

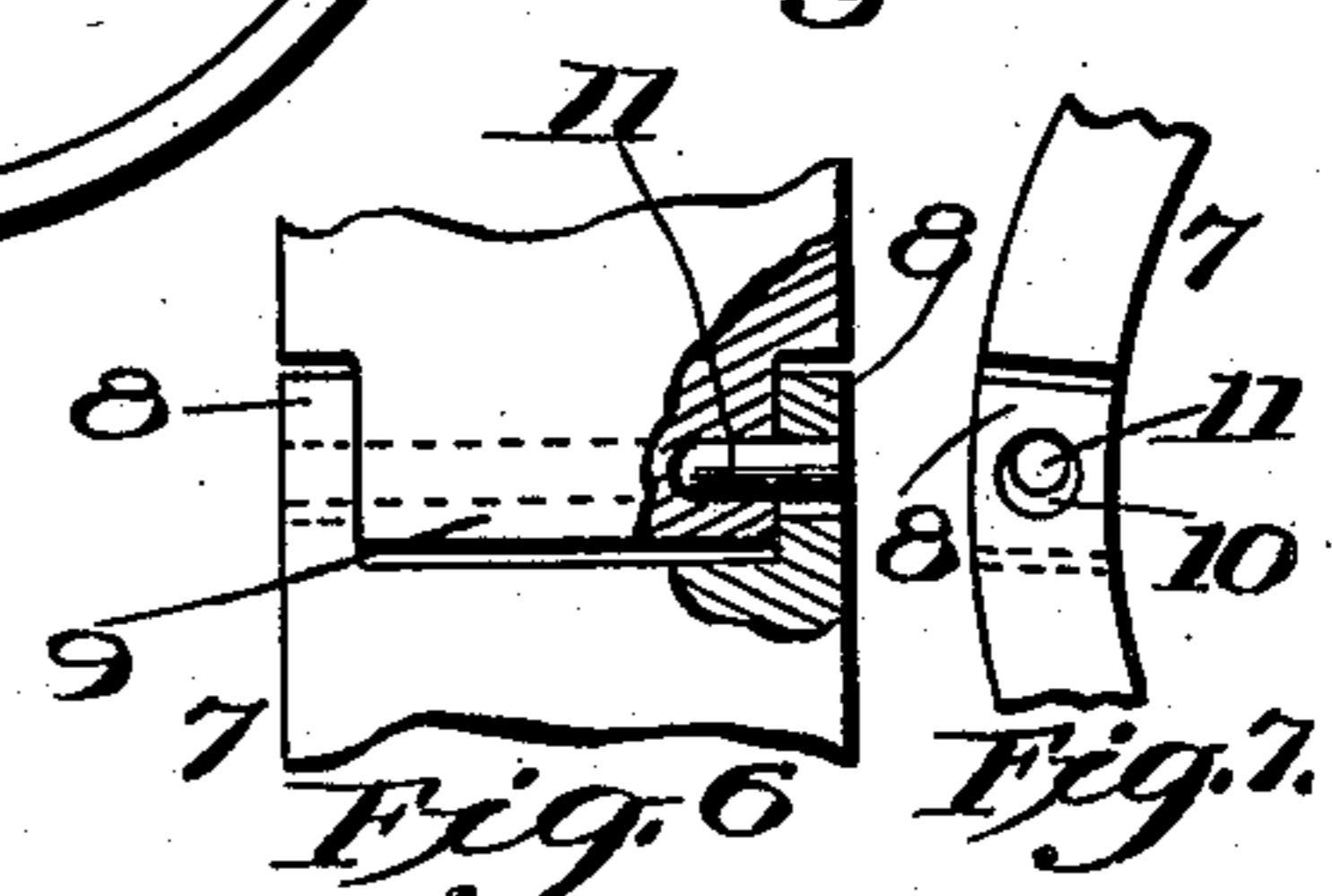
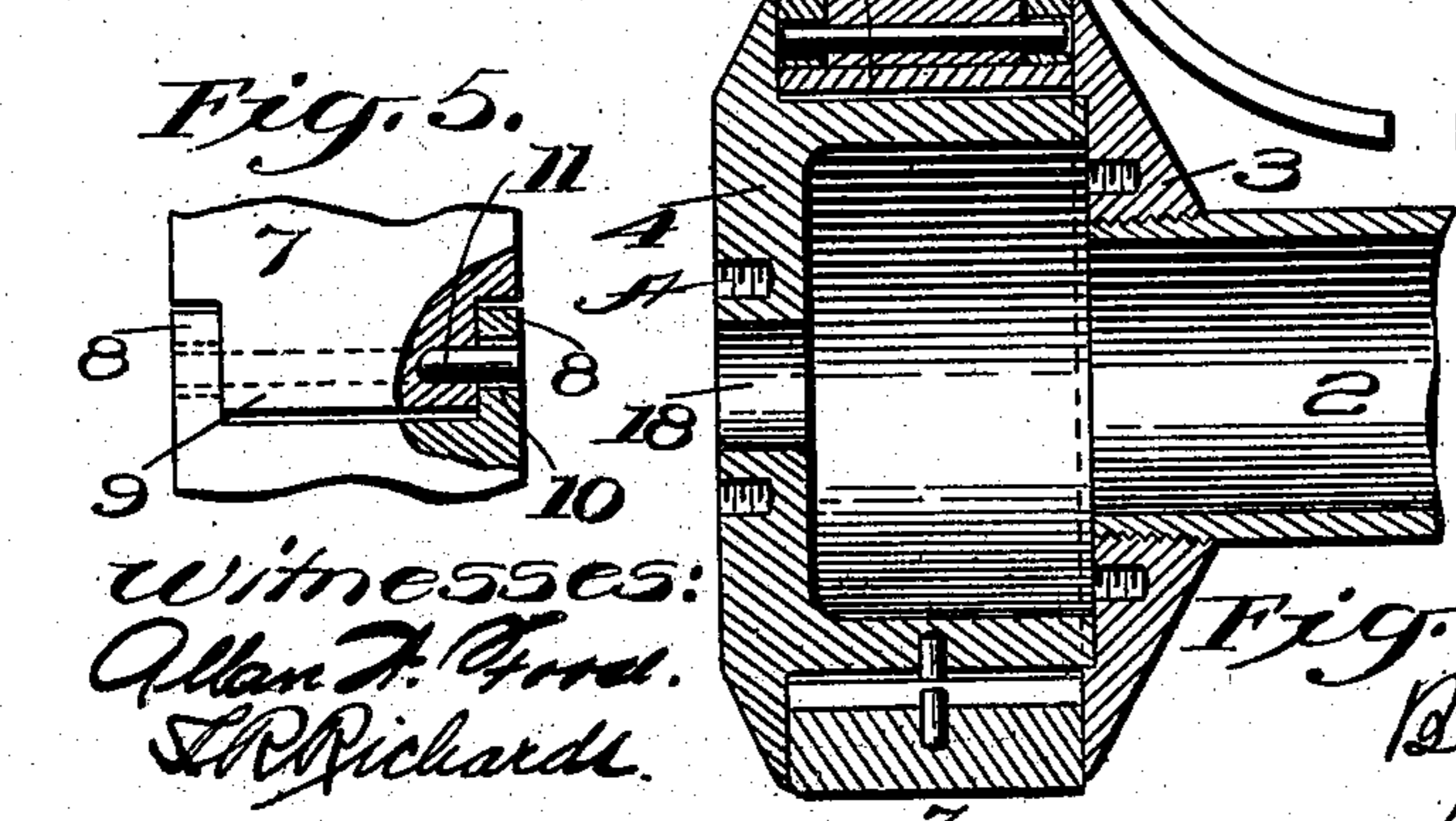
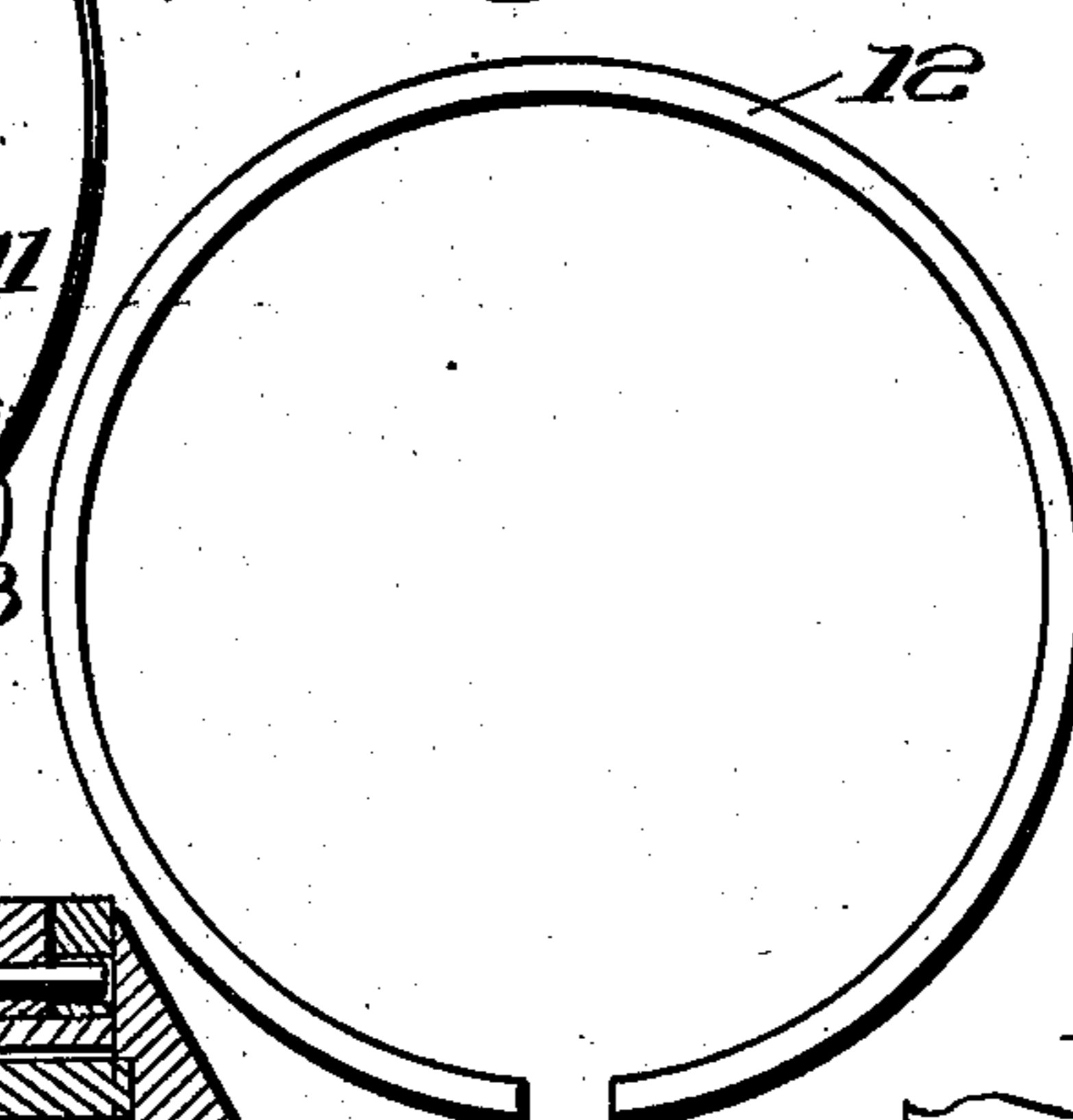
