

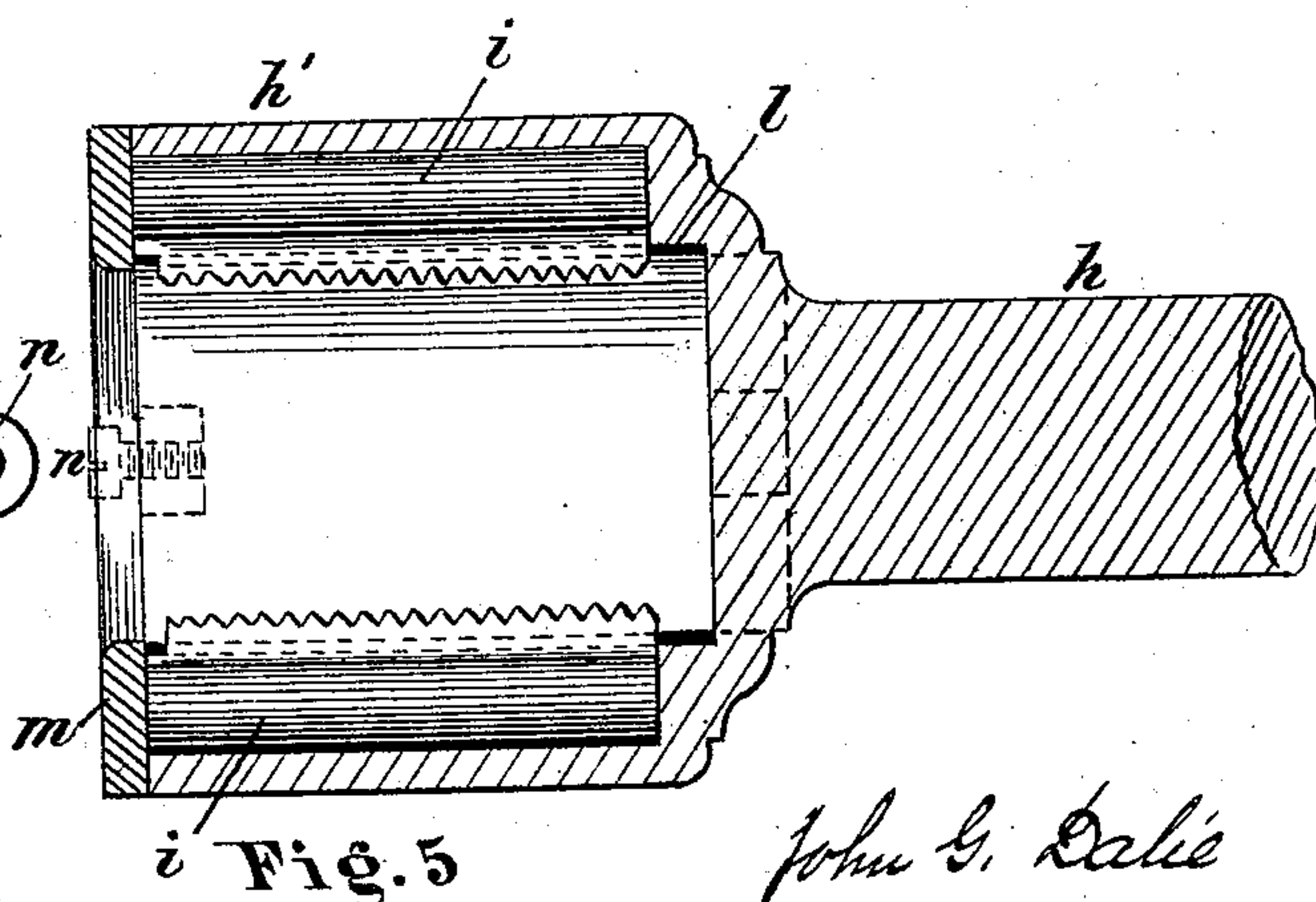
