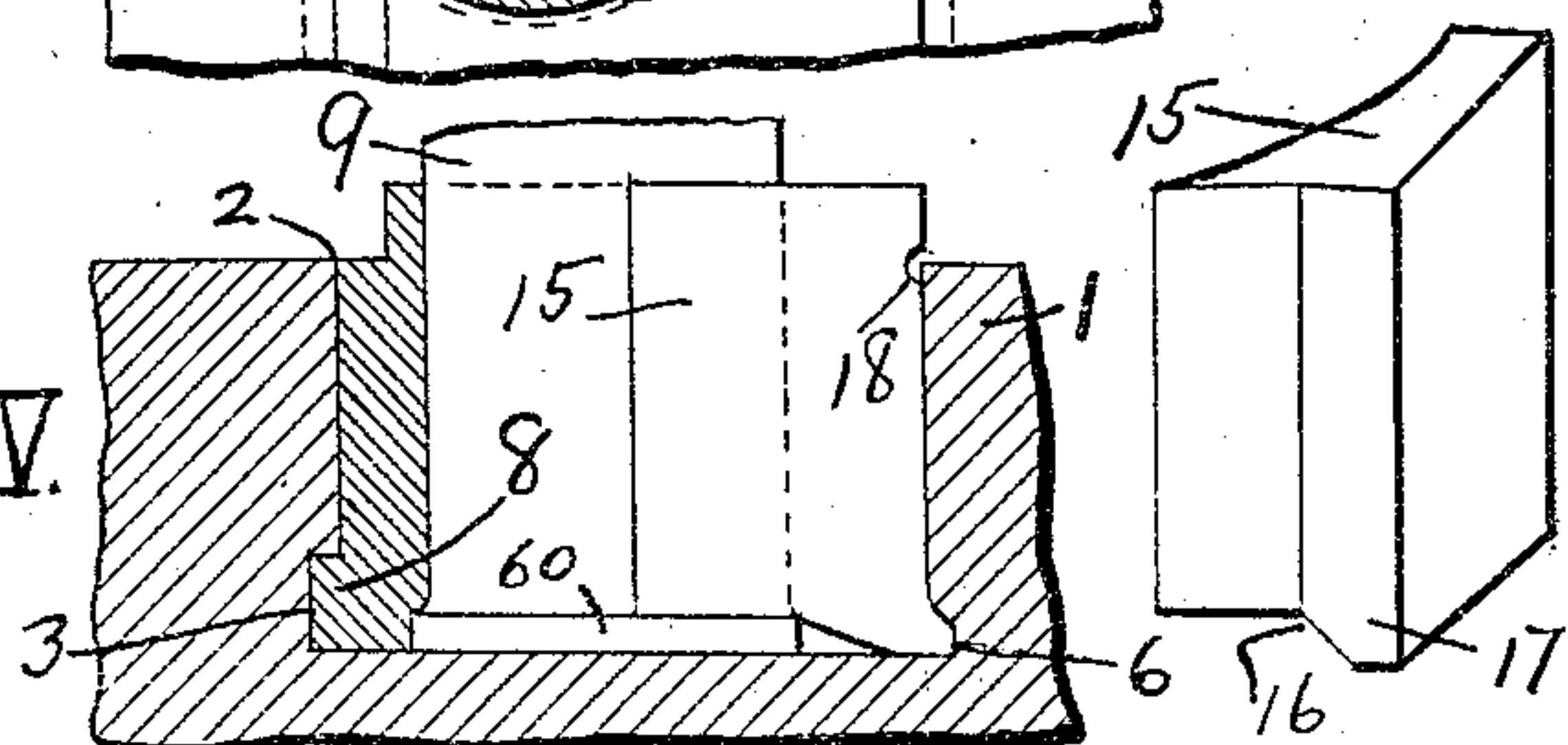