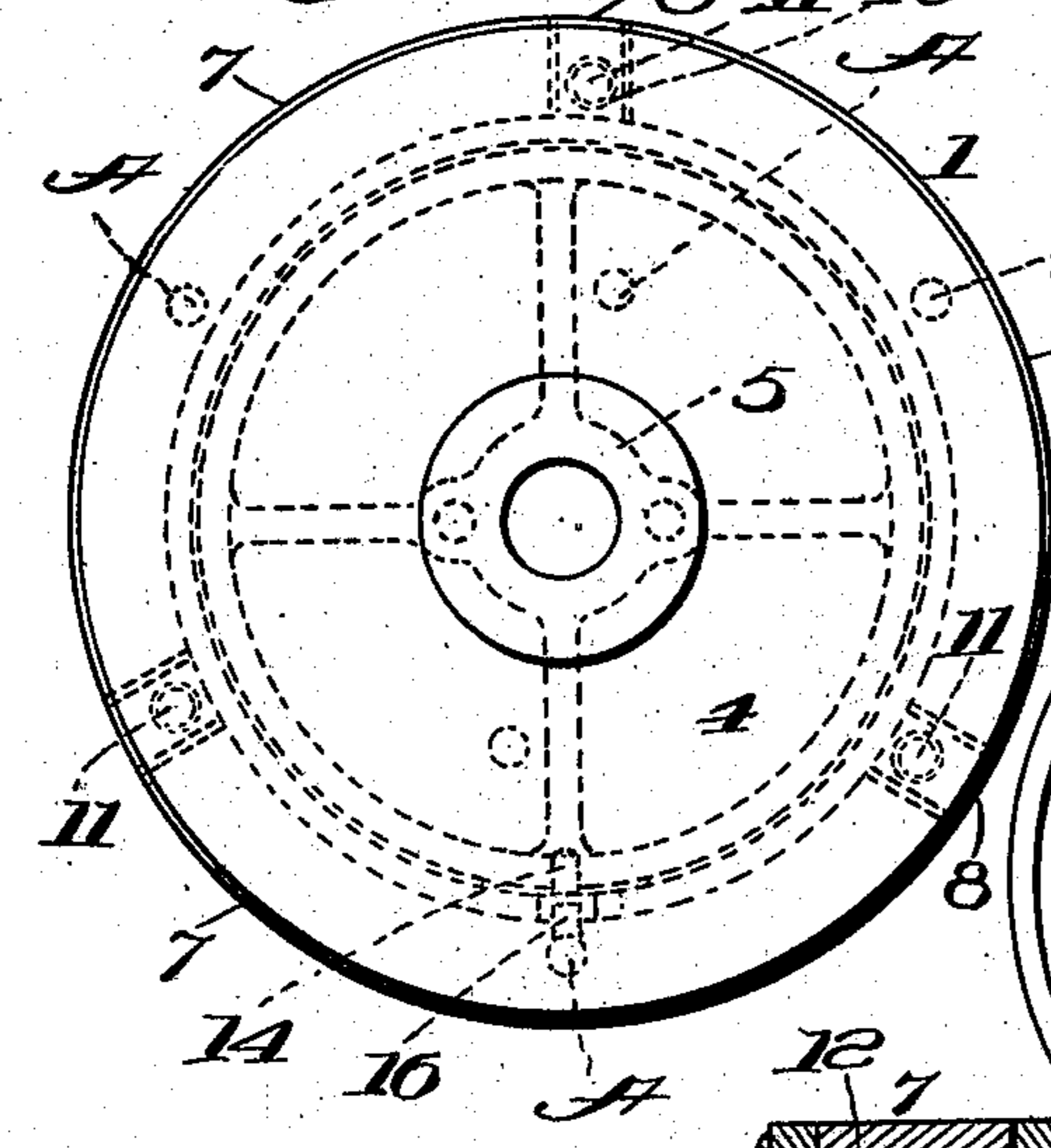
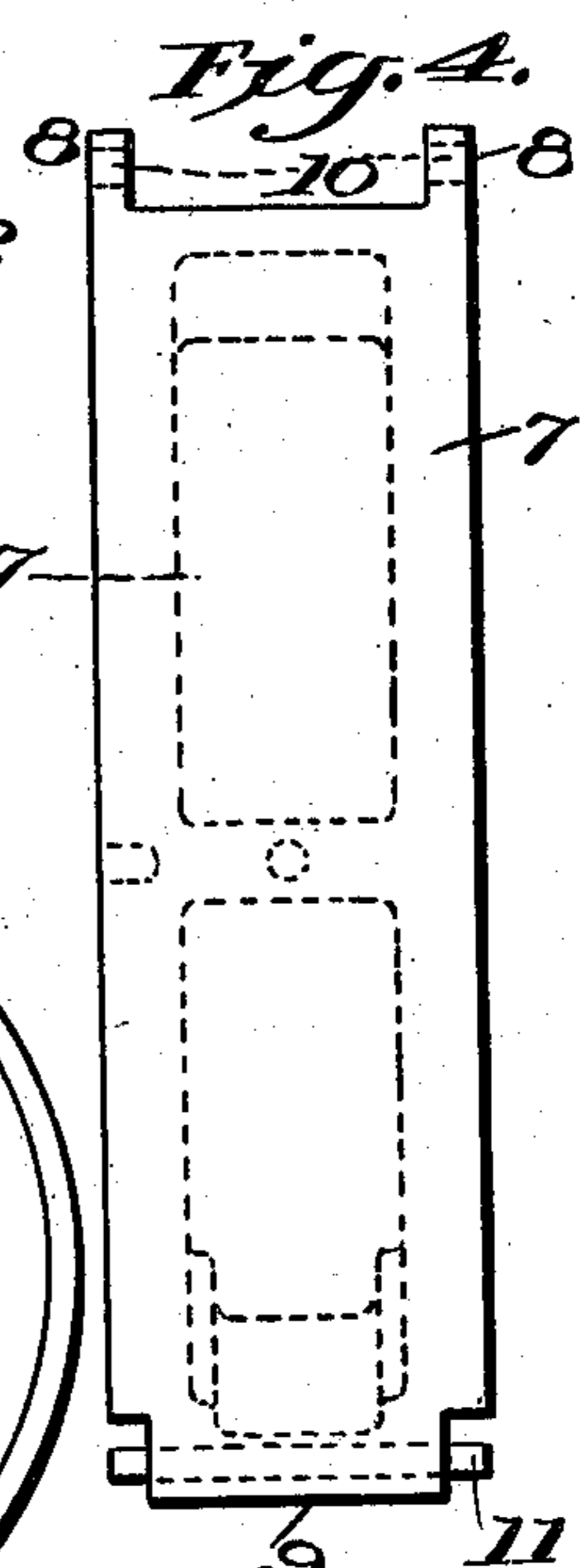
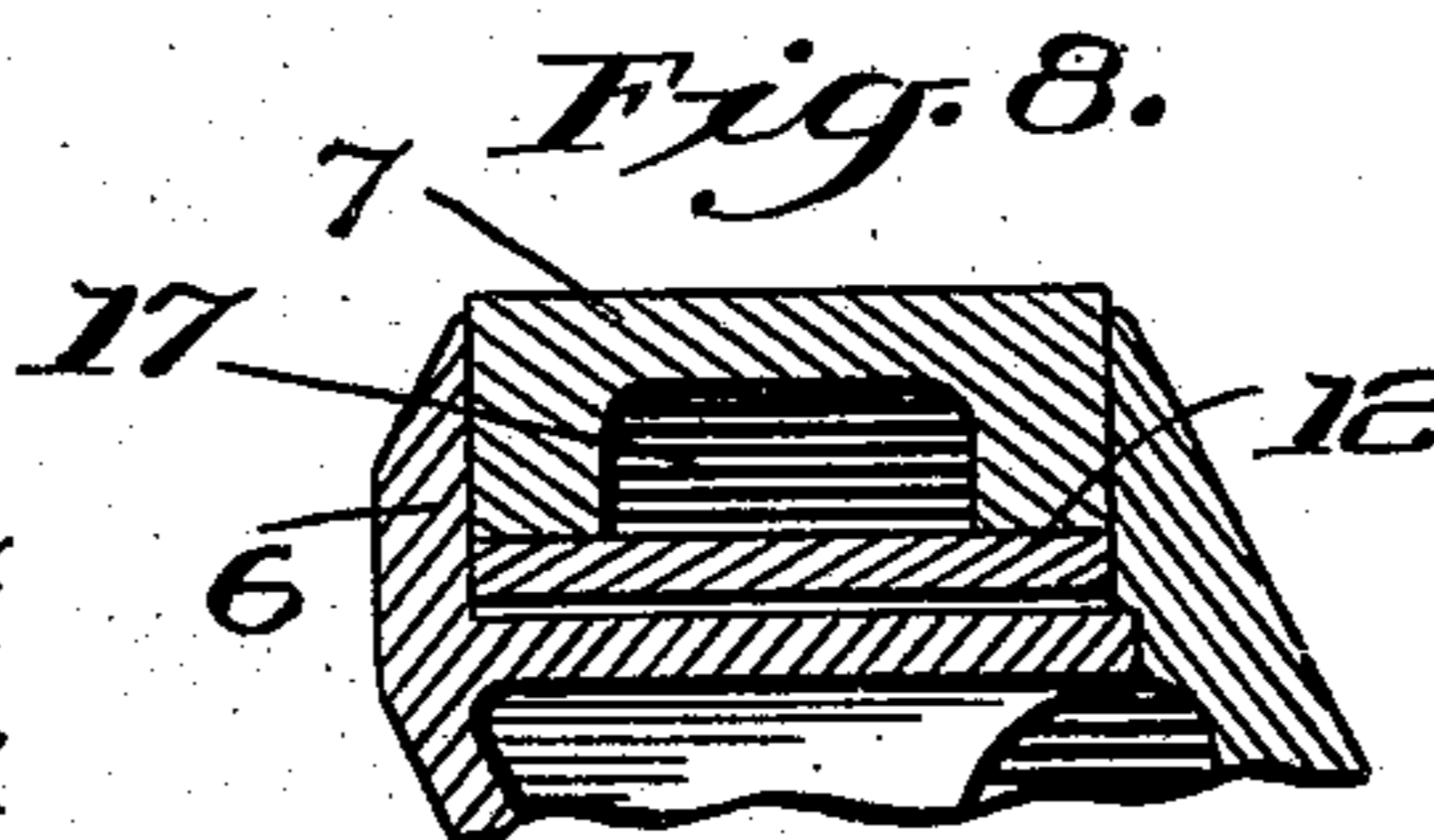
