

H. M. HINGLEY & J. E. FLETCHER.  
SHIP'S ANCHOR.

APPLICATION FILED FEB. 18, 1908.

913,292.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.

FIG. 1.

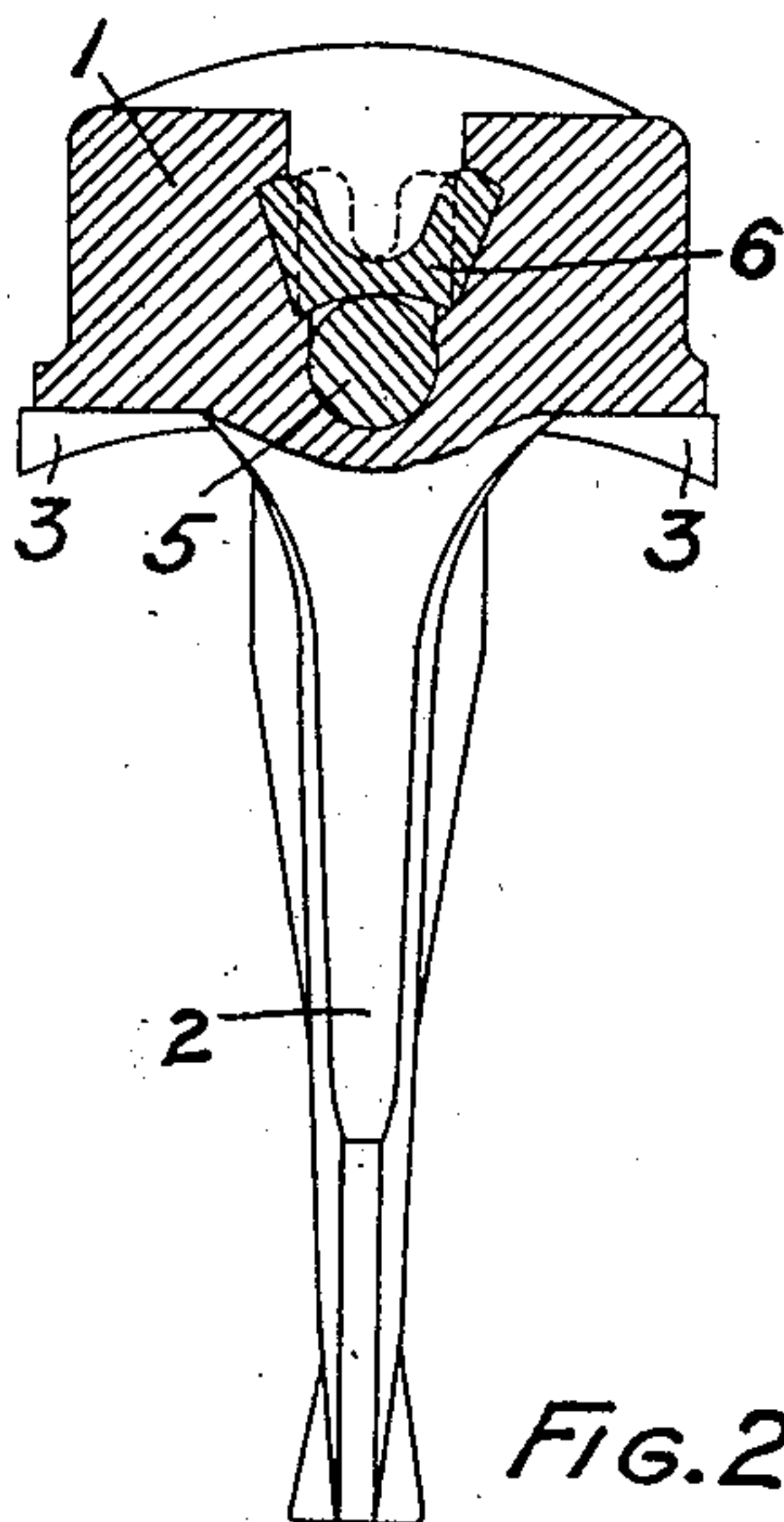


FIG. 2.

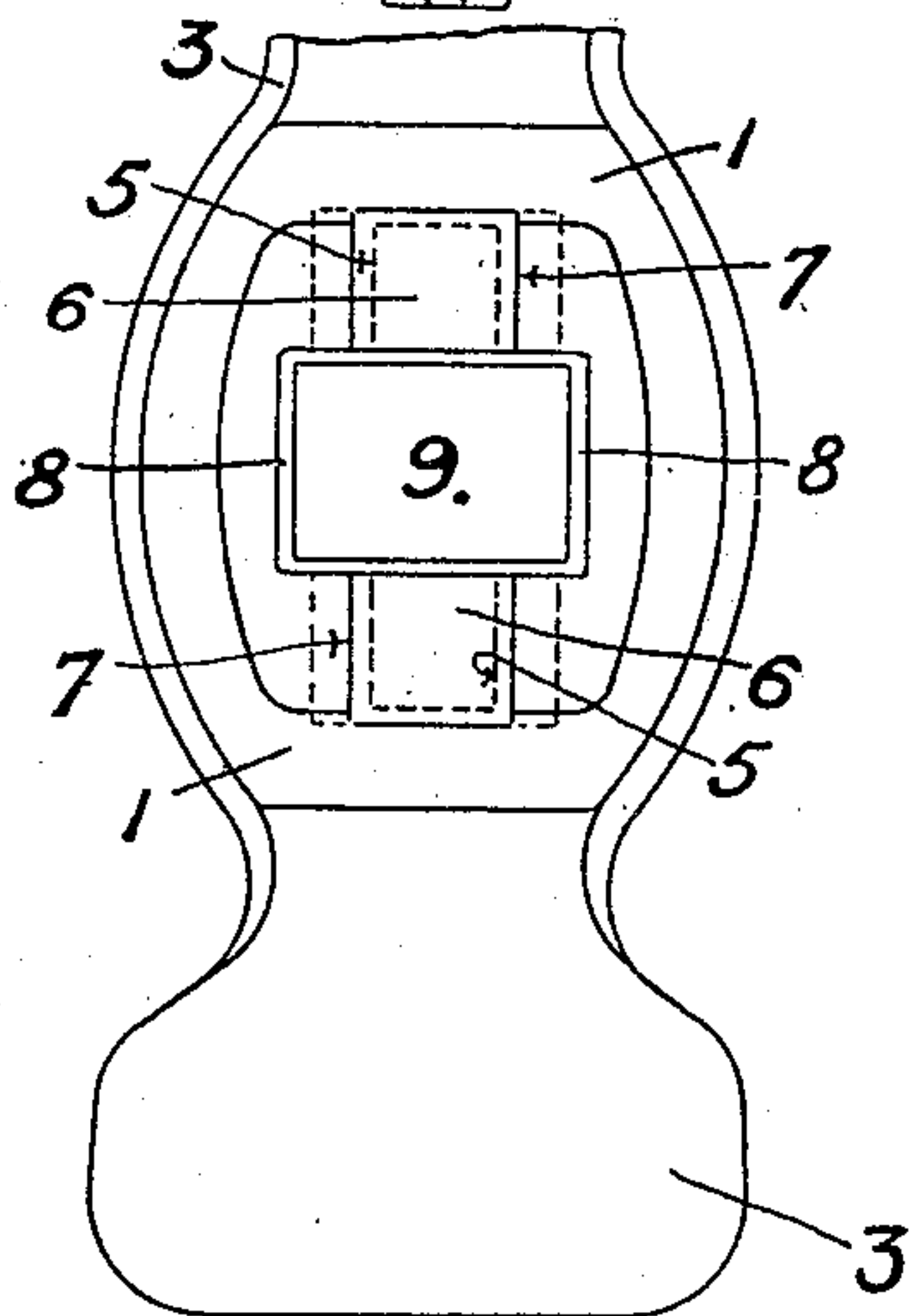


FIG. 5.