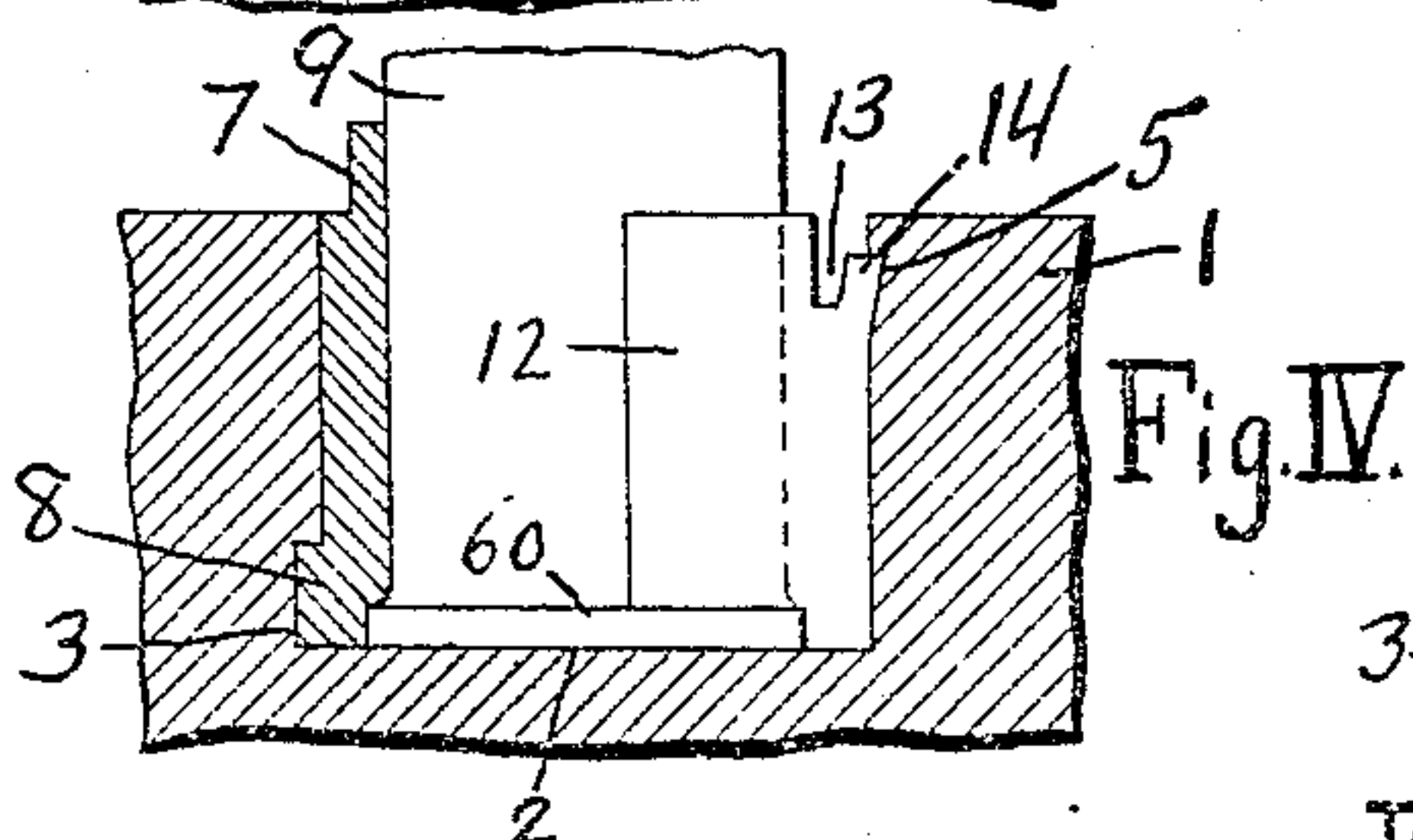
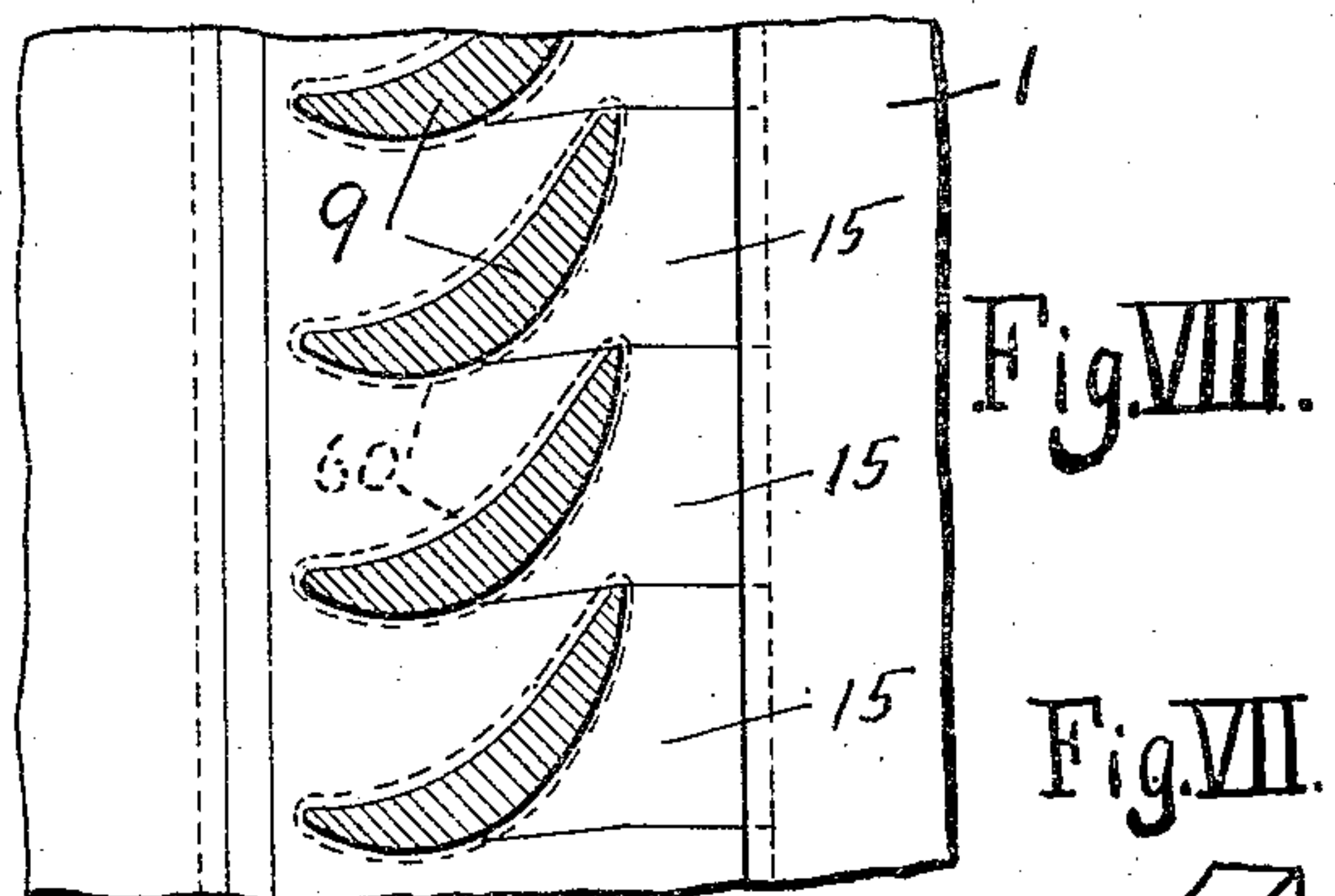