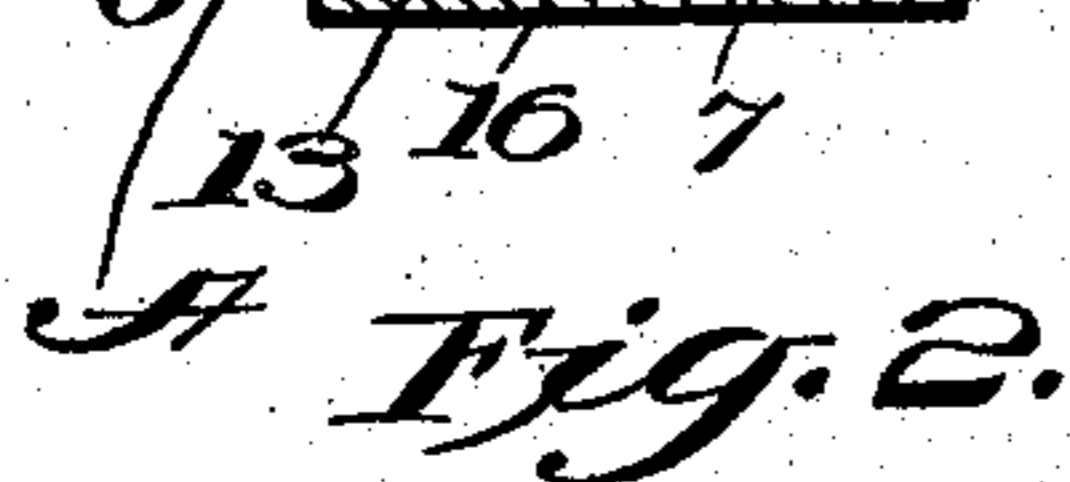
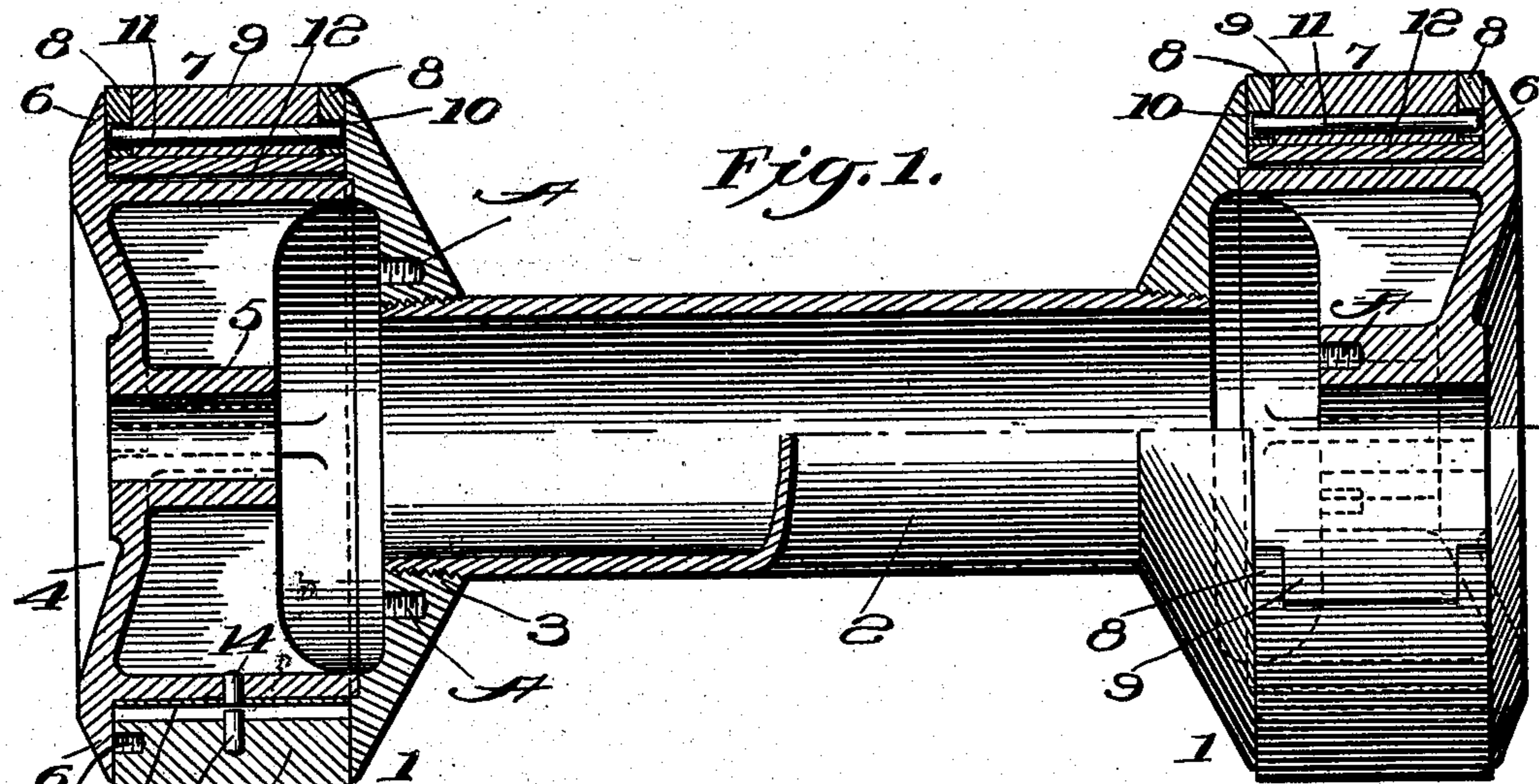
No. 885,650.

