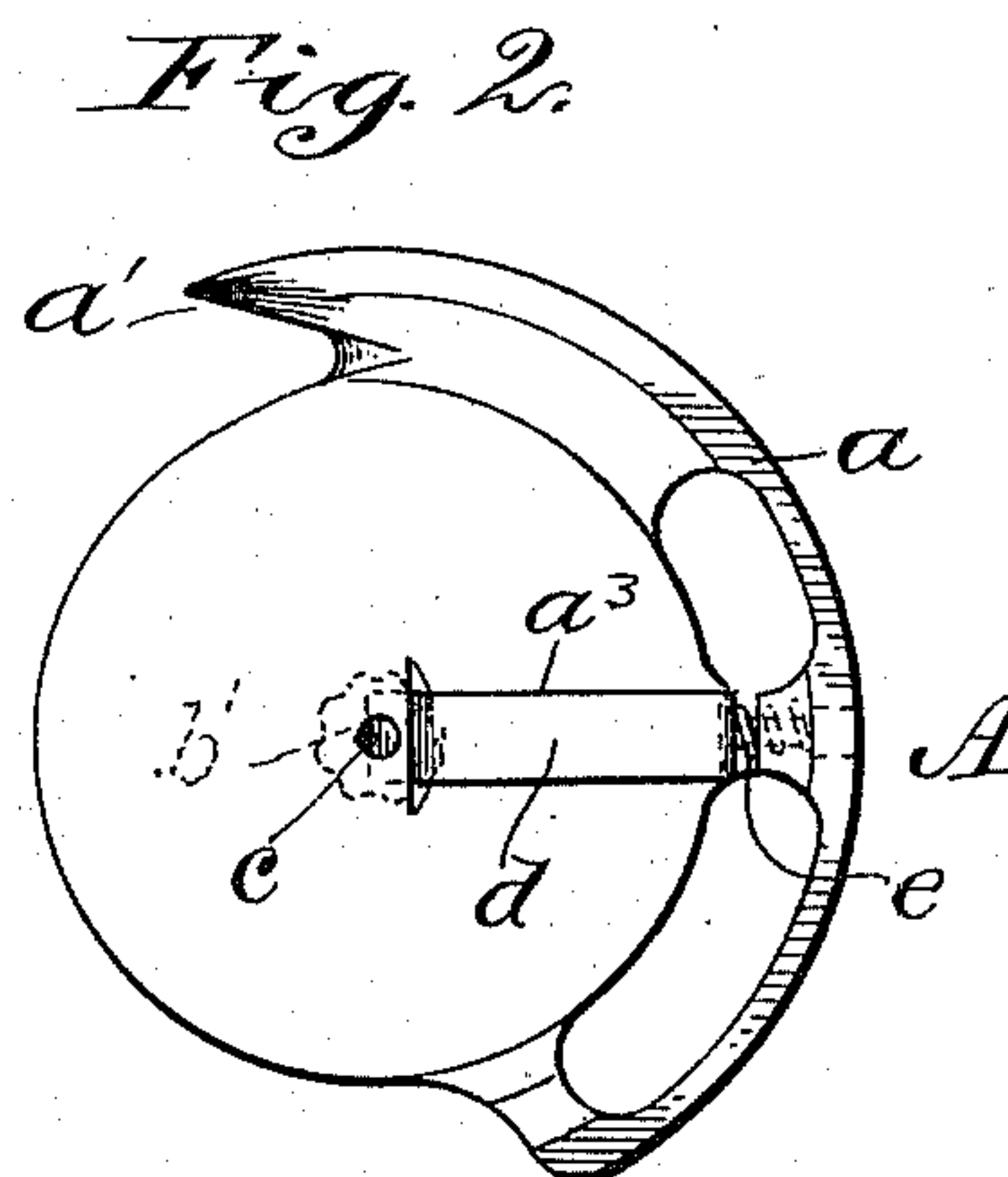