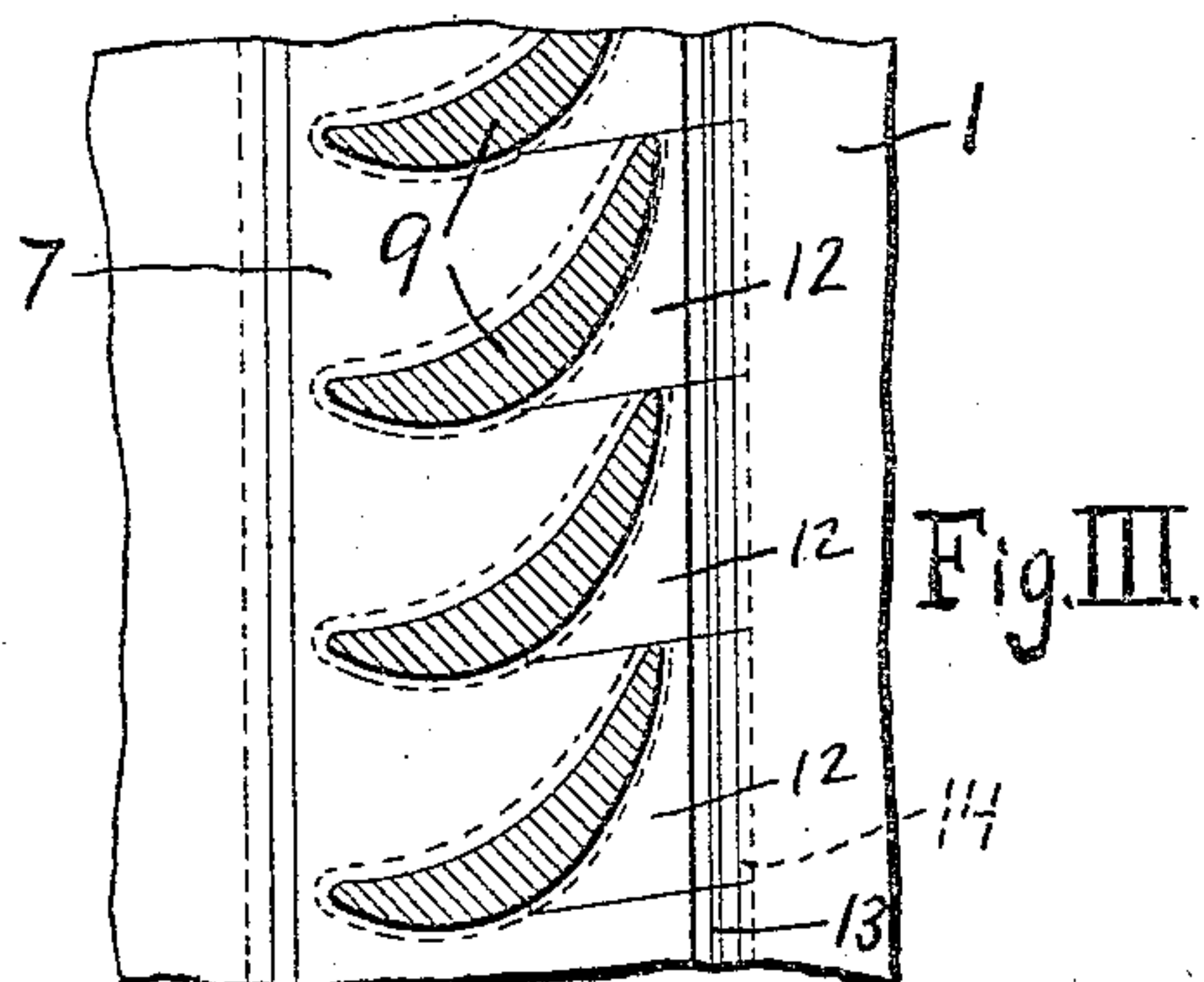