PATENTED APR. 21, 1908.

J. A. SCOTT.
PISTON VALVE.

APPLICATION FILED MAY 14, 1906.

2 SHEETS—SHEET 1.



Witnesses:
Allan J. Ford.
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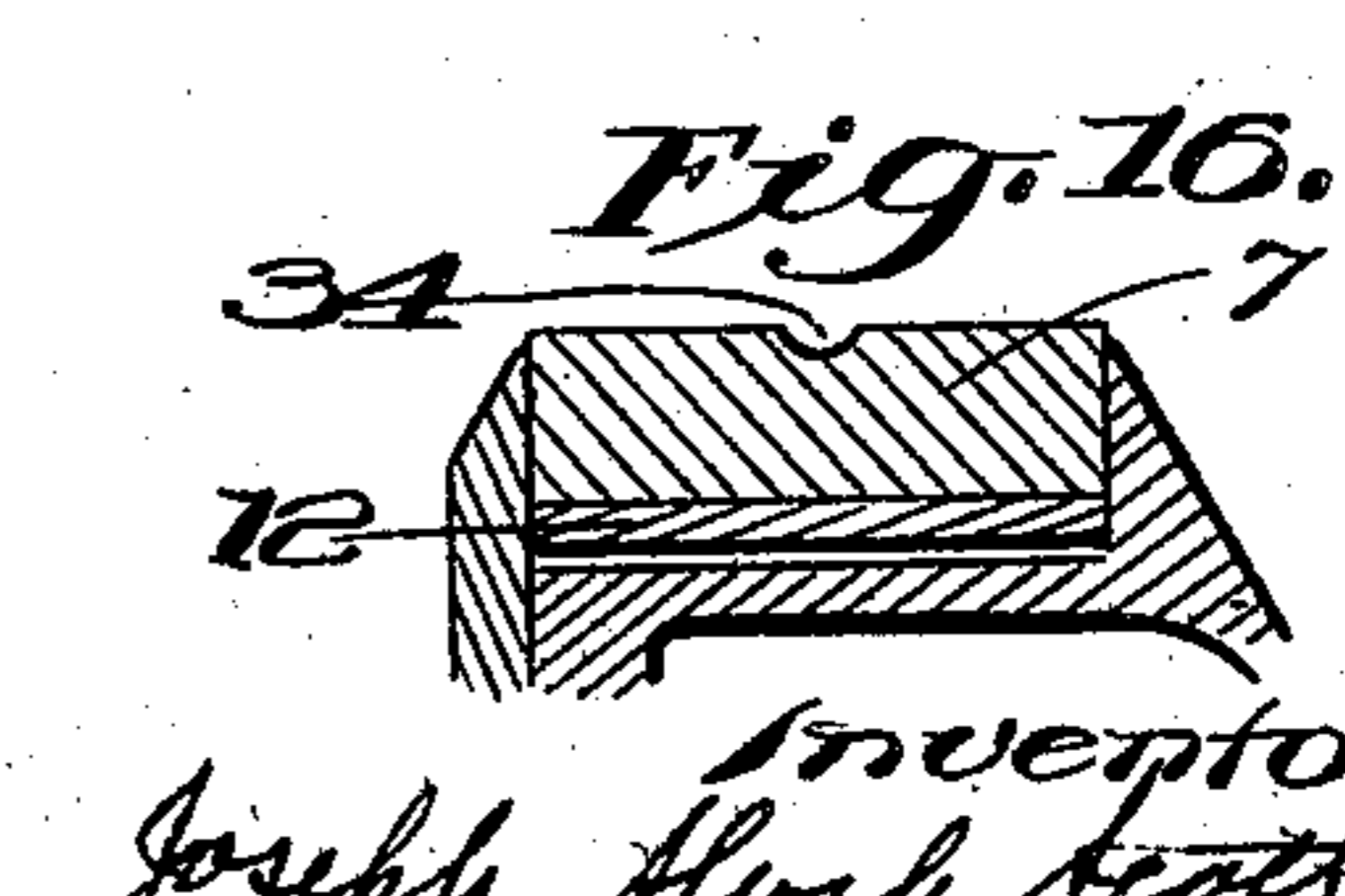
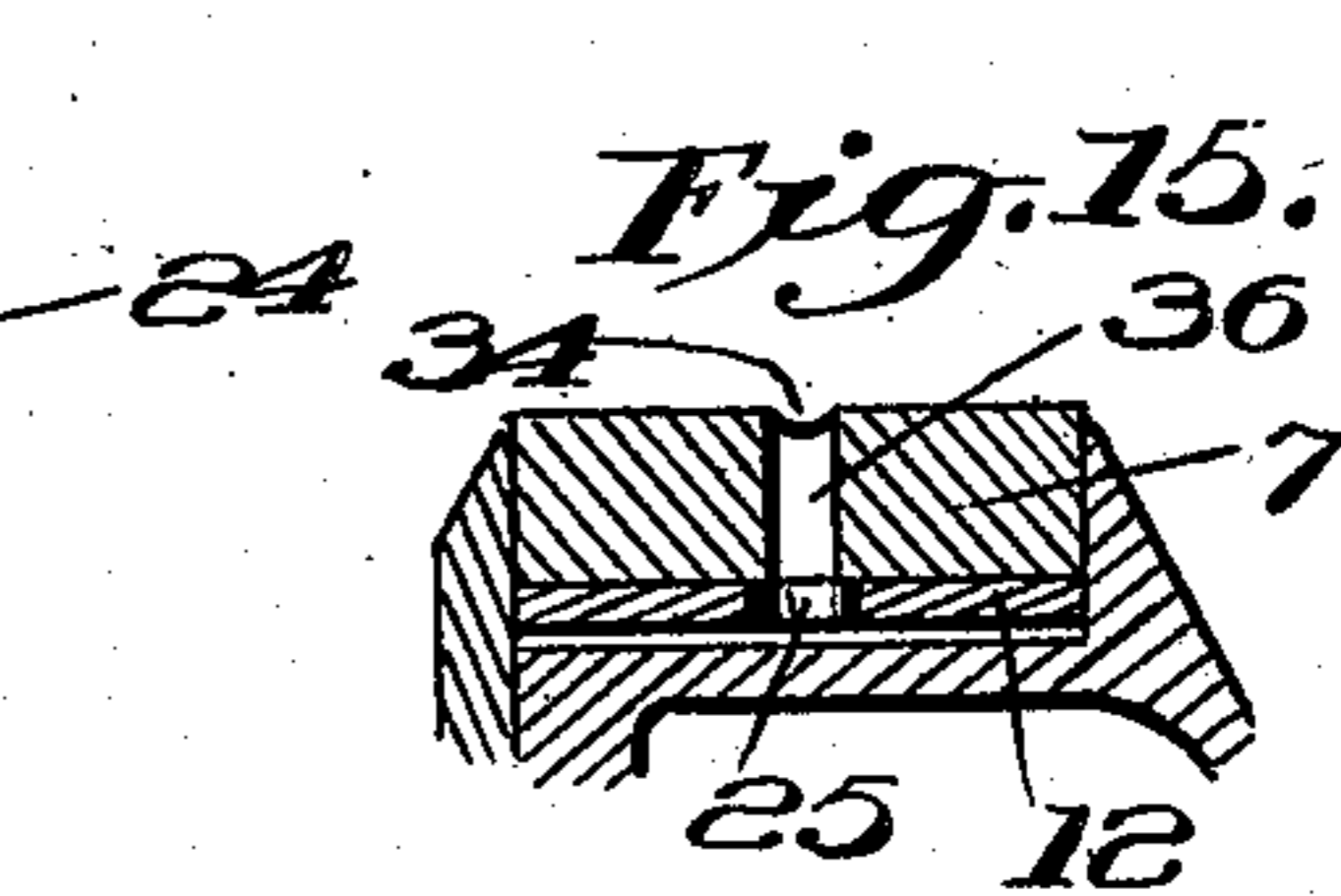
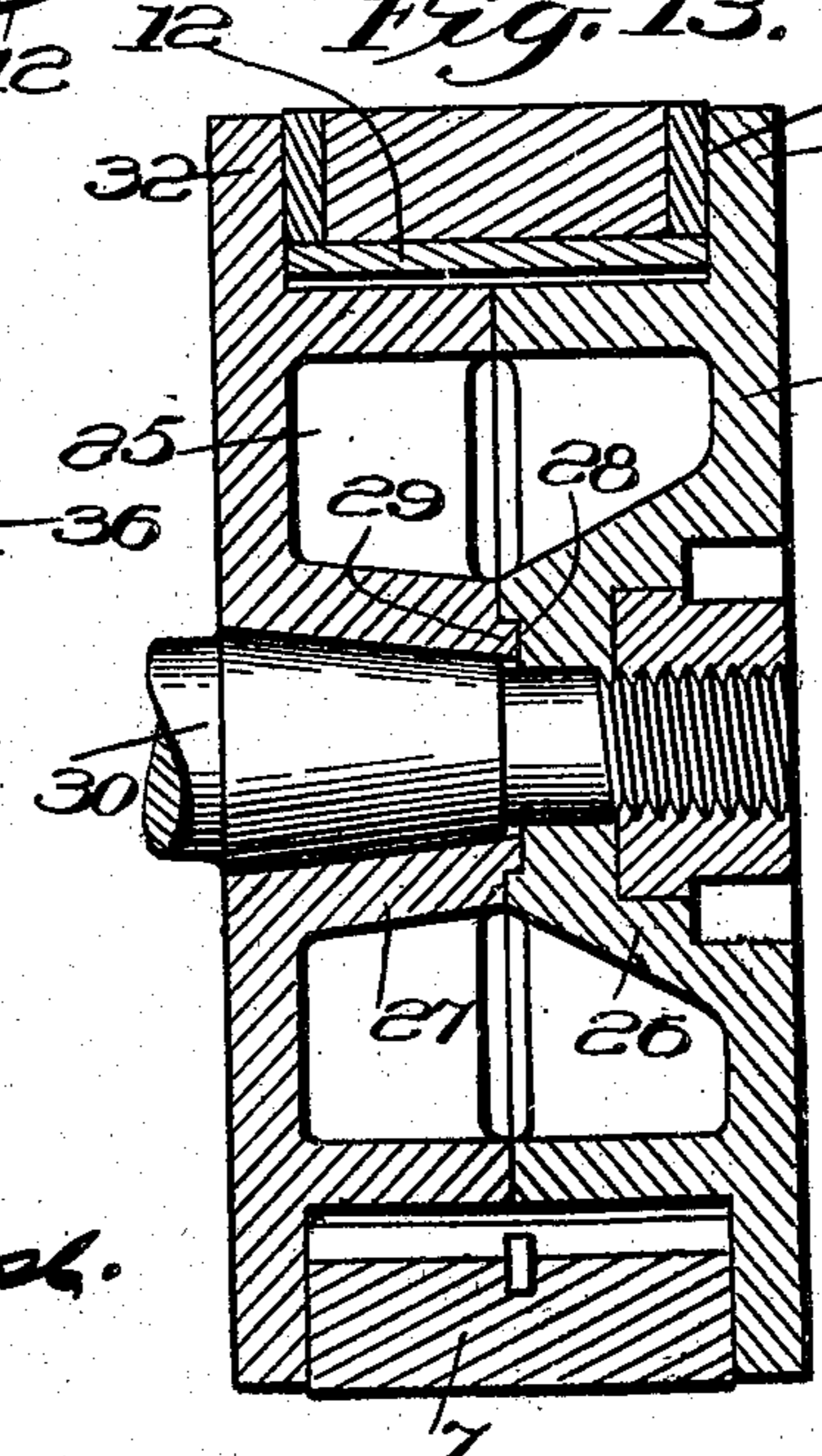
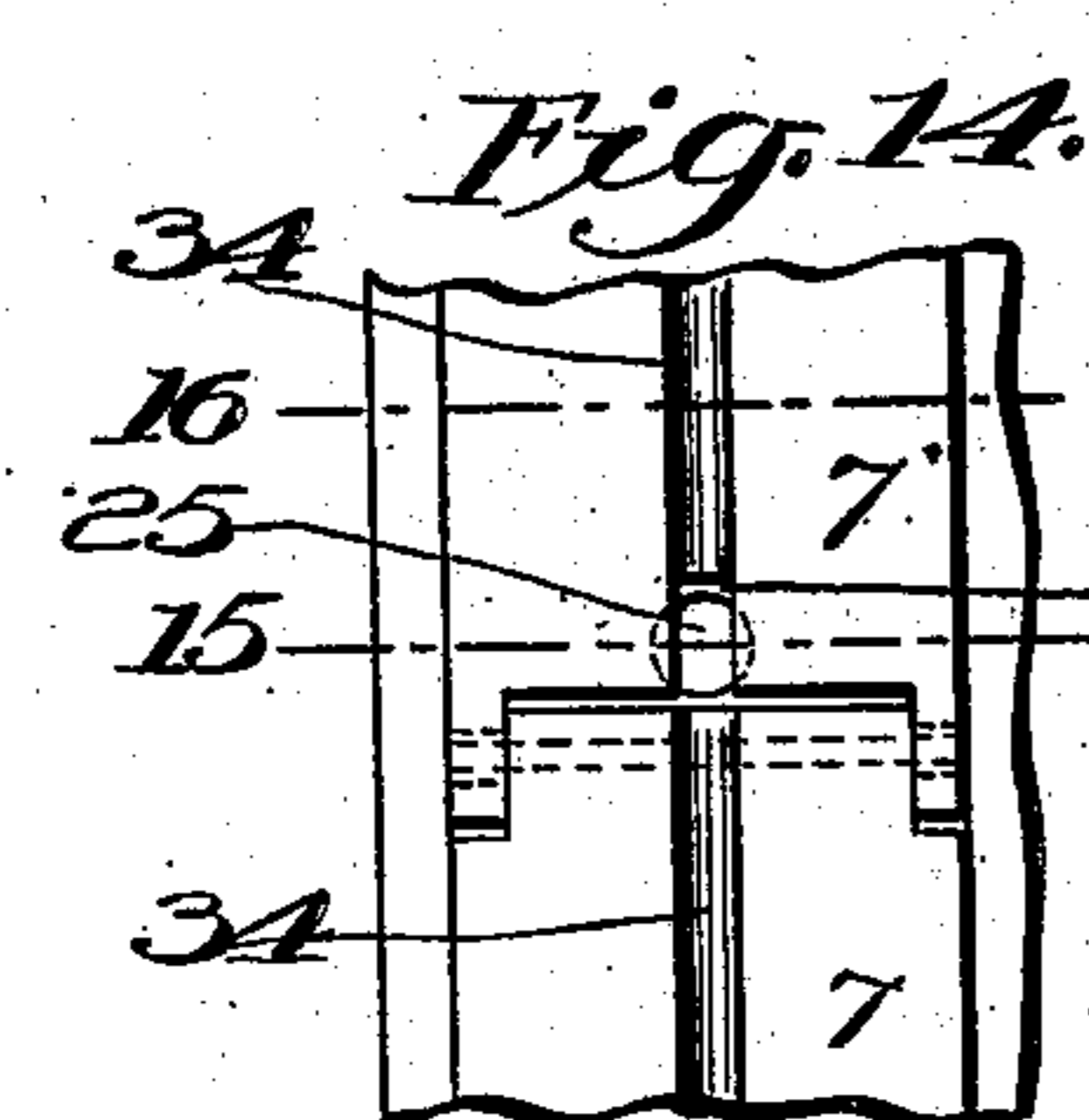