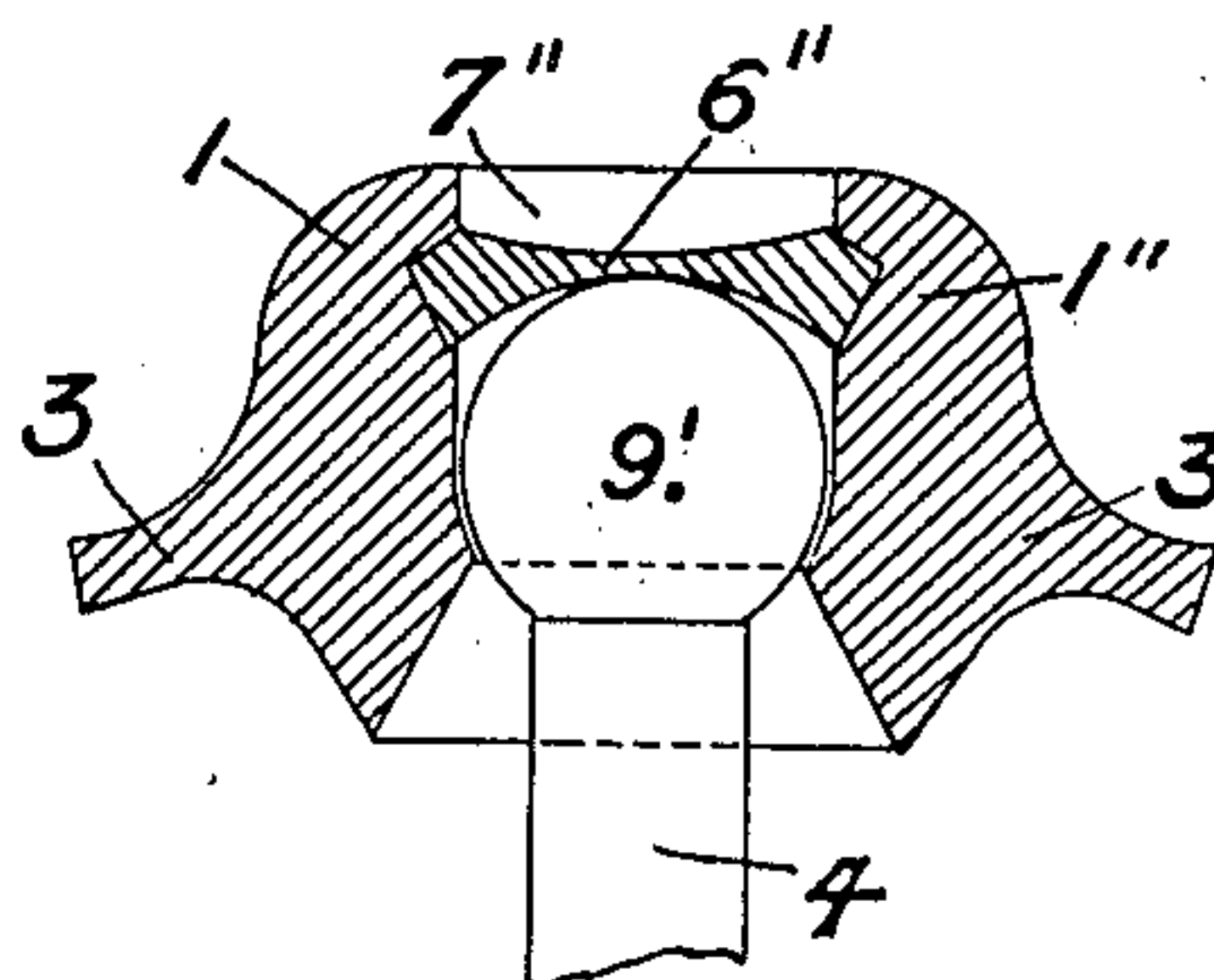


FIG. 6.