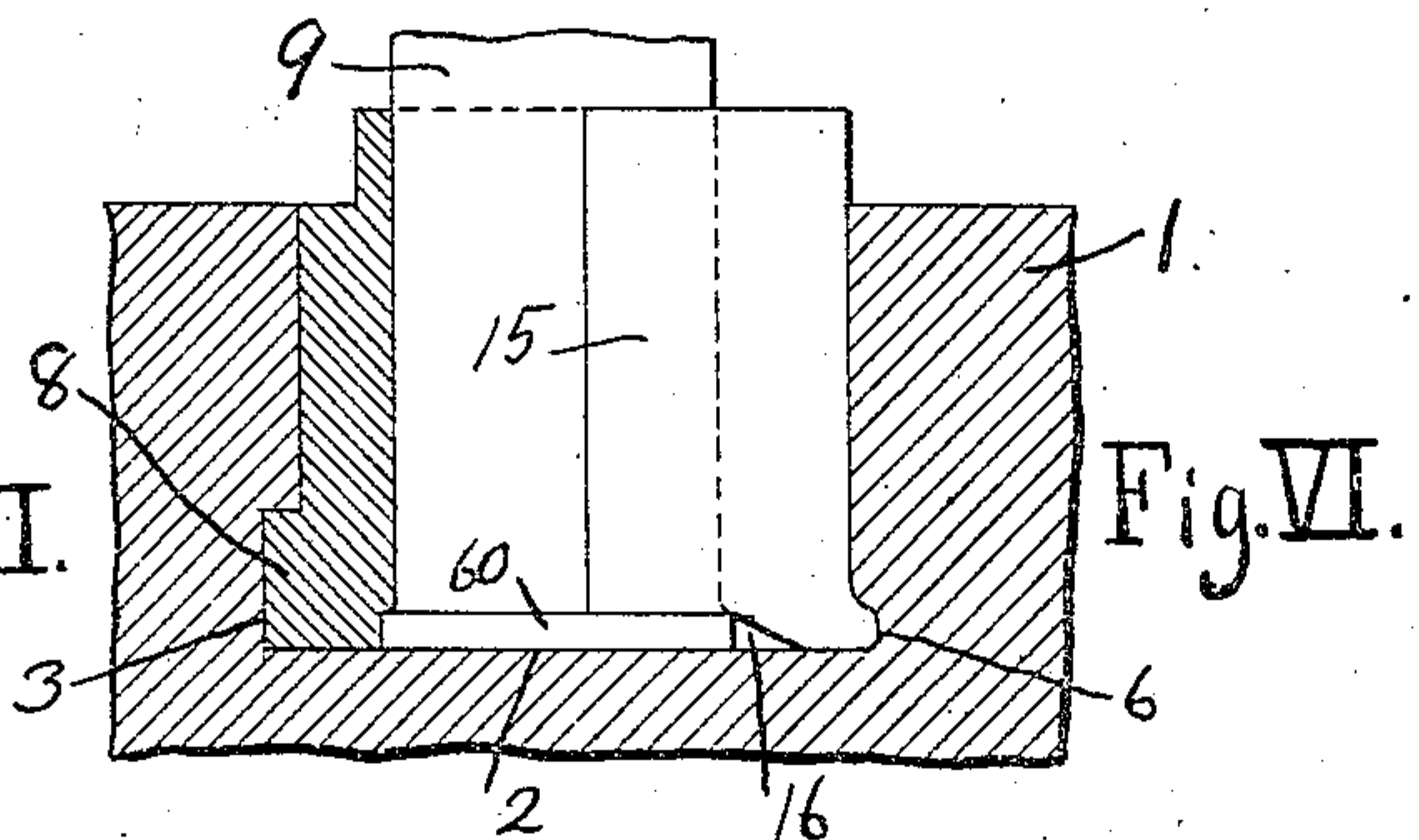