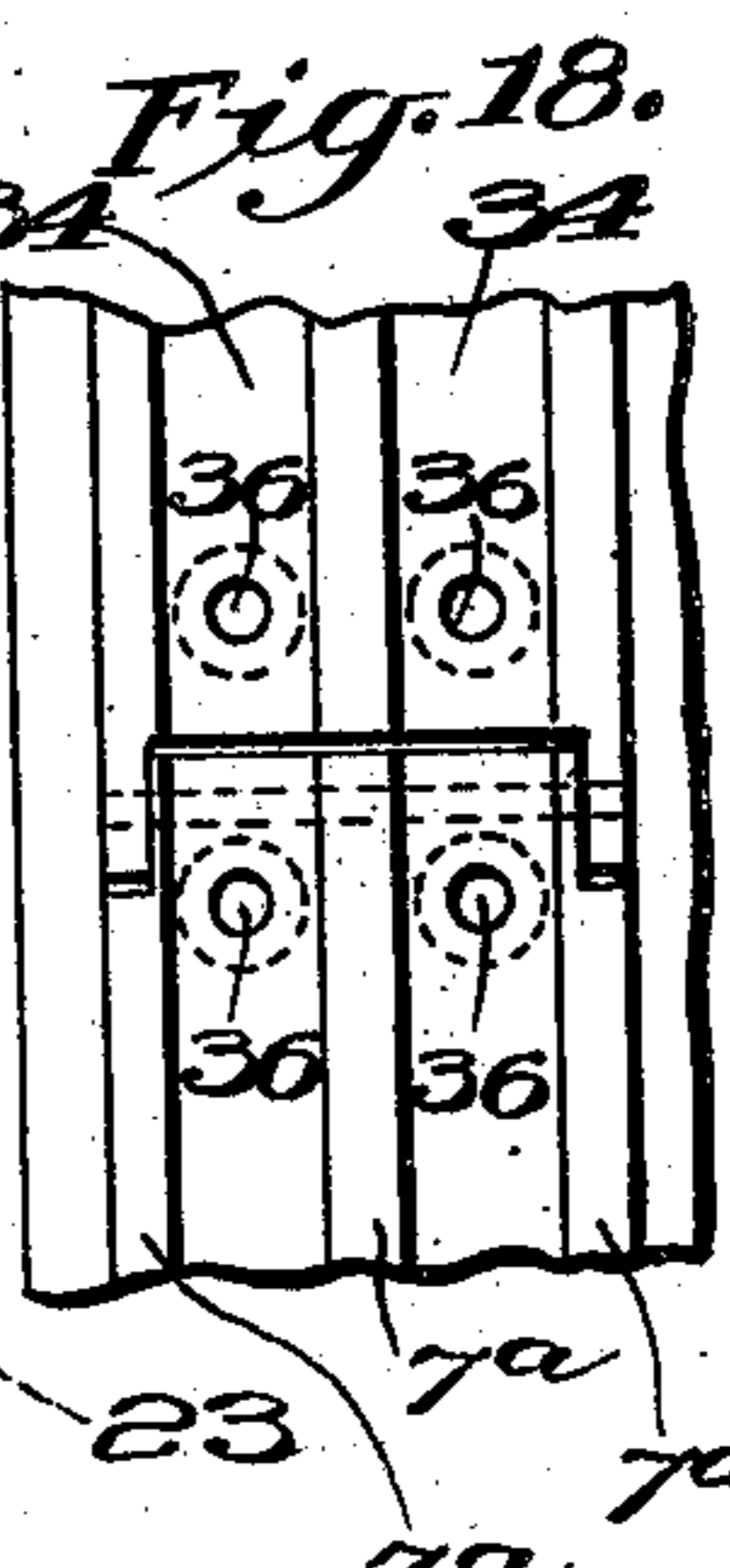
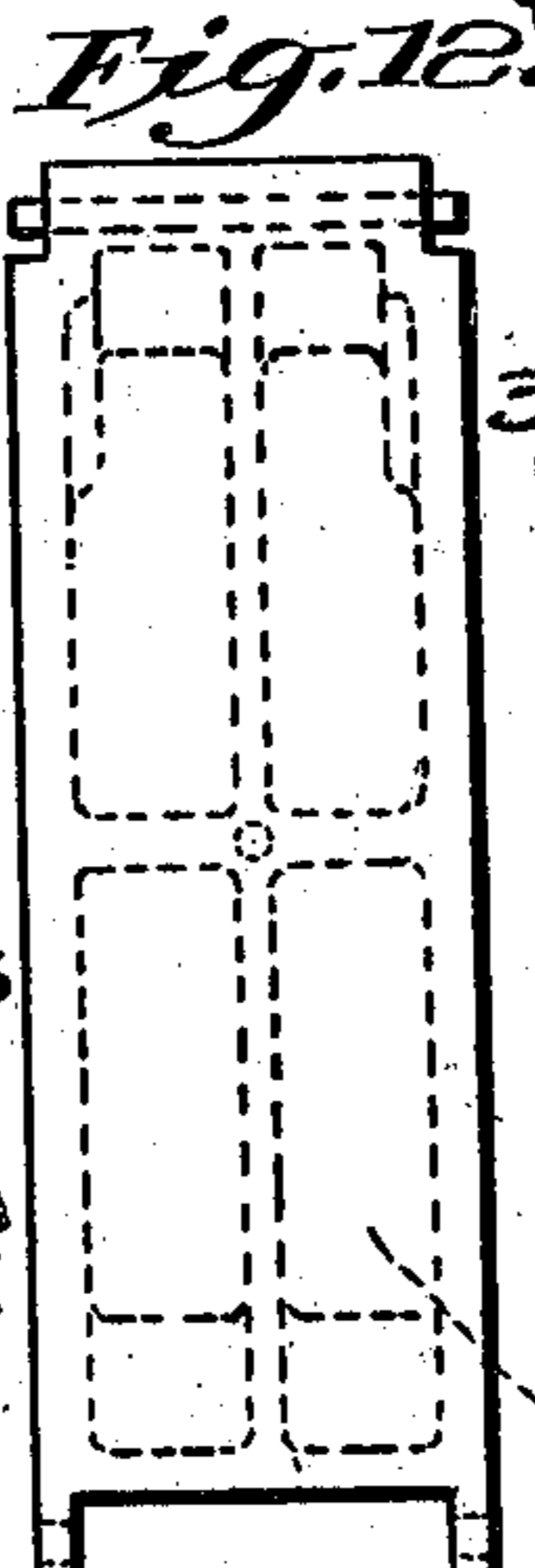
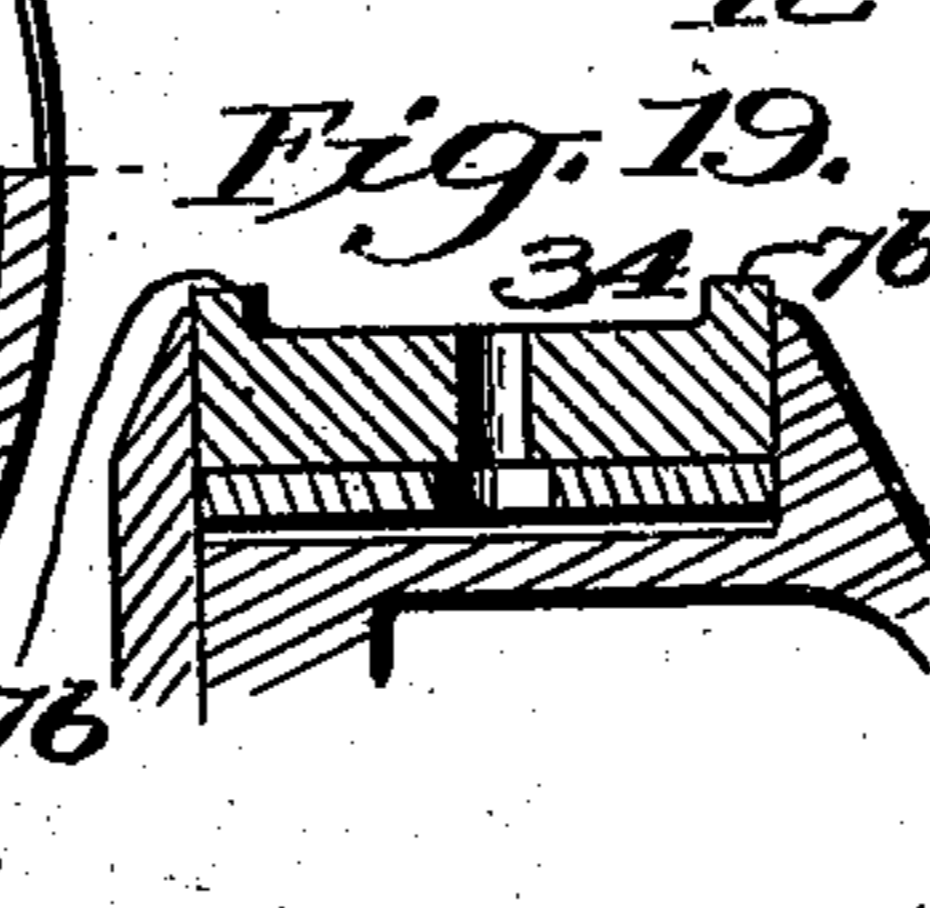
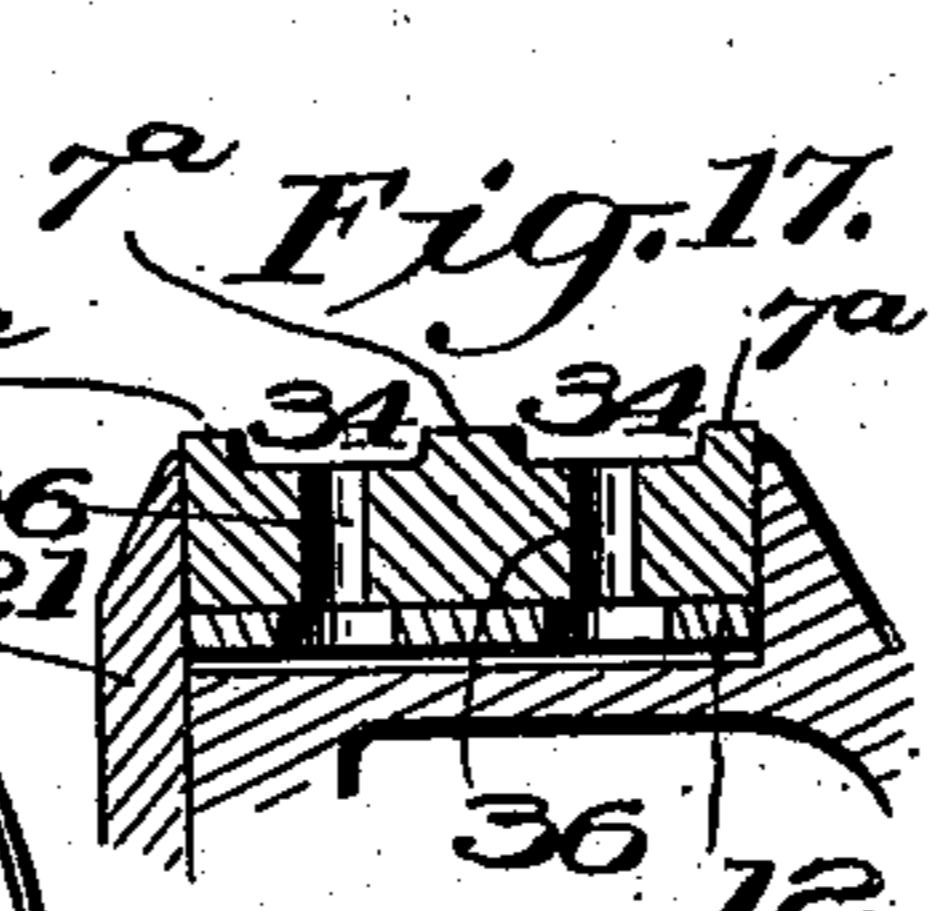