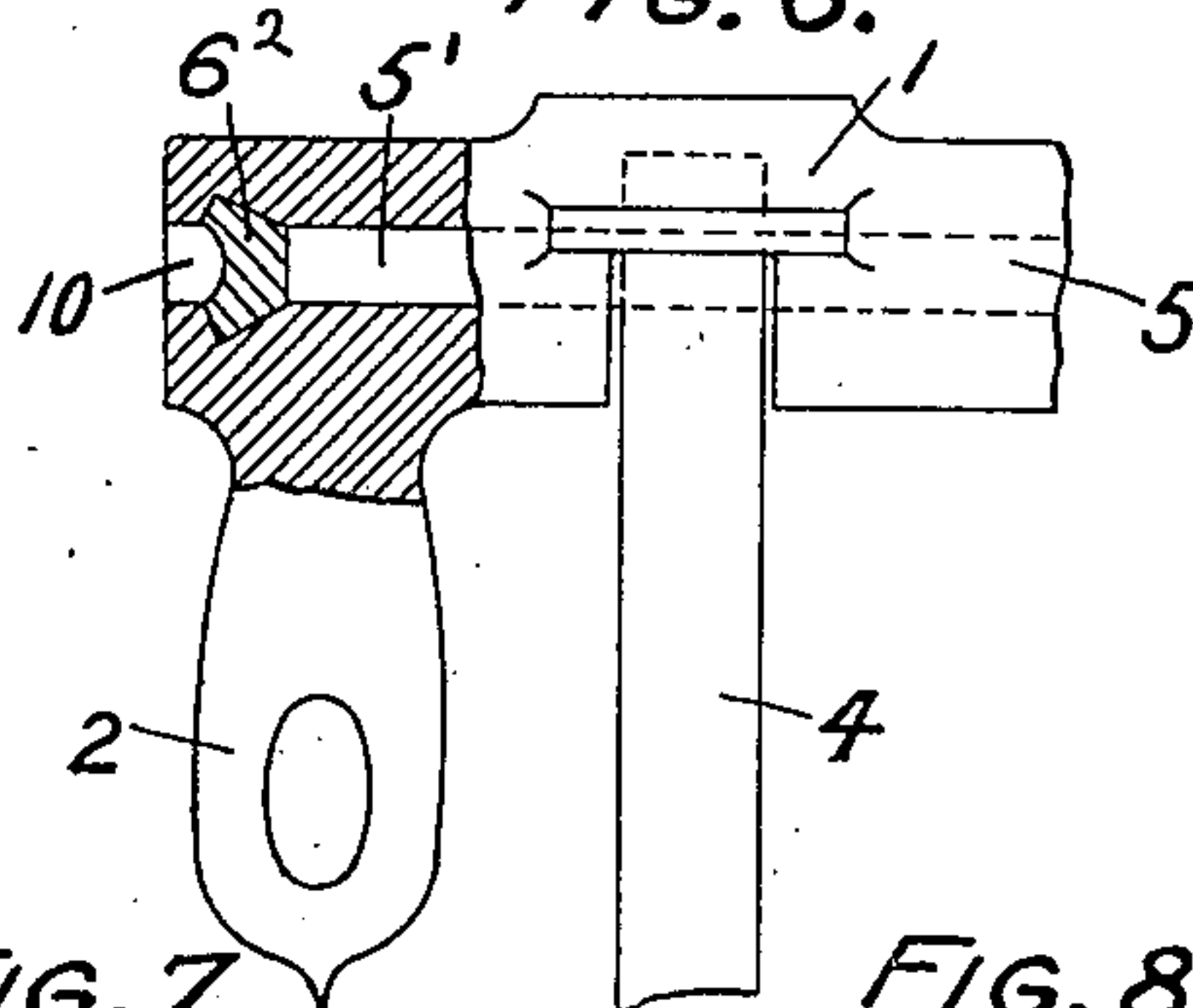


FIG. 7.

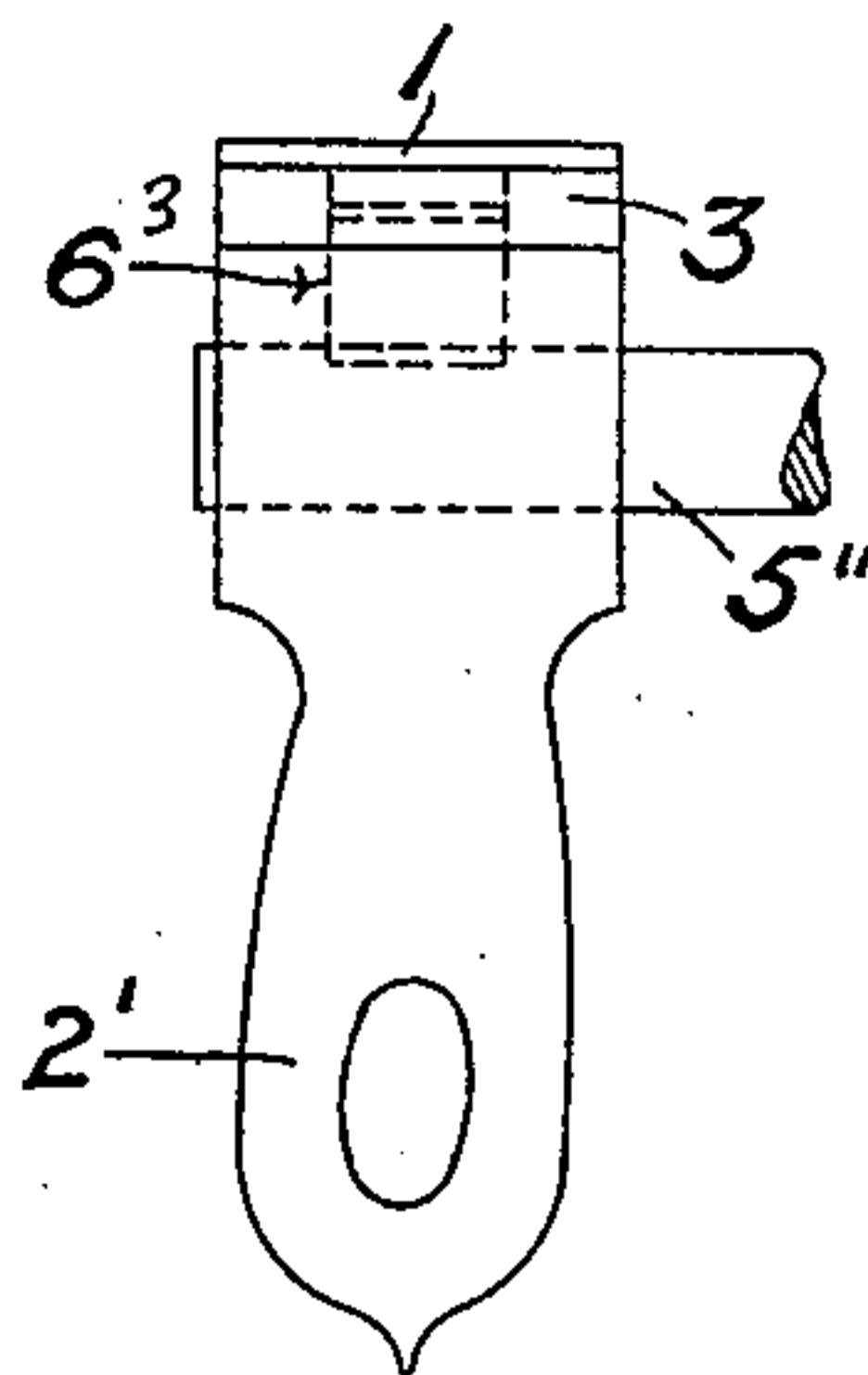
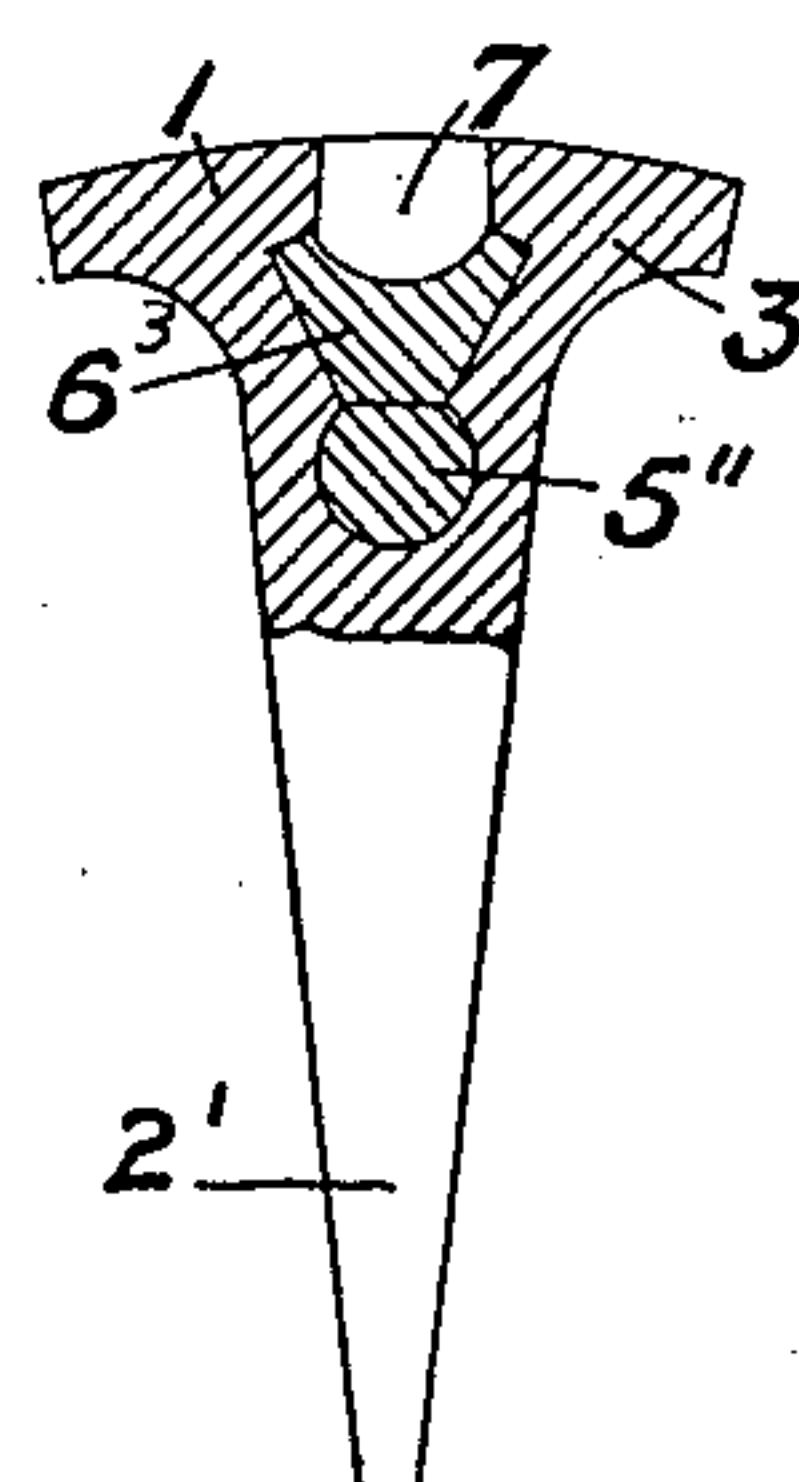


