

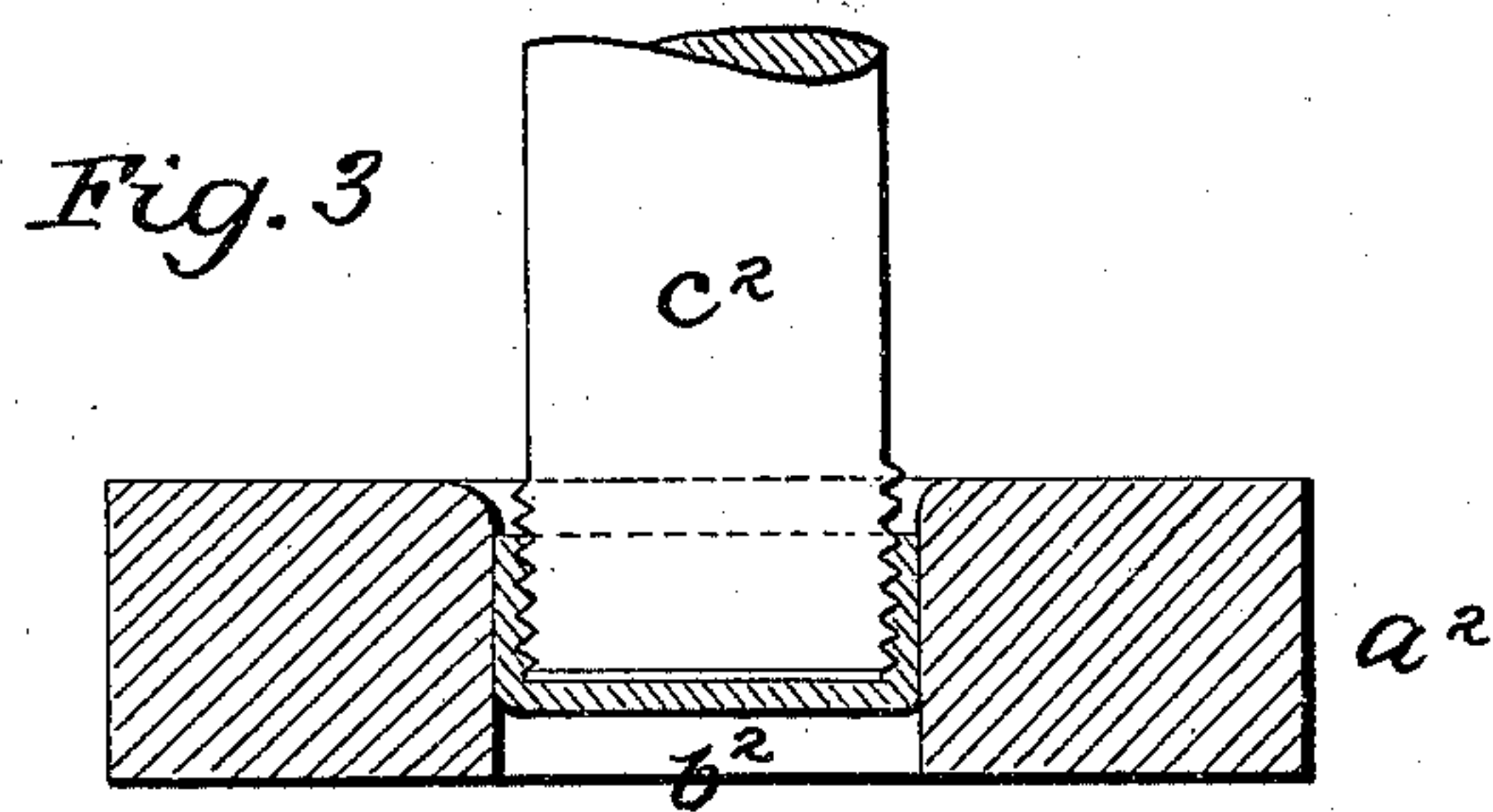