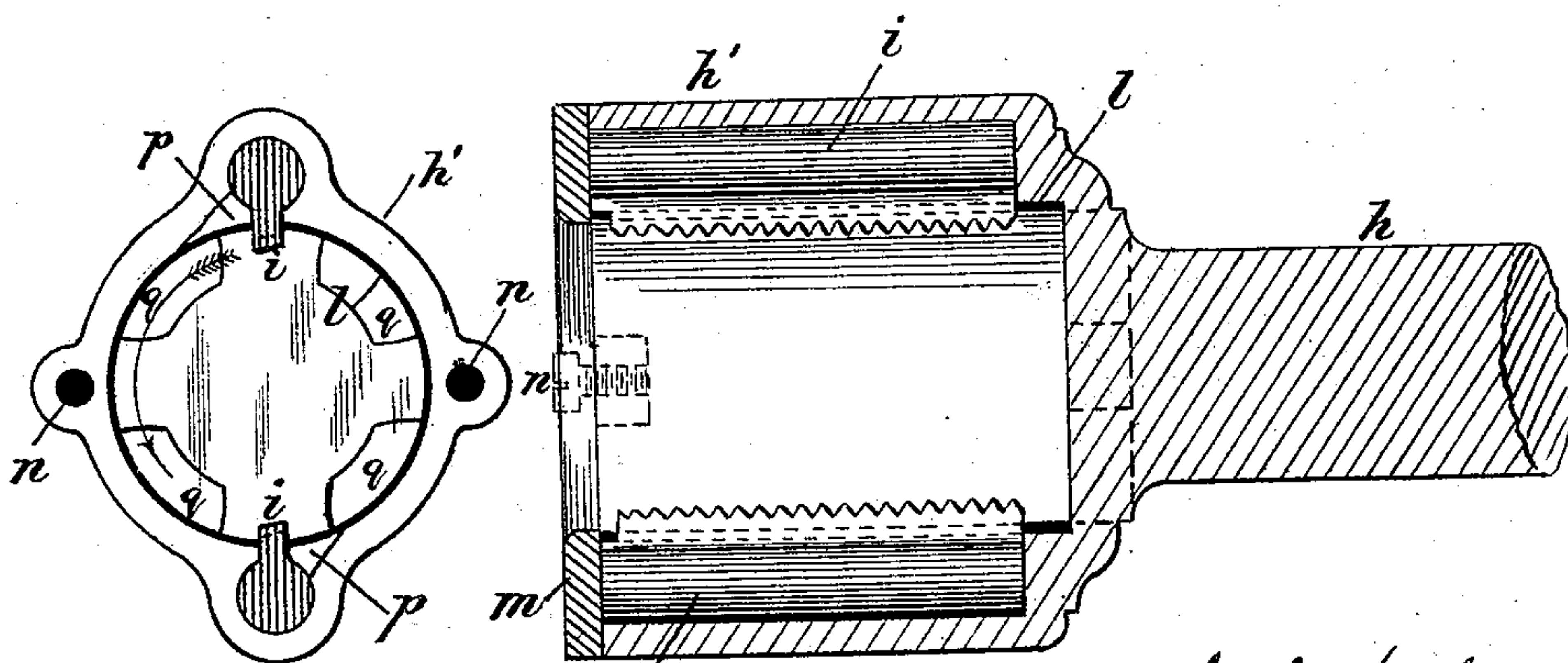
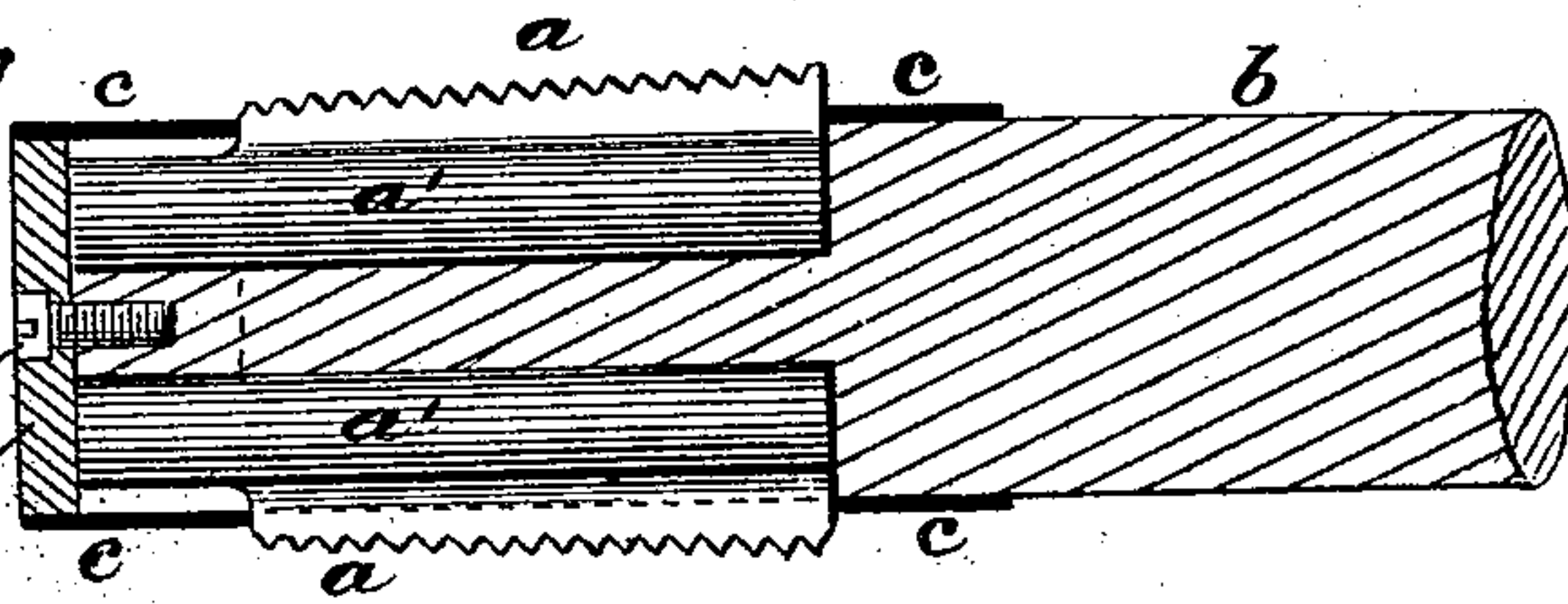