FIG. 8.



WITNESSES

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2 SHEETS—SHEET 2.

FIG. 3.

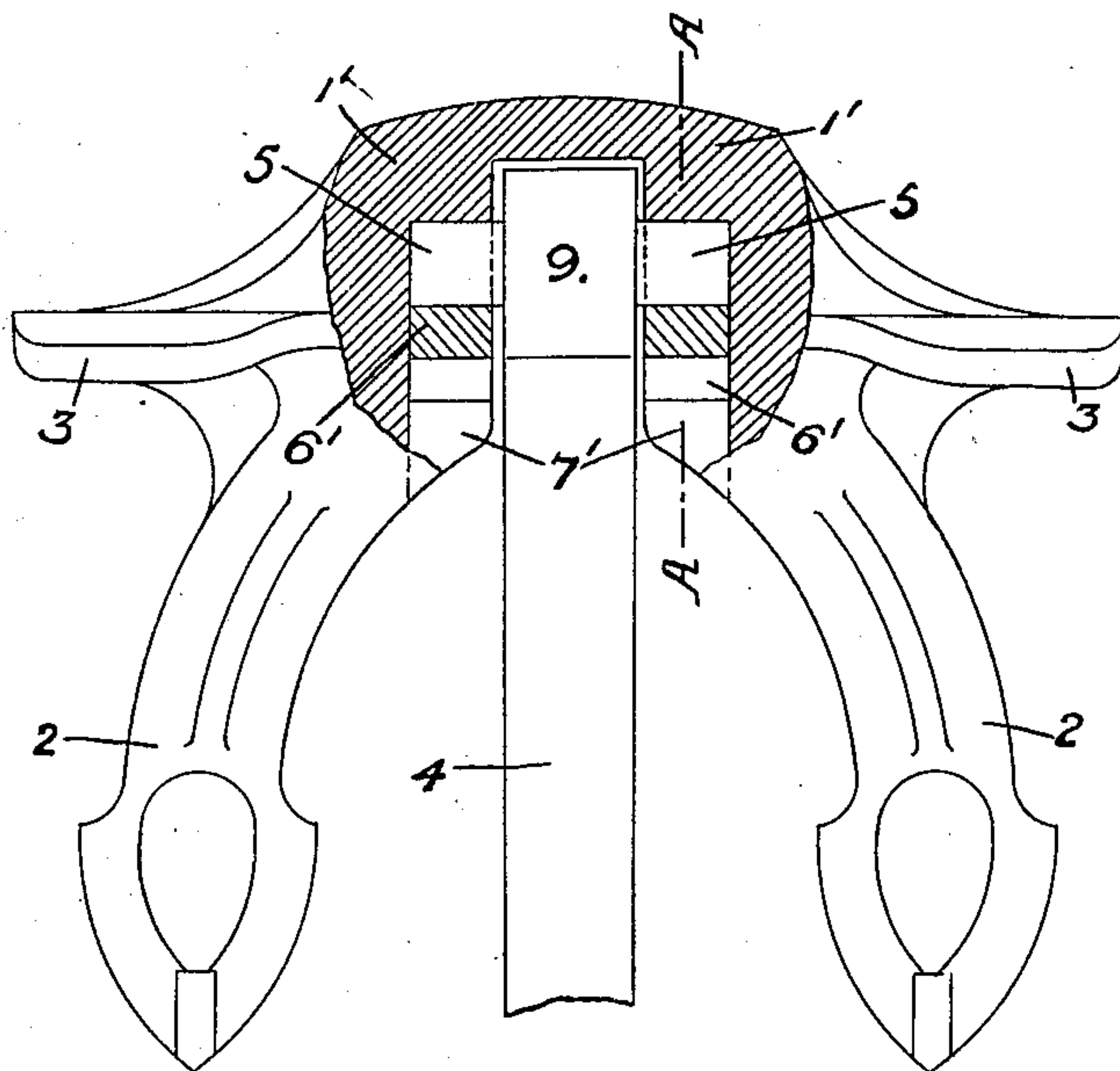


FIG. 4.