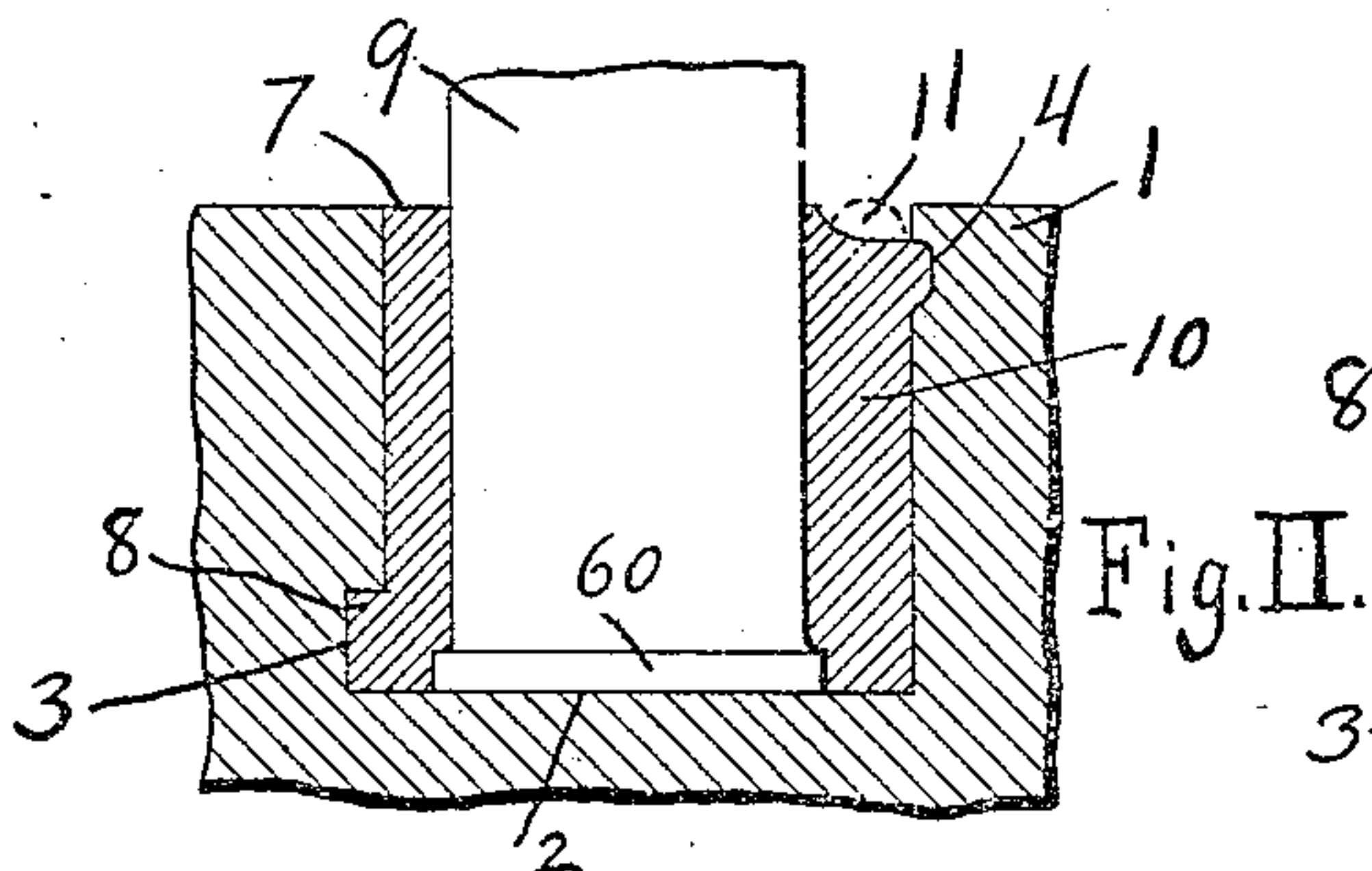
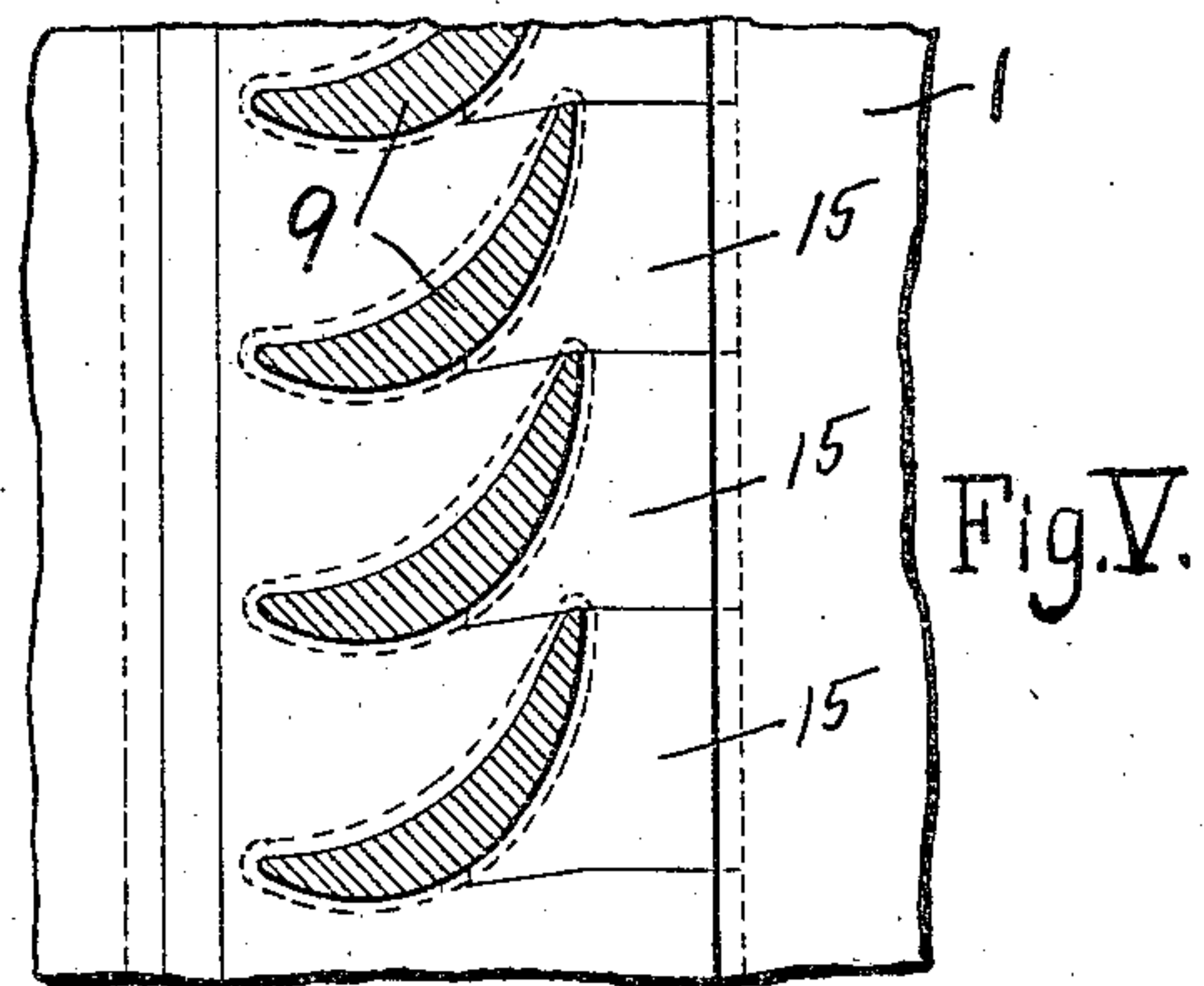