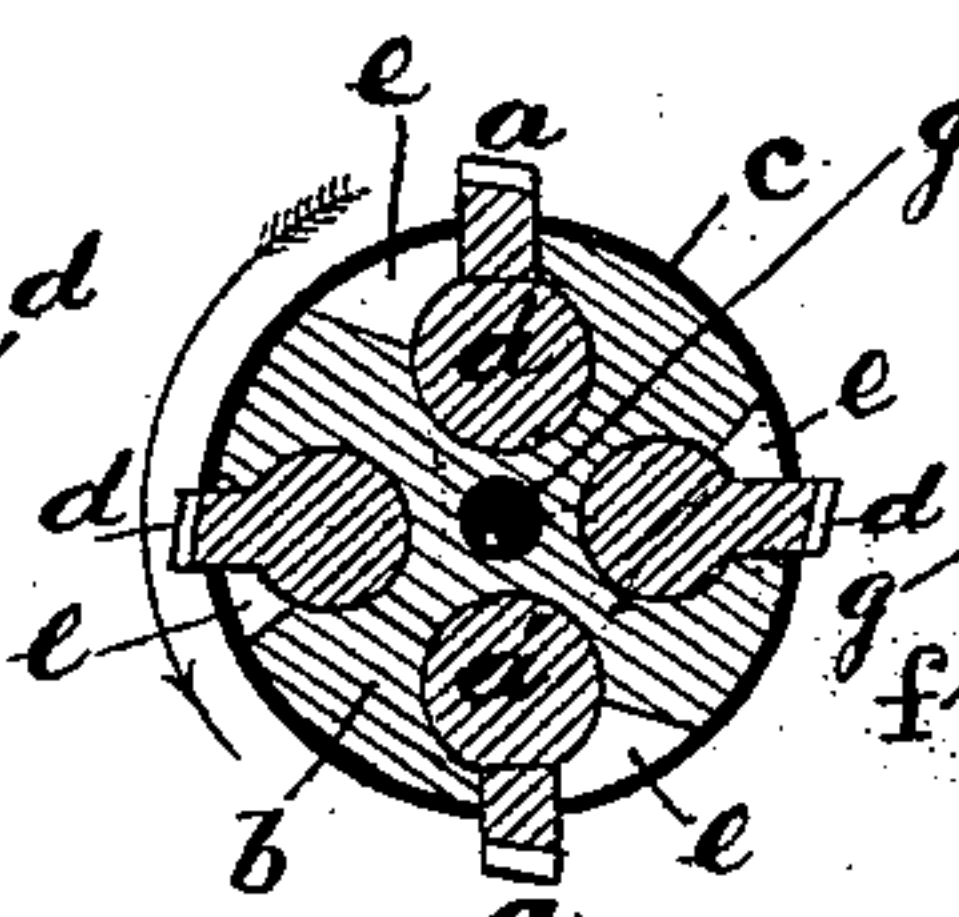