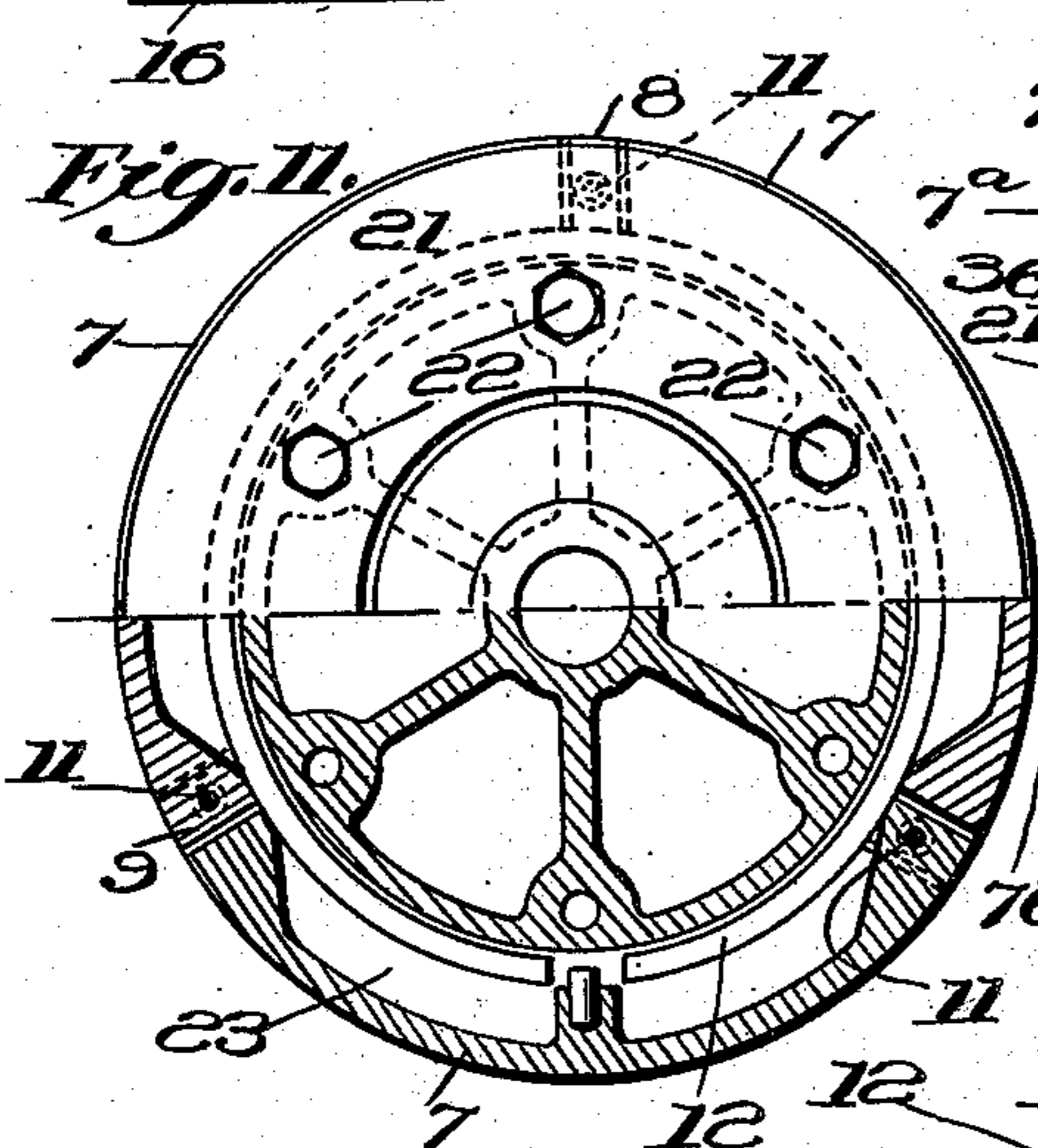
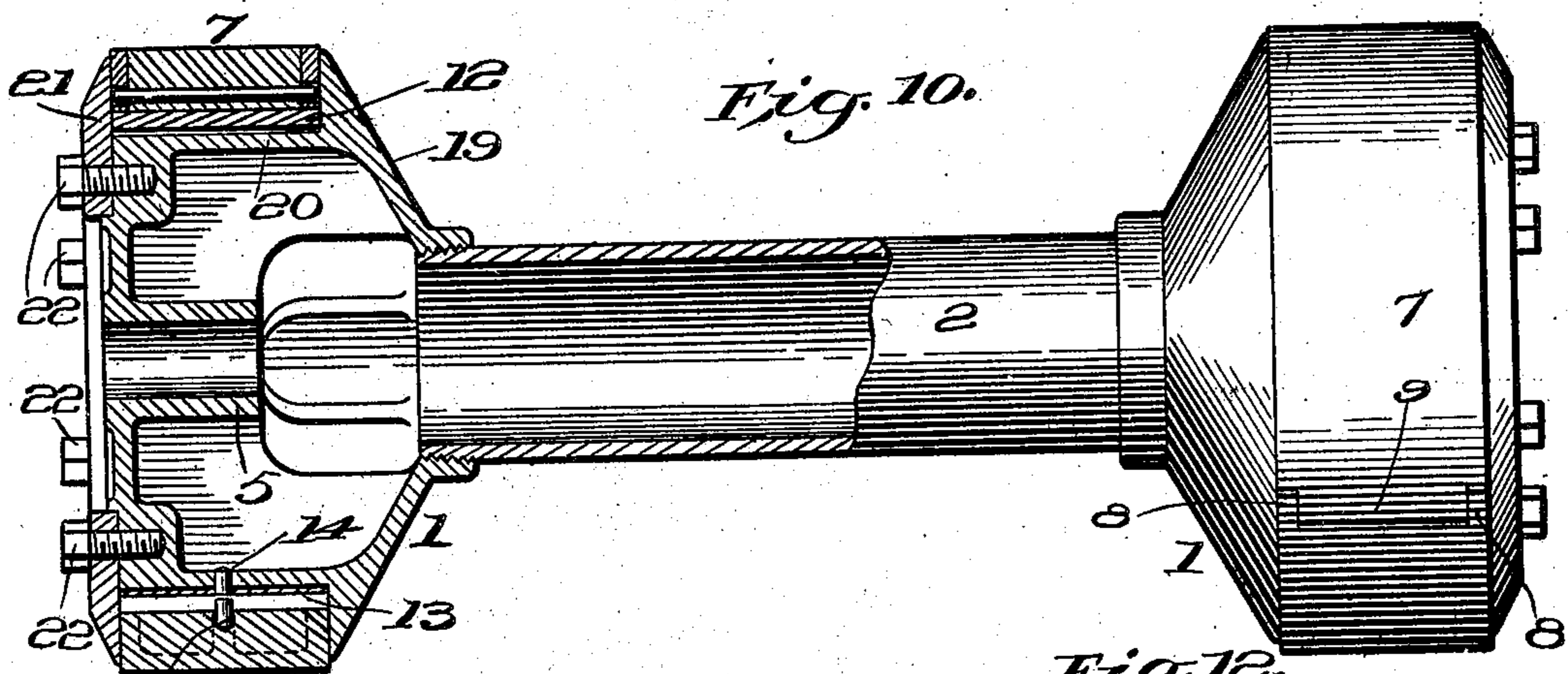
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J. A. SCOTT.
PISTON VALVE.