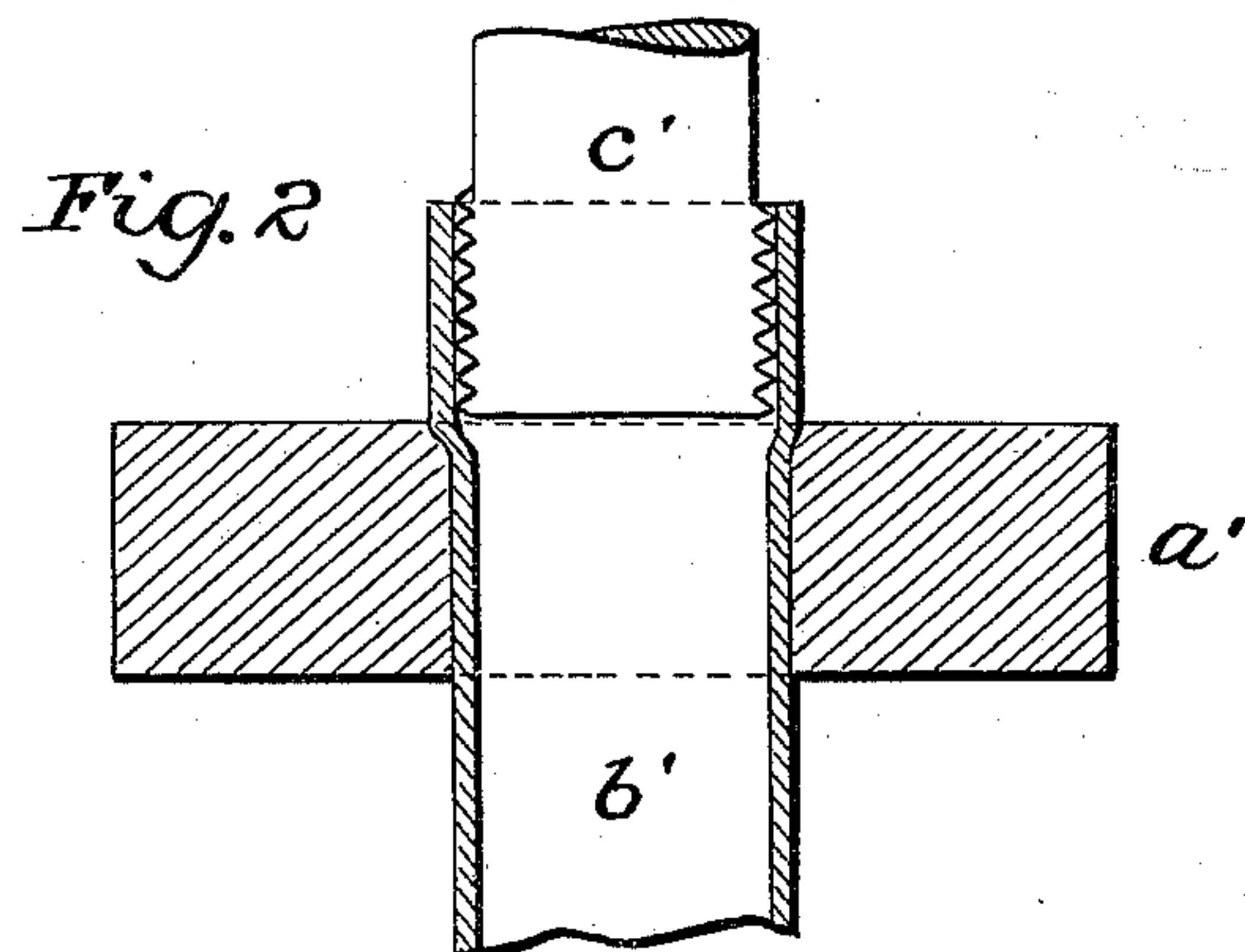