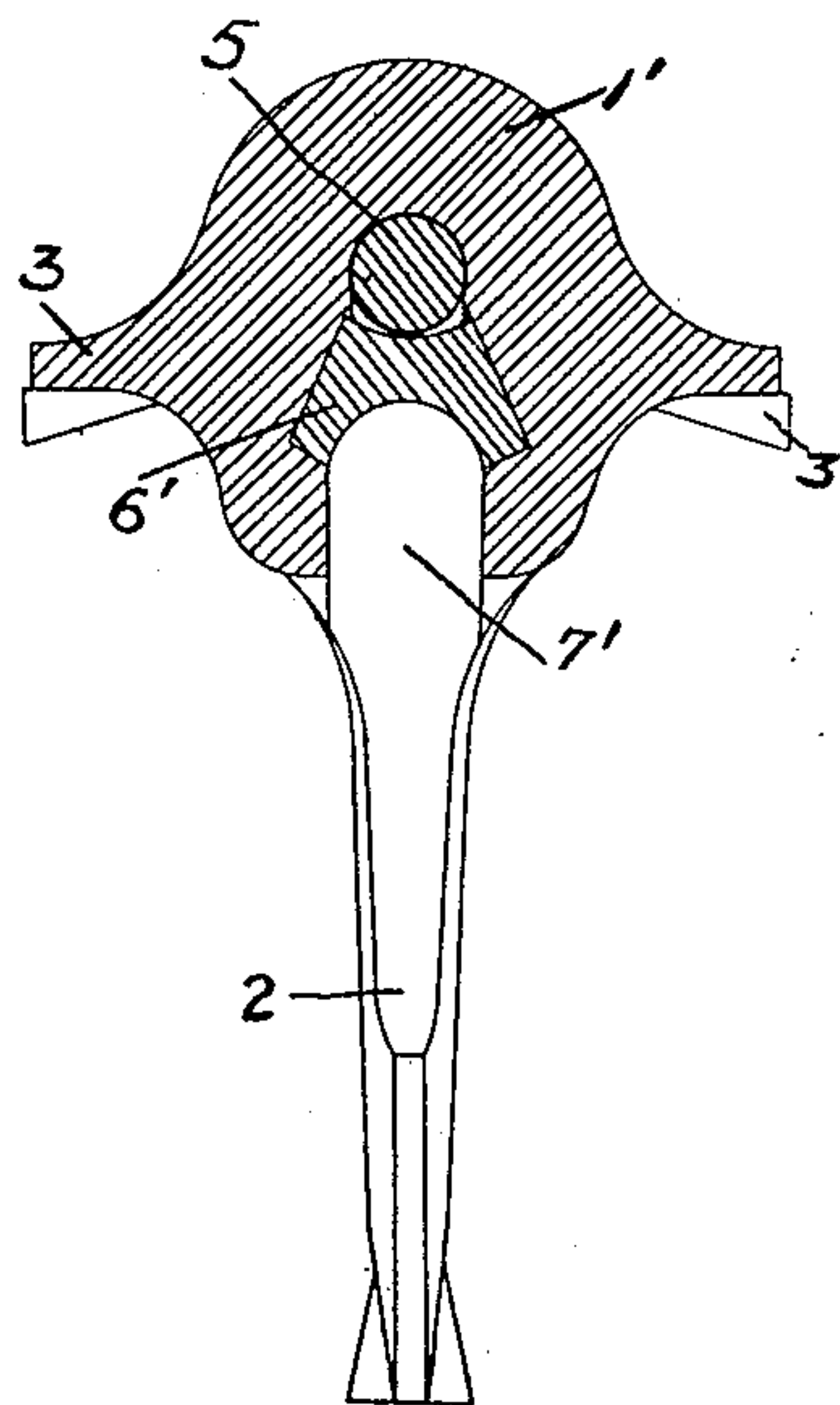


FIG. 10.

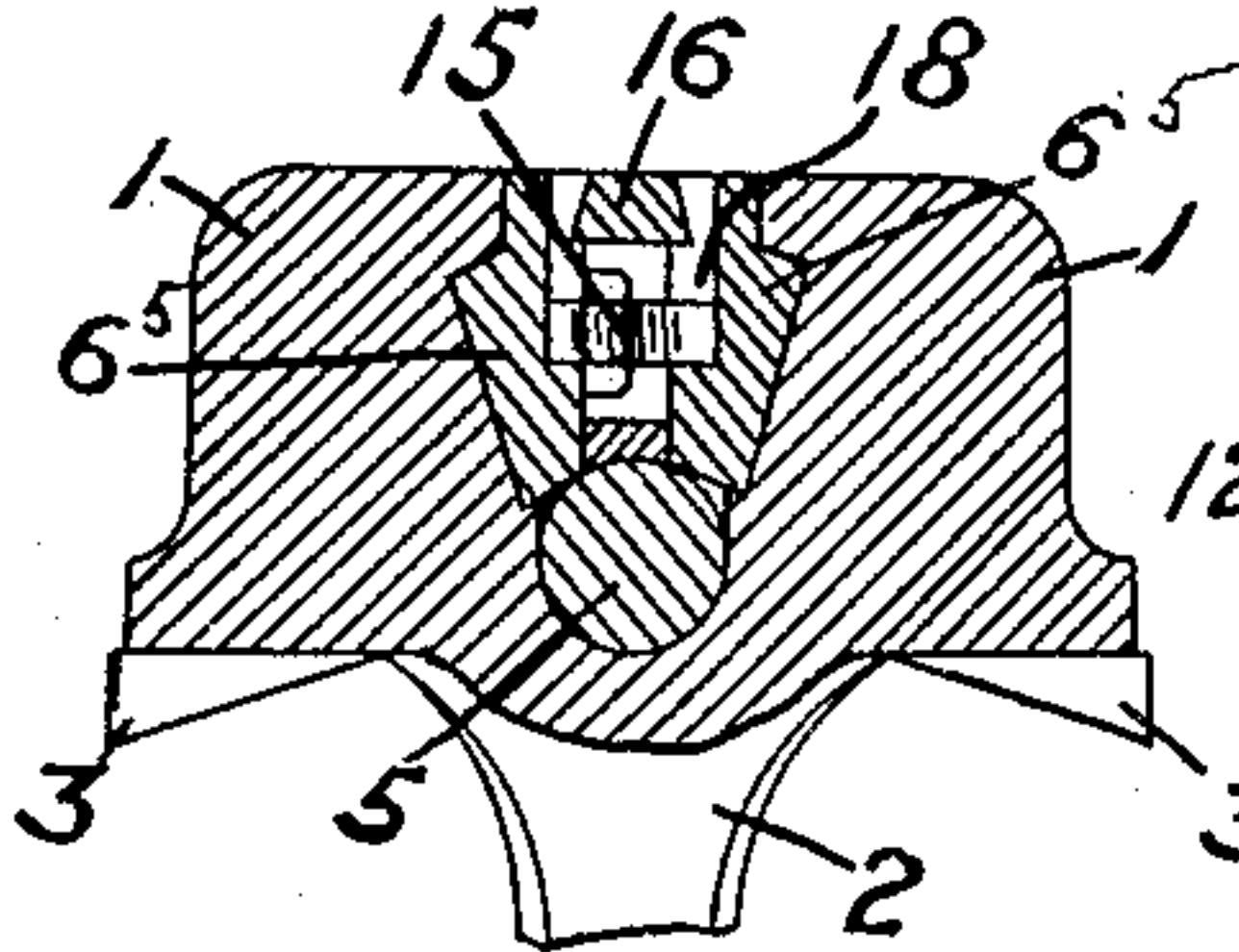


FIG. 9.