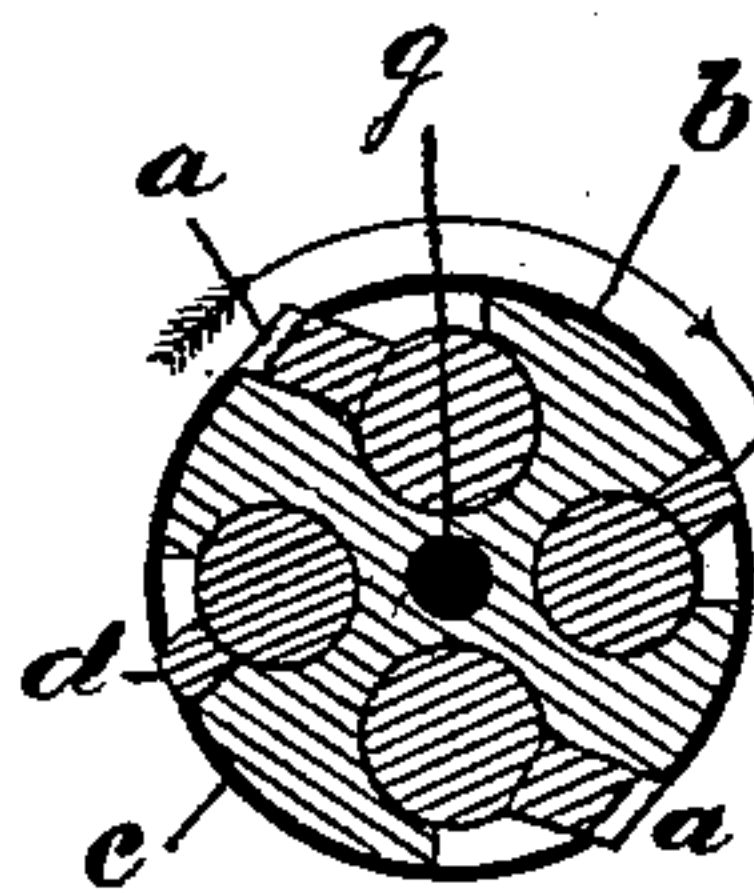
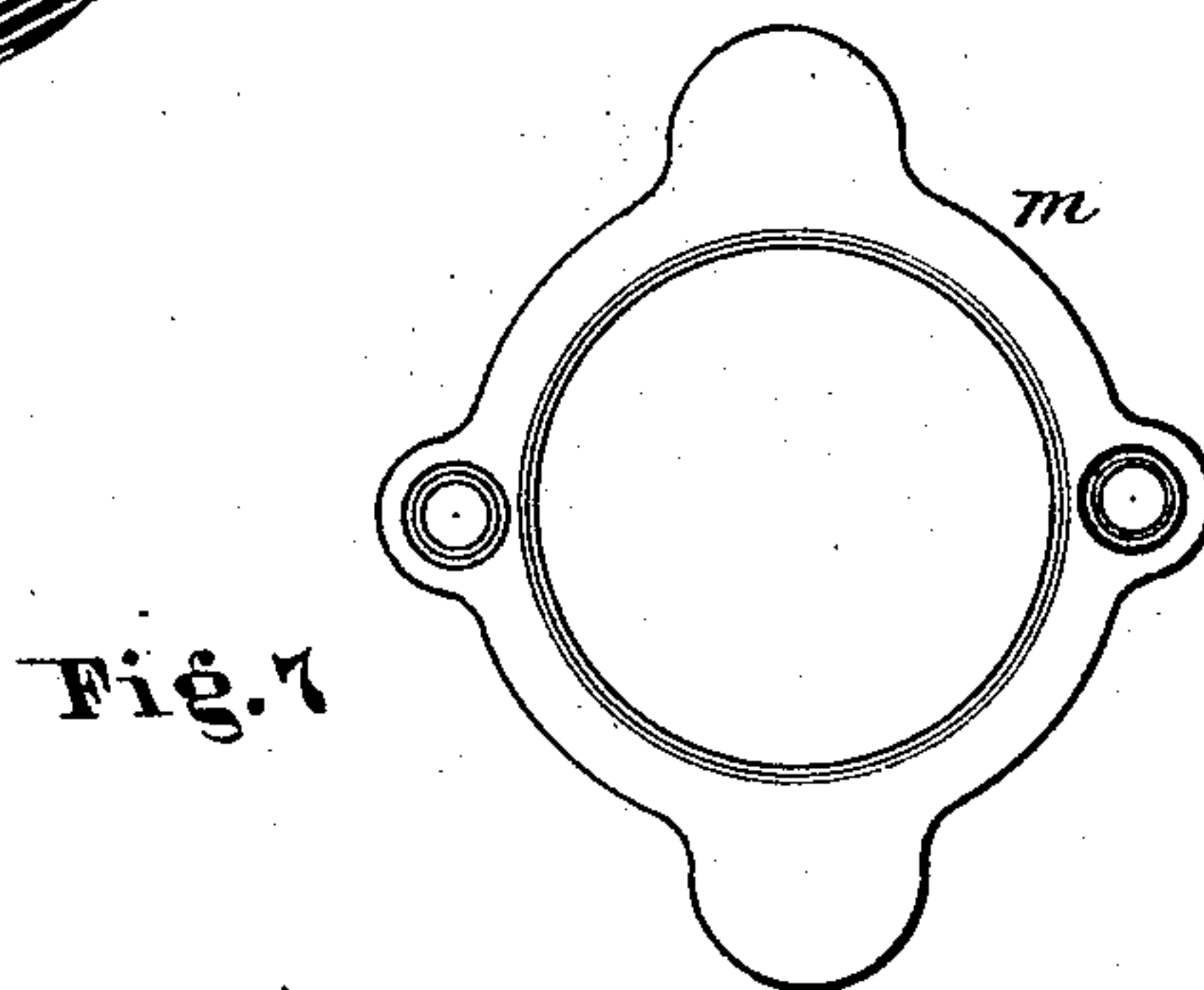