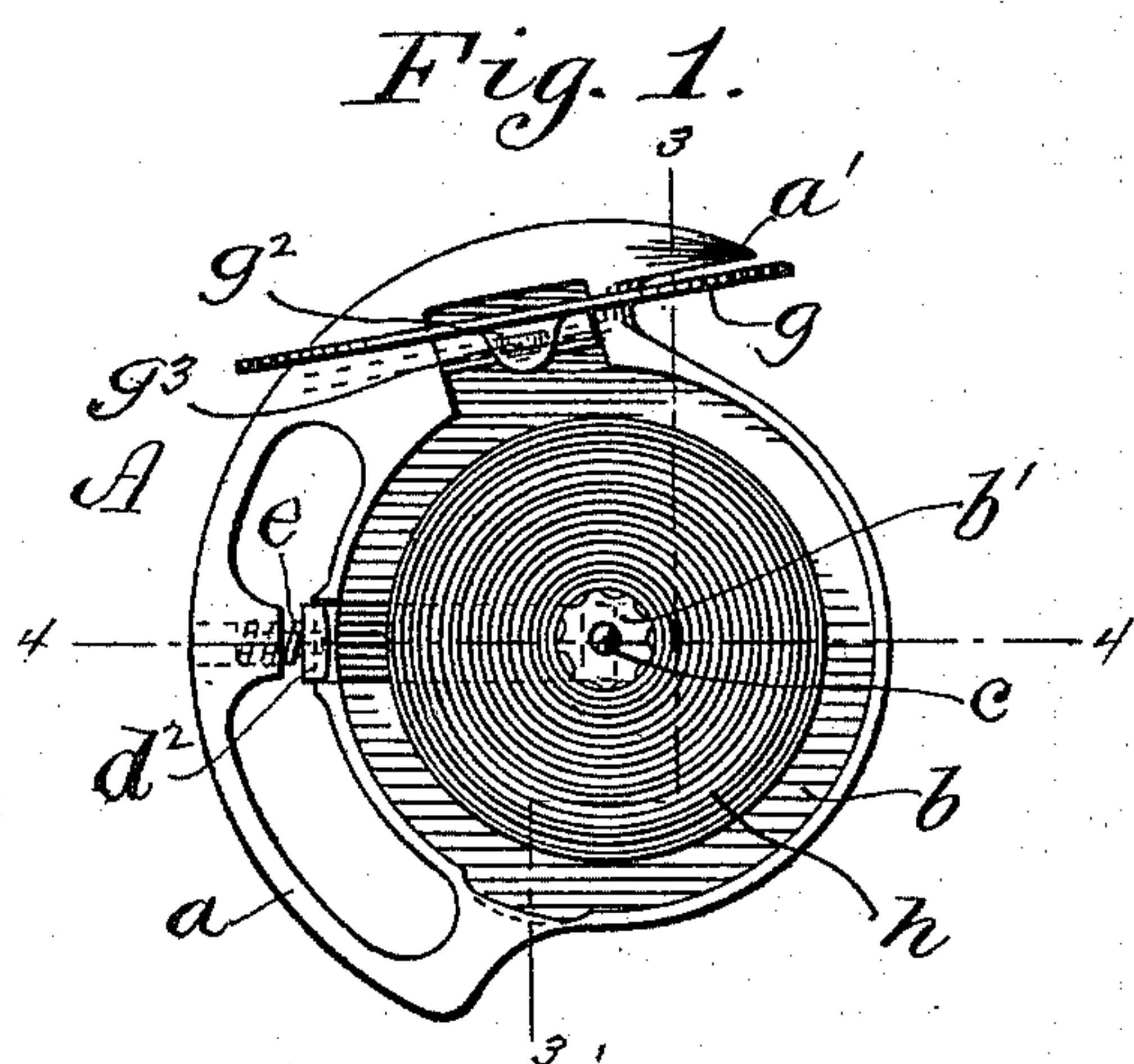