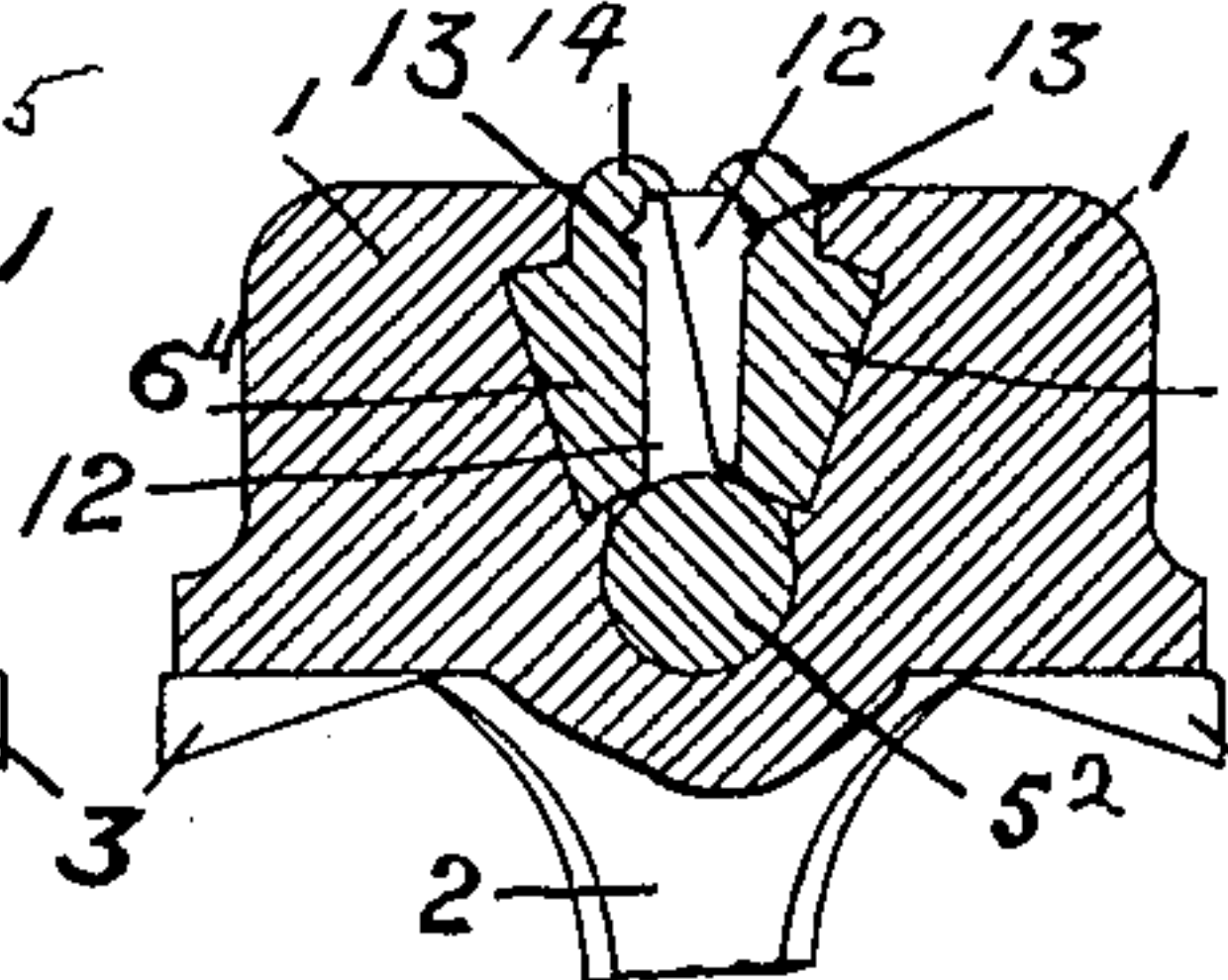


FIG. 12.

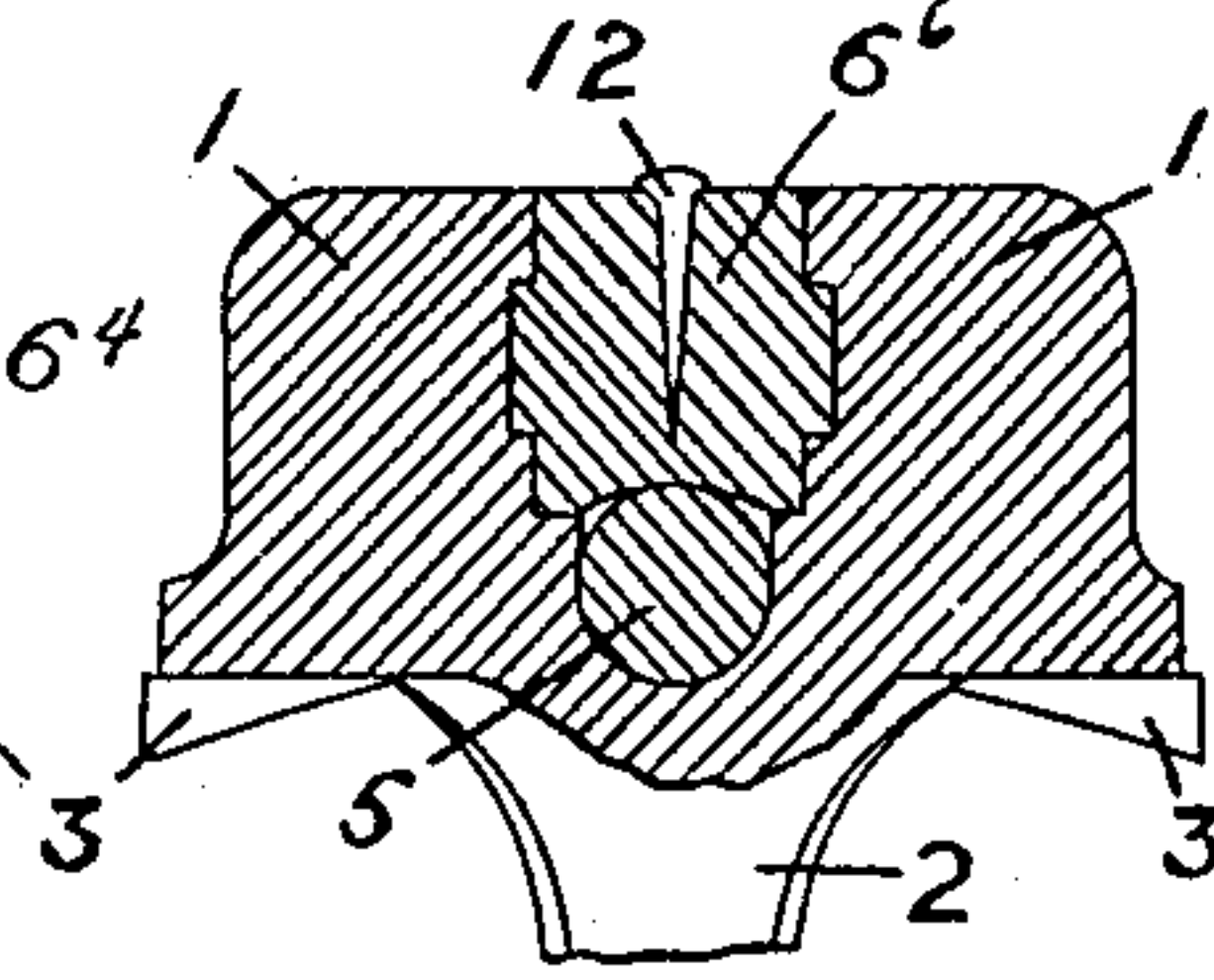
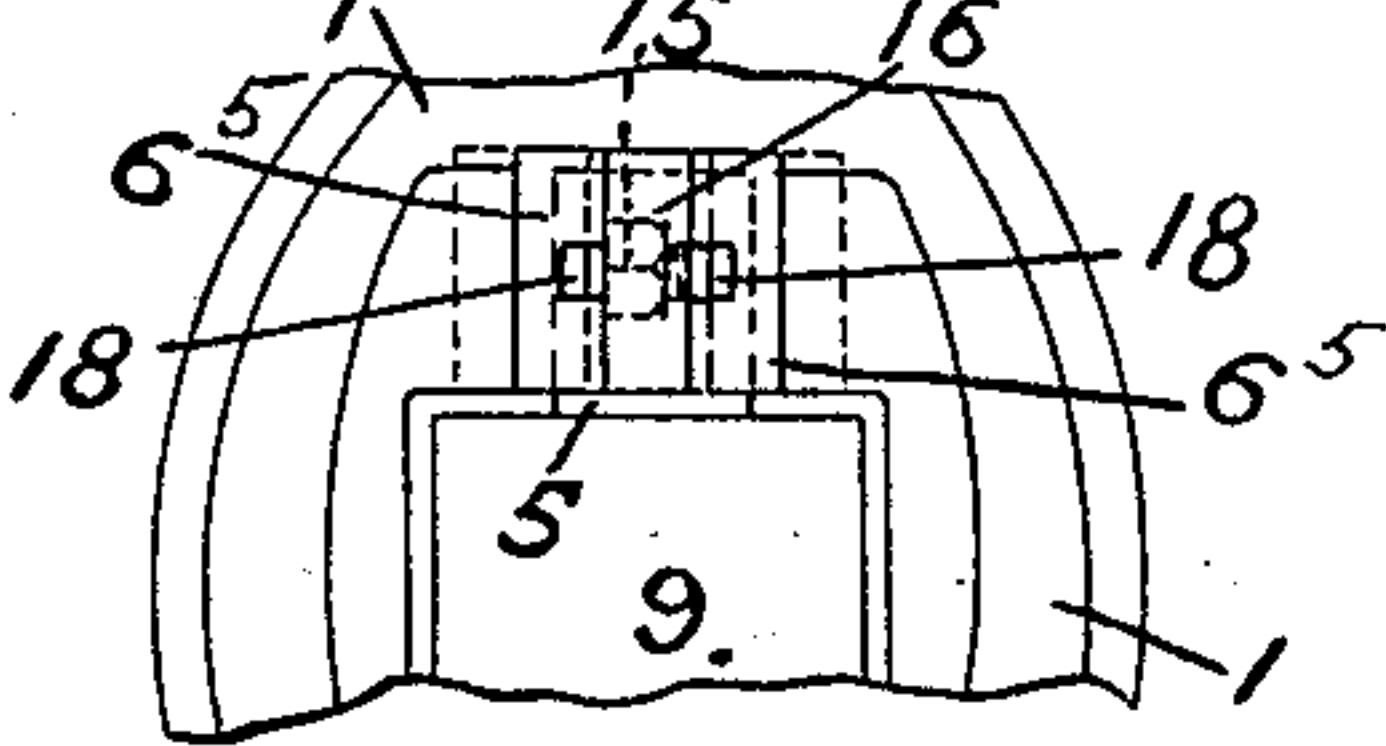