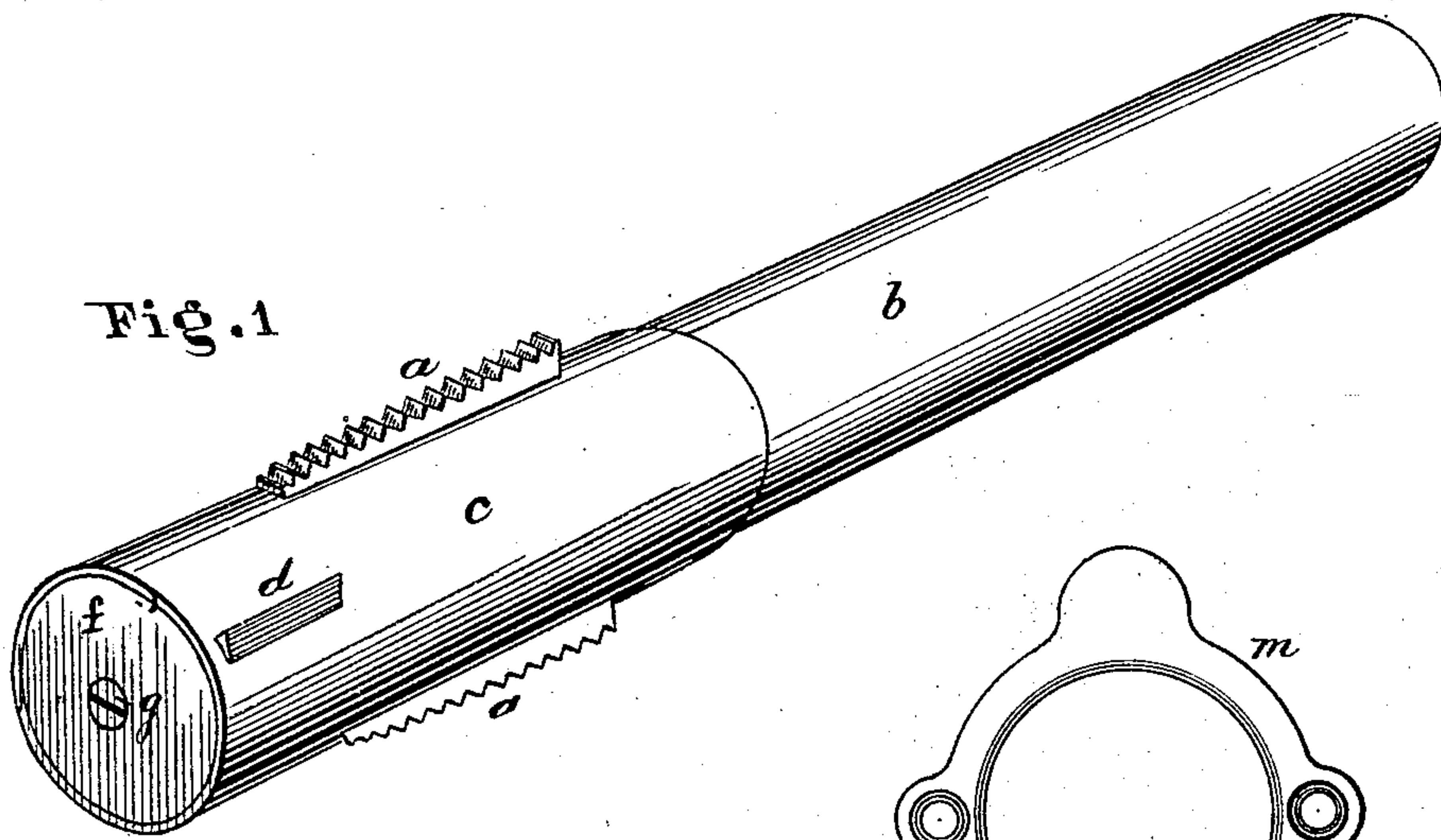
(No Model.)