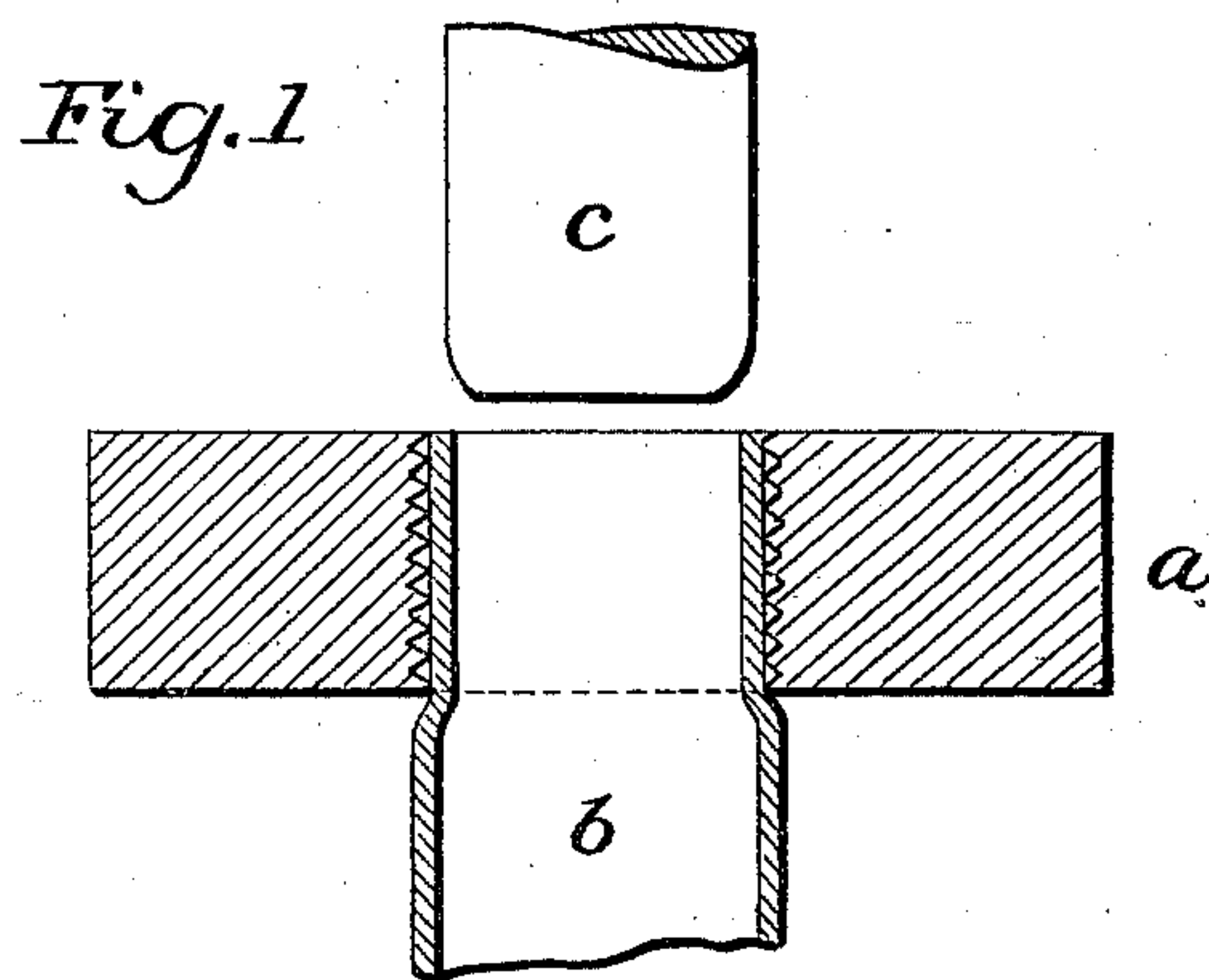
No. 638,962.