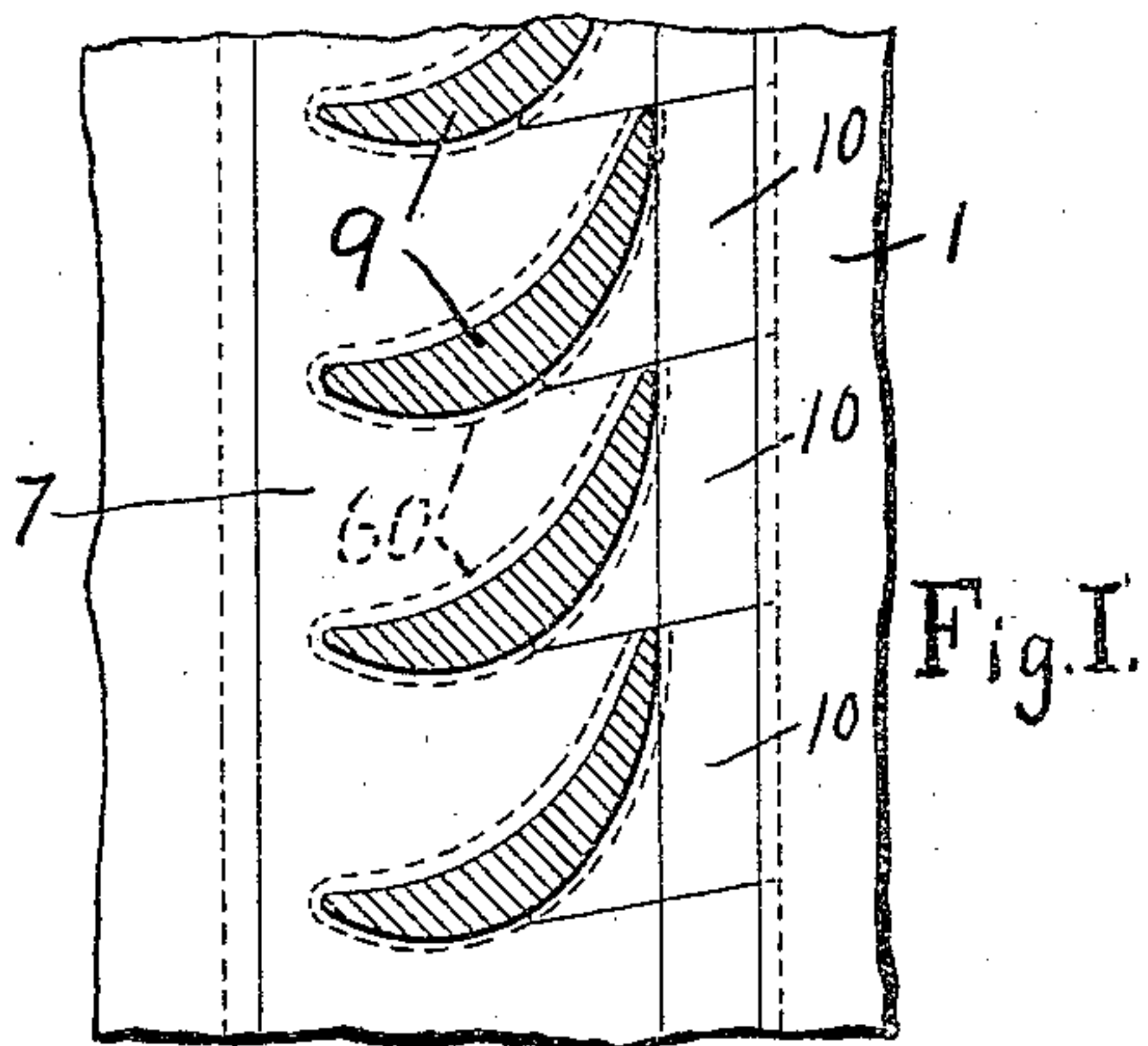