J. G. DALIE.

SCREW CUTTING TOOL.

No. 275,156.

Patented Apr. 3, 1883.



Attest  
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# UNITED STATES PATENT OFFICE.

JOHN G. DALIE, OF SPRINGFIELD, OHIO.

## SCREW-CUTTING TOOL.

SPECIFICATION forming part of Letters Patent No. 275,156, dated April 3, 1883.

Application filed September 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN G. DALIE, of Springfield, county of Clarke, State of Ohio, have invented a new and useful Improvement  
5 in Screw-Cutting Taps and Dies, of which the following is a specification.

In the accompanying drawings, Figure 1 is a perspective view of a screw-cutting tap of my invention. Fig. 2 is a longitudinal section  
10 of the same. Fig. 3 is a transverse section with the cutting-sections shown in position for work. Fig. 4 is a transverse section with the cutting-sections represented as drawn in, ready for retreat. Fig. 5 is a longitudinal section of  
15 my improved screw-cutting die. Fig. 6 is an end view of the same with the retaining-cap removed, and Fig. 7 is an end elevation of the detached retaining-cap.

My invention relates to screw-cutting taps  
20 and dies that have the cutting-sections pivoted in the mandrel in such a manner that they will fall back radially when the machine that actuates them is reversed, thereby diminishing their diameter sufficient to permit of an uninterrupted return without unscrewing; and it  
25 consists, first, in constructing the cutting-sections with enlarged cylindrical journals, forming a part of and extending the full length of said sections, and fitting them into corresponding  
30 bearings formed in the mandrel of the tap, said bearings being cut away at one side to permit of the desired oscillatory movement of the cutting-sections.