Patented Dec. 12, 1899.

S. FRANK.  
SWAGING SCREW THREADS.

(Application filed July 1, 1899.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

SALOMON FRANK, OF FRANKFORT-ON-THE-MAIN, GERMANY.

## SWAGING SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 638,962, dated December 12, 1899.

Application filed July 1, 1899. Serial No. 722,530. (No specimens.)

*To all whom it may concern:*

Be it known that I, SALOMON FRANK, a subject of the Queen of England, and a resident of Frankfort-on-the-Main, Germany, have invented certain new and useful Improvements in Swaging Screw-Threads, of which the following is a specification.

The subject of this invention is a process for cutting screw-threads.

Hitherto screw-threads have been cut by means of leading-screws and suitable cutters or tools in lathes or screw-cutting machines. As to the screw-threads of such articles, for example, as the caps and necks of preserving-tins, it has already been attempted to impress them in the tin with a graver or punch. Now the object of this process is to provide tubes or other hollow cylindrical articles with screw-threads, either within or without, by forcing a matrix or die of corresponding shape into the wall of the tube or the like.

In carrying out my invention I preferably change or vary the diameter of the portion of the tube to be operated upon, as by expanding or contracting it, and then simultaneously restore said portion to its original diameter and form screw-threads thereon, as by placing the contracted portion within an interiorly-screw-threaded die and expanding it against the screw-threads by a smooth die or plunger or by contracting the expanded portion against a screw-threaded mandrel by drawing it and the mandrel through a perforated die.

In the accompanying drawings, Figures 1 and 2 are sectional views of one form of apparatus employed to form the external and internal threads, respectively; and Fig. 3 is a similar view of the means employed for forming a screw-threaded cap.

Fig. 1 illustrates the manner in which a tube *b* is by this process provided with an outer screw-thread. To this end one extremity of the tube is first reduced somewhat in width by means of a draw-plate, so that it may readily fit in the matrix *a*, having the desired screw-thread formed in its interior. A die or mandrel *c* is then driven into the end of the tube, which will force the metal of the tube against the screw-threads, and thereby form the required threads upon the exterior of the tube. The diameter of the mandrel is substantially the same as the original diameter of the tube, so that it will just clear the same, and thus leave the interior diameter of the tube

the same as before the operation. The tube *b* thus provided with the necessary screw-thread is then unscrewed from out of the matrix.

Fig. 2 illustrates the manner in which a tube may by the method just described be provided with an inner screw-thread. The tube *b'* to be screw-threaded is first slightly enlarged at one end, so that the externally-threaded mandrel or die *c'* may be inserted into it. The core portion of *c'* is exactly equal in diameter to the clear width of the tube. Now when the tube *b'*, together with the die *c*, is forced through the matrix *a'*, the aperture whereof is equal to the outer diameter of the tube *b'*, the metal of the tube will be pressed into the convolutions of the screw-thread of *c'*. The tube is now provided with the required screw-thread and die or mandrel *c'* is screwed out of it.

Fig. 3 shows how this process applies to the inner screw-threading or tapping of a cap or lid of any receptacle. After the lid *b<sup>2</sup>* has first been slightly enlarged at its edge, so as to be capable of accurately accommodating a screw-threaded die *c<sup>2</sup>*, the said lid or cap *b<sup>2</sup>* is placed upon a matrix of corresponding shape and forced down into it in the same way as has been described with reference to Fig. 2. The lid, cap, or cover thus tapped is then screwed off the die.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. The method substantially as herein described, of forming screw-threads upon tubes, which consists in varying the original diameter of the portion of the tube to be threaded, and then simultaneously restoring the diameter of said portion of the tube and forming screw-threads thereon.

2. The method substantially as herein described, of forming internal screw-threads upon tubes, which consists in expanding the portion of the tube to be threaded, and then simultaneously contracting said portion of the tube and forming screw-threads thereon.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SALOMON FRANK.

Witnesses:

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