No. 875,645.

PATENTED DEC. 31, 1907.

N. C. BASSETT.  
BLADE FASTENING.

APPLICATION FILED OCT. 29, 1906. RENEWED MAY 27, 1907.



WITNESSES:  
Frank E. Dennett  
John C. Rennie

Fig. IX. N. C. Bassett INVENTOR  
BY  
G. J. Dr. Wein ATTORNEY.



# UNITED STATES PATENT OFFICE.

NORMAN C. BASSETT, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY,  
OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

## BLADE-FASTENING.

No. 875,645.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed October 29, 1906, Serial No. 341,075. Renewed May 27, 1907. Serial No. 375,954.

*To all whom it may concern:*

Be it known that I, NORMAN C. BASSETT, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Blade-Fastenings, of which the following is a specification.

This invention relates to fastening devices suitable for fastening the blades of fluid propelled engines, or the blades of fans or pumps for propelling fluid, and generally it relates to a fastening means which is capable of being used in any relation where it is desirable to firmly secure to a member a plurality of similarly associated elements.

The purpose of this invention is to provide a blade-holding member which is easily and cheaply constructed and with which the blades are adapted to be secured within a recess provided by a blade-carrying member by filling blocks.

In the drawings which accompany this specification and form a part thereof and on which the same reference characters are used to designate the same elements wherever they may appear in each of the several views and which drawings illustrate embodiments of this invention,—Figure 1 represents a plan of a fragment of a blade-carrying member with blades secured therein, the blades being shown in section. Fig. 2 represents a sectional elevation of the arrangement of the parts as shown in Fig. 1. Fig. 3 represents a plan similar to that shown in Fig. 1, illustrating an alternative method of locking the filling blocks to the blade-carrying member. Fig. 4 represents a sectional elevation of the parts as shown by Fig. 3. Fig. 5 represents a plan similar to Fig. 1 but showing a second alternative method of locking the filling blocks to the blade-carrying member. Fig. 6 is a sectional elevation of the parts as shown by Fig. 5. Fig. 7 is a perspective view of one of the filling blocks as shown by Figs. 5 and 6 before it is calked into place. Fig. 8 is a plan similar to Fig. 1 but showing a third alternative method of locking the filling blocks to the blade-carrying member. Fig. 9 is a sectional elevation of the parts as shown by Fig. 8.

The term "blades" as used in this specification is used in the generic sense and is in-

tended to include any similar or equivalent elements which may be assembled in the manner shown and is not intended to restrict this invention to any specific apparatus in which are used elements to which the technical term "blade" is applied. The term "blade" being used as a matter of convenience because this structural arrangement of parts is especially well adapted for use in the construction of steam turbines.

On the drawings the numeral 1 represents the blade-carrying member which is provided with a recess 2, said recess being provided with a side, undercut as at 3, its opposite side being undercut or recessed, as shown at 4, Fig. 2, 5 Fig. 4 and 6 in Figs. 6 and 9. This last mentioned recess, however, may be omitted in some cases, its function being to provide additional security to the assembled structure by affording a positive lock to hold the parts in their secured relation.

The numeral 7 represents a blade-holding member which is provided with a projecting or offset portion 8 adapted to seat in the undercut portion 3 of the blade-carrying member, and the blade-holding member 7 is notched, the notches being approximately triangular in shape as seen in plan. The blade-holding member 7 is preferably adapted to be seated upon the bottom of the recess 2 and is provided with recesses to receive projections 60 formed upon the blades in order to prevent the withdrawal of the blades endwise therefrom, as clearly shown by each of the several figures of the drawings.