FIG. 11.



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# UNITED STATES PATENT OFFICE.

HENRY MONTAGU HINGLEY AND JOSEPH ERNST FLETCHER, OF DUDLEY, ENGLAND.

## SHIP'S ANCHOR.

No. 913,292.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed February 18, 1908. Serial No. 416,610.

*To all whom it may concern:*

Be it known that we, HENRY MONTAGU HINGLEY and JOSEPH ERNST FLETCHER, subjects of the King of England, residing at  
5 Dudley, in the county of Worcester, England, have invented new and useful Improvements in Ships' Anchors, of which the following is a specification.

This invention has reference to ships' anchors, and more particularly to that type  
10 which are called "stockless" or "patent" anchors.

Anchors as at present made, especially those of the larger construction and weighing many tons, such as are used for large  
15 vessels, are found in practice to be defective; that is, they are not able as at present constructed to withstand the enormous stresses and shocks to which they are subjected in  
20 actual practice, especially those which they have to undergo in being "dropped", although this is not the only severe test to which they are put.

In some anchors, the actual operativeness  
25 of the anchor is dependent upon pins, bolts, or like fastening or holding devices, by which the shank and head are held in place; while in other types, pins, bolts, or the like are employed to keep the shank and head in  
30 the correct relative position, although this type of anchor would not be inoperative if these pins, bolts, or the like, broke. Nevertheless, the holding of the parts in the correct relative position is of the highest im-  
35 portance, and in fact a practical necessity.

The objects of the present invention have been primarily to provide improvements in anchors of the kind to which this invention  
40 relates, by which the parts or means holding the head and shank together, or the flukes, trunnion bar or crosspin, and shank together, are rendered independent of pins, bolts, or other similar fastening means.

According to this invention, there is em-  
45 ployed in connection with the head and the shank trunnion or crosspin, as the case may be, a block fitted and held in the head, which is secured and held in position by pressure, re-acting between the parts; and in some  
50 cases it also presses upon and holds or locks the crosspin in position.

The invention is illustrated in the accompanying drawings, which show slightly different arrangements of the improvements  
55 hereunder for holding the shank and the

head or flukes in place, or the parts in their correct relative position; and it will be further described with reference to the examples given.

In the drawings, Figure 1 is a cross section  
60 of an anchor, and Fig. 2 is a plan of one arrangement of parts; Fig. 3 is a front elevation partly in section, and Fig. 4 is a cross section showing another arrangement of parts; while Fig. 5, Fig. 6, Figs. 7 and 8,  
65 Fig. 9, Figs. 10, 11 and Fig. 12 show other slight modified arrangements hereinafter more particularly referred to.

Referring to the drawings, 1 designates generally the crown of the anchor; 2 are the  
70 flukes, and 3 the trippers, all of which parts constitute the anchor head; while 4 generally designates the shank, and 5 the trunnion or cross-pin, by means of which the head of the anchor, or flukes, as the case  
75 may be, and shank are connected together.

The locking and fastening block which is secured and held in position by pressure, is designated 6 with exponents in the views showing modifications throughout all the  
80 figures but its particular manner of application, and arrangement, and disposition in the various modifications, will be set out separately in the descriptions of these modifications. In some cases, this block 6 is pressed  
85 into a locking seat or recessed part or parts, which lock and hold it within the head or shoulders of the flukes, as the case may be, by such pressure; and when once so pressed and secured, it cannot become loose, and con-  
90 sequently the shank trunnions, gudgeons, or cross-pin cannot come out of place in relation to the other parts of the anchor. Conversely, in some cases, however, these hold-  
95 ing means or parts are adapted to be held in place by shrinking the head onto same, by cooling it after heating, the blocks having been placed in position in the holding or locking seat or recessed parts while the anchor  
100 head is hot. Such forms of locking blocks, and the manner of introducing and fastening them in position are illustrated in Figs. 1 to 8.

In Figs. 1 and 2, the trunnion 5 is connect-  
105 ed to or formed in one with the shank 4; and in the crown 1 are slots or ways 7 at each side of the recess 8 in which the head 9 of the shank 4 lies; said ways or slots opening out at the top of crown, and arranged to permit  
110 of the trunnion being introduced into place,



that is, into the bottom of these ways or recesses in which they fit and rest. At a point above this position in the ways or recesses 7, there is a gap or space in the metal at each side, and the locking blocks 6—which are recessed in the center as shown—are, after the shank trunnions 5 have been placed in position, introduced through the ways 7—being then of such a width, as shown in dotted lines, as to pass down them into position over the trunnions, and their two sides are pressed outwards by forging or hydraulic pressure or the like, and firmly pressed into and fill the gaps or spaces in the metal at each side of the ways 7; and being so pressed or forged into position and locked, they are held and locked by pressure re-acting between the parts, and cannot when once secured, become loose.