It also consists in combining with said sections two or more separate reamers that work  
35 in advance and yet in harmony with said screw-cutting sections, and at the same time serve to steady the screw-cutting sections to their work; and it further consists in a screw-cutting die having an exterior casing provided  
40 with interior bearings for the accommodation of two or more screw-cutting sections that are constructed with enlarged cylindrical journals that form a part of and extend the full length  
45 of said cutting-sections, in combination with an interior sleeve provided with slots through which the cutting-sections project, and by which they are oscillated when their motion is reversed, and an apertured cap for holding  
50 said cutting-sections and sleeve from working out endwise, and yet not interfering with the work to be threaded.

In the accompanying drawings the same letters of reference indicate corresponding parts in each of the figures.

In order that others skilled in the art to  
55 which my invention belongs may make and use the same, I will proceed to describe its construction and operation.

The parts *a* are threaded sections formed  
60 with enlarged cylindrical journals *a'* running the entire length of said sections, and they fit into corresponding cylindrical bearings formed in the body of the mandrel *b*. The part *c* is a sleeve provided with slots through which the  
65 sections *a* protrude, and by which they are oscillated at the proper time. The parts *d* are short reamers fitted into the mandrel *b*, and protruding through slots in the sleeve *c* in substantially the same manner as the sections *a*.  
70 They are used in advance of the screw-cutting sections to prepare the holes for threading, and at the same time serve as guides to steady said screw-cutting sections to their work. The  
75 mandrel *b* is cut away at *e e e e* to form apertures for the cutting-sections and reamers to move in when the motion of the tap is reversed. It will be noticed that the longitudinal walls of each recess converge toward a point eccentric from both the axis of the mandrel and that  
80 of the cylindrical journal. These walls are thereby made of unequal breadth; or, in other words, the depth of the recess as measured upon said walls is much greater upon one side than upon the other. Therefore when the cut-  
85 ters are brought into operation they rest against the narrower wall of said recess and are projected outward from the mandrel, whereas when the screw-cutter is reversed the cutter-stocks turn upon their cylindrical journals  
90 till they lie against the opposite wall of said recess, whereby they are wholly withdrawn from the threads, thereby enabling the tools to be entirely disengaged. The screw-cutting  
95 sections *a* and the reaming-sections *d* are held in their positions endwise by means of a disk, *f*, that fits into the end of sleeve *c*, the disk *f* being secured to the mandrel *b* by means of a screw, *g*, in the manner shown.

My improved screw-cutting dies are represented in Figs. 5, 6, and 7, in which *h* is the  
100 mandrel, having an enlarged end, *h'*, that forms an exterior casing for the reception of the cutting-dies *i* and the sleeve *l*. The cutting-dies



are inserted into the casing *h'* in a manner similar to that of the sections *a* in the casing *b* of the tap, and the sleeve *l* is similarly slotted for the reception of the sections *i*. The  
5 screw-cutting sections *i* are held in their places by a cap, *m*, that corresponds in shape to the end of that part of the mandrel marked *h'*, and is held to its place by screws *n*. The exterior casing, *h'*, is cut away at *p p* to permit the sec-  
10 tions *i* to oscillate on their bearings when the direction of motion of the tap is reversed. Apertures *q* are formed in the rear end of the casing *h'* to permit the cuttings from the thread-  
15 ing operation to escape, and thereby obviate choking of the parts.

I am aware that a screw-threading die has been provided with a screw-cutter adapted to oscillate in its bearing, and such, therefore, I do not broadly claim.

Having thus described my invention, what I 20 claim, and desire to secure by Letters Patent, is—

A screw-cutter consisting of a mandrel having a series of cutter-stocks provided with enlarged cylindrical journals mounted in bear- 25 ings within said mandrel and extending from end to end thereof, and a sleeve having slots through which the cutter-stocks project, each cutter-stock turning upon its journal between the horizontally-inclined longitudinal walls of 30 the recess *e*, cut from the face of the mandrel into the bearing, substantially as described.

In testimony whereof I have hereunto set my hand this 23d day of September, 1882.

JOHN G. DALIE.

Witnesses:

A. M. SUMMERS,  
E. C. BOWMAN.