With the construction of blades as shown by the drawings, viz., provided with enlarged heads at their lower ends, the blade holding member 7 need not necessarily be provided with recesses for said heads, but its depth may be decreased by an amount equal to the thickness of said heads, in which case it would not seat against the bottom of the recess 2, but the construction as described above and shown by the drawings is the preferred construction.

The constructions which are the subject of this invention are intended to facilitate the assembling of the blades with the blade-holding member 7 and the secure locking of said blades and blade holding member within the recess of the blade-carrying member 1,



and is of special importance when it is desired to remove one or more damaged blades, as it is necessary to remove, for example, only a single filling block and the damaged blade when a new blade can be inserted and secured by a filling block. The notches in the blade-holding member 7, it will be noticed, as shown by each of the several figures of the drawings, are of ample size to provide for the removal of an individual blade by forcing it to the right, as shown, and giving it a slight twist if necessary.

The numeral 9 indicates the blades and the numeral 10 indicates the filling blocks of the character shown by Figs. 1 and 2. It is preferred in the specific construction shown by Figs. 1 and 2 to provide the filling blocks with a rounded top portion, as shown at 11, Fig. 2, which provides for the flow of the material and insures the filling of the recess 4 by said material.

The numeral 12 represents the filling blocks of the type shown by Figs. 3 and 4. These filling blocks are preferably formed at their lower part to fit accurately upon the heads of the blades and to seat against the bottom of the recess 2. A slot 13 is cut lengthwise in their upper surfaces and the parts of the blocks outside of said slot are made of a height so that when the blocks are seated in place and said outer part 14 is forced outwardly, it will engage in the recess 5.

The numeral 15 represents the filling blocks of the character shown by Figs. 5, 6, 7, 8 and 9. Each filling block is recessed at its lower end at 16, whereby a projection 17 is provided, this projection being adapted to seat against the bottom of the recess 2, and the material comprising it being adapted to be forced into the recess 6 when the block is forced or pounded home. The filling blocks 15 may also be recessed or may be made short enough so that the blade carrying member may be calked over them or into said recesses, as clearly shown at 18 on Fig. 9, which shows the parts in position and ready for the calking tool. It will thus be seen that this invention provides a very simple and secure arrangement for securing together a plurality of parts such as described.

The importance of this invention from a structural standpoint is due to the fact that the blade-carrying member 1 is usually a massive casting upon which it is only possible practically to work with the lathe or boring machine. The blades must be accurately spaced and accurately positioned with respect to said member, which is accomplished by providing the blade-holding member 7, which is a comparatively light member, easily handled and readily machined to the required accuracy of shape. By providing the blade-holding member 7 with notches of substantially the size and

shape indicated by the drawings, the blades are readily assembled with or disassembled from said blade-holding member 7 while said blade-holding member is seated in the recess provided by said blade-carrying member 1 and by providing a single filling block for each blade, by each of which the blades and blade-holding member 7 are firmly secured to the blade-carrying member 1, the greatest simplicity and security of fastening is realized and at the same time the greatest facility for removing a damaged blade and replacing it by a new one is also realized.

What I claim is,—

1. The combination with a blade-carrying member, provided with a recess, of a blade-holding member, provided with notches, seated in said recess, blades seated in said notches, and filling blocks to secure said blade-holding member and blades in the recess of said blade-carrying member.

2. The combination with a blade-carrying member, provided with a recess, of a blade-holding member, provided with notches, seated in said recess, blades seated in said notches, and filling blocks to secure said blade-holding member and blades in the recess of said blade-carrying member, said filling blocks being locked to said blade-carrying member.

3. The combination with a blade-carrying member, provided with a recess a side of which is undercut, of a blade-holding member, provided with notches and a projection, said projection being adapted to engage with said side in the undercut portion thereof, blades seated in said notches, and filling blocks to secure said blade-holding member and blades in the recess of said blade-carrying member.

4. The combination with a blade-carrying member, provided with a recess, of a blade-holding member provided with notches and recessed adjacent said notches, seated in said recess, said blade-holding member being provided with a projection adapted to engage with said side in the undercut portion thereof, blades seated in said notches and provided with projections adapted to engage with said blade-holding member in the recessed portions thereof, and filling blocks to secure said blade-holding member and blades in the recess of said blade-holding member.

5. The combination with a blade-carrying member, provided with a recess, of a blade-holding member provided with notches and recessed adjacent said notches, seated in said recess, said blade-holding member being provided with a projection adapted to engage with said side in the undercut portion thereof, blades seated in said notches and provided with projections adapted to engage with said blade-holding member in the recessed portions thereof, and filling blocks to

secure said blade-holding member and blades  
in the recess of said blade-holding member,  
the recess of said blade-carrying member  
being provided with a depression and por-  
5 tions of the filling blocks being forced into  
said depression to lock the several parts  
against displacement.

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

NORMAN C. BASSETT.

Witnesses:

FRANK E. DENNETT,  
JOHN OLSEN.