In the modification in Figs. 3 and 4, the ways 7' instead of entering through the top of the crown 1', are provided in and enter the underside of the head; and the locking blocks 6' are moved up through these, and pressed into recesses in the sides of the ways 7', similarly as above described. In other respects, the construction is the same as that described with reference to Figs. 1 and 2.

Fig. 5 shows an anchor of the type having spherical head 9'. In this case, in the sides of the way or space 7'' in the crown 1'', into which the spherical head 9' is passed in connecting and securing the shank and anchor head together, there is an annular recess, and into this recess the edges of the block 6'' are forced or passed by forging or other suitable pressure, as above described, the block being made so that it will pass down through the aperture 7'', and when in it and resting near the head 9' it can be pressed out into position.

The modification in Fig. 6 shows a type of anchor in which the means, namely, the trunnions by which the anchor head and shank are held together, is in the form of a crosspin 5', which is passed endwise through a hole 10 in the anchor head, and in the shank head. In this case, within the hole 10, preferably at each end, there is provided a recess; and when the pin or rod 5' has been introduced into position in fastening the head and shank together, the blocks 6<sup>2</sup> are introduced into the ends of the hole, and they are pressed upon from these ends by forging or the like, and forced out into and fill the recess. When once so forced in, they cannot come out.

Figs. 7 and 8 are side elevation and end view showing an anchor in which the flukes 2' are separate, each having a head, which is rigidly fastened onto the ends of the crosspin 5''. In this case, in addition to the locking blocks 6<sup>3</sup> being passed into an aperture in the heads, and pressed out into a recess therein, the crosspin is flattened or recessed at the part where it lies within the fluke heads, and the locking block inner ends

are adapted to enter and lie in this recessed or flattened part, and so interlock the fluke shoulder or head with the crosspin 5'' in every direction.

In all of these cases described with reference to the drawings, when the holding blocks are actually pressed into the locking recesses or seats by direct pressure applied to them as described, so that they are bent or pressed from the form which they have when introduced, into another, this may be effected advantageously while the blocks or parts are hot, they being while hot dropped or placed into position through the apertures 7, or holes 10, as the case may be, over or in relation to the shank trunnions or crosspin 5, and their sides or ends, as the case may be, forged or pressed by suitable tools or means into and fill their locking recesses or seats, and thereby become immovably secured and locked in position.

In the modifications shown in Figs. 9 to 11, the locking and holding block is in two parts, each having a shoulder or the like adapted to fit in the locking recesses or seats of the anchor head or fluke head, as the case may be, and be driven or pressed into position therein by wedges in the manner described, or by a cross screw and bolt or the like.

In the construction shown in Fig. 9, the two parts of the block 6<sup>4</sup>, at their outsides are similarly formed to those above described, and are adapted to fit in two recesses in the ways or passages down which the trunnions 5<sup>2</sup> are passed in connecting the anchor shank and head; and they are held in this position by reversed wedges 12 introduced from the back of the divided block. In the case shown, these wedges have slight projecting parts 13 at their upper ends, which, when the wedges are driven in, will be forced into recesses in the adjacent faces of the two parts of the block 6<sup>4</sup>; or, the wedges may have plain surfaces and may be hammered on their ends, after insertion, so that the parts opposite these recesses in the blocks 6<sup>4</sup> will be forced into same somewhat, so as to lock them in position. Furthermore, in the case shown, the upper parts of the block 14 are shown pressed over the upper edges of the wedge 12, and this may be done by riveting or forging over the block ends—which may stand slightly above the head 1—after the wedges are introduced, so as to further assist in rendering them immovable.

In Figs. 10 and 11, which are sectional elevation and plan, respectively, the blocks 6<sup>6</sup> are of divided form, similar generally to those shown in Fig. 9; and they are recessed at 18, on their inner sides, and within these recesses a cross bolt and nut 15 is fitted; and by turning the nut, which rests on the one inside surface of the one half block 6<sup>5</sup>, the bolt will be pressed onto the other half, and so these two parts are pressed apart and held



in position in the head 1. Also, in the upper end of these half blocks 6<sup>a</sup>, a wedge shaped recess is provided in the adjacent faces, and a supplementary wedge 16 is forced into same, and when in position, this further insures the half blocks 6<sup>a</sup> being immovable.

Fig. 12 illustrates a case wherein the locking blocks 6<sup>a</sup> are fastened and held in position by shrinking the crown 1 or fluke heads, as the case may be, over them, after being introduced into position while the head is hot. In this case, small recesses are formed in the sides of the ways down which the trunnion shank 5 is passed, and the projecting parts of the block 6<sup>a</sup> which are to fit within said recesses, are made of corresponding form. In this case, when the crown 1 is heated and thereby expanded, and the trunnion 5 is placed in position, the block 6<sup>a</sup> is dropped into position cold; and as the head shrinks or contracts onto the block in cooling,—the projecting parts of the block lie in the recesses—with the result that they will become immovably held. In this construction, if desired, a sawcut may be taken down the center of the block 6<sup>a</sup>, and a wedge 12 driven in the center as an additional security.

While we have described several modified forms of parts and modes of securing them together, and the relative dispositions of same, it is to be understood that the invention is not necessarily restricted to same, as it can be modified to suit different kinds of anchors of the kinds referred to, or to meet special cases, without departing from its general character.

What is claimed is:—

1. A ship's anchor wherein the head end of the shank is fixed to the movable head by an expanded metal block which engages with a recess in the said head, and serves as a part bearing for the head end of the shank.

2. In ships' anchors, a shank having an enlarged head end; a movable head having an opening for the enlarged head end, and a recess in the surface of said opening; and a block capable of being fitted in the said opening and bearing against the said head end, and capable of being expanded so as to enter

the said recess and engage therewith, so as to enable all stresses sustained by the block to be directly transmitted to the body of the movable head.

3. In ships' anchors, a shank having an enlarged head end; a movable head having an opening into which the said head end fits, the said opening having a shouldered recess in its surface; and a block capable of being inserted in the opening, and of being expanded in the opening by force, and of being immovably fixed in the shouldered recess, the under surface of the block serving as a part bearing for the head end of the shank.

4. A ship's anchor, comprising the combination of a shank having an enlarged head end; a head provided with flukes, and having a cavity in the walls of which recesses are formed, the cavity being shaped to serve as a part bearing for the enlarged head end; and a metal block fitting in the recesses in the walls of the cavity and serving as a part bearing for the said head end, and serving also as a means for retaining the said head end in position relatively to the said head.

5. A ship's anchor, comprising the combination of a shank having an enlarged head end; a head provided with flukes, and having a cavity in the walls of which inclined lateral recesses provided with shoulders are formed, the cavity being shaped to serve as a part bearing for the enlarged head end; and a metal block having a reduced middle portion and inclined walls, and shaped to partly fit the enlarged head end, and fitting in the inclined recesses in the walls of the cavity, the said block serving as a means for retaining the said head end in position relatively to the said head, and permitting the latter to freely move on the said head end without displacement.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HENRY MONTAGU HINGLEY.

JOSEPH ERNST FLETCHER.

Witnesses:

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HENRY HERBERT OLIVER.