(No Model.)

P. DIEHL.
SHUTTLE FOR SEWING MACHINES.

No. 573,864.

Patented Dec. 29, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

PHILIP DIEHL, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 573,864, dated December 29, 1896.

Application filed March 8, 1894. Serial No. 502,177. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Shuttles, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of sewing-machine shuttles for use in machines having oscillating shuttle movements, and more particularly to multiple-shuttle machines requiring thin flat shuttles to permit the needles of the machines to be placed near together, although my improved shuttle is also adapted for use with single-needle machines for manufacturing or family purposes.

In the class of shuttles referred to cops of thread instead of bobbins have heretofore been used to some extent; but in such use much trouble has been encountered from breakage of the thread, and considerable difficulty has also arisen from inability to secure uniform tension on the shuttle-thread, the breakage of the thread and the uneven tension thereon being due to the fact that the thread was drawn from the centers of the cops, so that the latter were liable to collapse when nearly used up and when only thin shells of thread remained, this collapsing of the cops resulting in entanglement and breakage of the thread or in uneven tension thereon.

My invention has for its object to avoid the difficulties above mentioned; and to this end my improved shuttle has in its thread-cavity a central fixed stud or post which is preferably provided with a corrugated or otherwise roughened friction or holding surface, so that a cop of thread having a central opening closely fitting said stud or post will be held stationary thereon relative to the shuttle. The said stud or post is made hollow or provided with a central hole or thread-passage extending through the side or rear wall of the shuttle, and the thread is drawn from the outer edge of the cop inward and is delivered through the said thread-passage, the proper tension on the thread being preferably secured by a spring-pressed tension slide or device which extends into a notch or recess cut

in one side of the said stud or post to said thread-passage, and thus the thread being delivered through the latter may be nipped by the tension device to give it a proper tension. The thread-cavity of the shuttle is preferably closed by a hinged cover which comes in close proximity to but does not press against the side of the flat cop of thread, and thus said cover will prevent the thread which runs inward from the exterior of the cop to said thread-passage from kinking even if it should at times fall loose from the outer edge of the cop.

In the accompanying drawings, Figure 1 is a front side view of my improved shuttle with the cover lifted. Fig. 2 is a rear side view thereof. Figs. 3 and 4 are sections on lines 3 3 and 4 4, respectively, of Fig. 1.

A denotes the shuttle-body, a portion of which is formed with a suitable rim *a* to run in the shuttle-race, said rim having a loop-seizing beak *a'* of ordinary construction, and the said shuttle-body A is provided with a thread-cavity *b*. The shuttle-body is provided at the center of the thread-cavity *b* with a cop-holding stud or post *b'*, in the center of which is a thread passage or hole *c*, passing through the side or rear wall *a²* of the shuttle. The stud or post *b'* has preferably a roughened or corrugated outer surface, so as to have a frictional hold upon a cop of thread having a central opening of suitable size to be closely fitted upon the said pin or post, there being sufficient frictional contact between the cop of thread thus fitted on the said pin or post and the latter to cause the cop to remain stationary relative to the said stud or post and thus move with the shuttle.

To provide a suitable tension device, the rear wall *a²* of the shuttle is provided with a slot or recess *a³*, in which is fitted a tension slide-plate *d*, the inner end *d'* of which is bent so as to fit in a notch or recess *b²*, formed in the cop-holding stud or post *b'*. The radially-movable tension-slide *d* is forced inward, so that its inner end *d'* will press against the wall at the bottom of the notch or recess *b²*, by a small coil-spring *e*, pressing upon the outer end *d²* of the said slide, said end *d²* being bent at a right angle to the body of the said slide. A regulating-screw *f*, tapped in the rim *a* of the

shuttle, serves to vary the stress of the coil-spring e , the inner end of said screw serving as a pin to support the outer end d^2 of the tension-slide.

- 5 The thread-cavity b is closed by a hinged cover g , which is provided with an intumed lip g^2 , having a slight projection g^3 , which when the said cover is closed snaps into a slight recess a^3 , formed in the inner side of the
10 wall of the shuttle-body, said cover being in close proximity to the cop of thread held on the stud or post b' .

In the use of my improved shuttle the thread is led from the exterior of the cop h through
15 the hole c in the cop-holding stud or post b' and the wall a^2 of the shuttle, and thus the cop will remain stationary relative to the shuttle as the thread is drawn therefrom until the cop is wholly used up, and entanglement or
20 breakage of the thread by collapsing-cop remnants is thereby avoided.

I do not wish to be understood as limiting my invention to the details herein shown, as the form of the tension device, the construction for securing the friction-surface on the
25 stud or post b' , and other features of my improved shuttle might be varied without departing from the essential features of my invention.

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

1. A sewing-machine shuttle having a thread-cavity provided with a central stud or post having a special roughened or corrugated
35 friction-surface to hold a cop of thread placed thereon stationary relative to the shuttle, said

stud or post being constructed with a central thread-delivery passage extending through the same and the side or rear wall of the shuttle, and through which passage the thread, drawn from the periphery of the cop, is led, and said stud or post having also a notch or recess extending to said thread-passage, combined with a radially-movable spring-pressed tension-slide the inner end of which enters
4 said notch or recess to nip the thread passing through said stud or post.

2. A sewing-machine shuttle constructed with a thread-cavity in which is a central stud or post provided with a thread-passage running through the side or rear wall of the shuttle and having a notch or recess extending to said thread-passage, combined with a radially-movable, spring-pressed tension-slide the inner end of which extends into said notch or
5 recess to nip the thread passing through said stud or post.

3. The combination with the shuttle-body A having the thread-cavity b provided with the stud or post b' central of said thread-cavity
6 and having the notch or recess b^2 and the thread-passage c , of the radially-movable tension-slide d the inner end of which extends into said notch or recess, the spring e for yieldingly pressing said slide inward, and the
6 cover g .

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP DIEHL.

Witnesses:

HENRY CALVER,
L. L. BURRITT.