APPLICATION FILED MAY 14, 1906.

2 SHEETS—SHEET 2.



Witnesses:
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J. W. Richards.

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UNITED STATES PATENT OFFICE.

JOSEPH ALVAH SCOTT, OF NEW YORK, N. Y., ASSIGNOR TO COCKBURN BARROW & MACHINE COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PISTON-VALVE.

No. 885,650.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed May 14, 1906. Serial No. 316,660.

To all whom it may concern:

Be it known that I, JOSEPH ALVAH SCOTT, a citizen of the United States, and a resident of the city and State of New York, have invented certain new and useful Improvements in Piston-Valves, of which the following is a specification.

My invention relates to piston valves.

The object will be fully understood from the hereinafter description.

The invention is illustrated in the accompanying drawings in which the same reference character indicates the same part in the different views.

Referring to the drawings, Figure 1 represents a side elevation partly in section, of one form of valve embodying my invention. Fig. 2 is an end view thereof. Fig. 3 is a view of the split expanding packing ring. Fig. 4 is a view of one of the segments of which the packing is composed. Fig. 5 is a detail of one form of connection between the segments. Fig. 6 is a plan view of another form of connection between said segments. Fig. 7 is a side view of the same. Fig. 8 is a detail in cross section showing a modified form of segment. Fig. 9 is a longitudinal section showing a modification of the valve piston. Fig. 10 is a view similar to Fig. 1, showing still another modified form of general construction of valve, and especially the piston. Fig. 11 is an end view of Fig. 9, partly in transverse section. Fig. 12 is a view of the modified form of segment used with said construction. Fig. 13 is a view in section of still another modification of the piston. Fig. 14 shows a modified construction of the expanding ring in segment. Fig. 15 is a section on line 15 of Fig. 14. Fig. 16 is a section on line 16 of Fig. 14. Fig. 17 is a cross section of another modification of the segment and expanding ring. Fig. 18 is a plan view of the same. Fig. 19 is a cross section of another modification.

In the embodiment of my invention shown in Figs. 1 to 5 inclusive, the valve comprises the pistons 1 which are connected together by a tube or pipe 2, which is screw-threaded at its ends to receive the flanges 3 forming part of the respective pistons. Of course, it is understood that these flanges may be secured by other means than by screw-threads. The pistons being alike in construction, a description of one is sufficient for both.

Upon the flange 3 is mounted a packing holding head 4, having a hub 5 through which a rod (not shown) is passed to hold the heads of the respective pistons upon the flange 3. The head 4 is provided with a flange 6, between which and the flange 3 the expanding ring 12 and the packing are mounted and held. This packing comprises a plurality of segments 7 which, are more clearly shown in Fig. 4, the segments being provided at one end with a pair of jaws 8, and at the other end with a corresponding tongue 9, said jaws and tongue being provided with holes 10 to receive a connecting or dowel pin 11, by which the segments are connected together by hinge joints. The holes 10 in the jaws 8 are of larger diameter than the connecting pin 11 whereby the segment will be permitted to contract and expand when the pins and holes are concentric to each other, the expansion being caused by the expansion ring behind the segments tending to force said segments outwardly against the walls of the valve chamber, and the contraction being due to the pressure between the walls and the said segments. When the pins are placed eccentrically in the holes, as shown by Figs. 6 and 7, there can be no further expansion of the segments due to the pressure of the expanding ring, but there is permitted a limited contracting movement of the segments due to pressure on the peripheries of the segments.

In order to keep the expansion ring and the segments properly centered in a horizontal construction of valve and piston, I place a filler 13 between the expansion ring and cap, as clearly shown in Fig. 1. To maintain this filler in its proper place and to prevent its shifting, I secure to the head, a pin 14 which projects into an opening in said filler.

To hold the joints between the segments 7 and the joint 15 of the expanding ring 12 in staggered or brake-joint relation to each other, one of the segments is provided with a pin 16 which projects between the ends of said split ring, thereby keeping them from turning and preventing access of steam between the head 4 and said ring 12.

In Figs. 4 and 7, the segments are shown as cored at 17 on their inner surfaces to reduce the weight thereof and the amount of material used therein.

In the modified construction shown by

Fig. 9, the hub 5 is dispensed with and the face of the head is provided with an opening 18 to receive the securing rod.

In Fig. 10 instead of the flange 3, as shown in Fig. 1, the packing supporting the piston consists of a single casting 19, having a flange 20, and the packing composing the segments and expanding ring are held in place thereon by an annular ring or follower plate 21 secured to the casting by the bolts 22. In this construction, the segments, more clearly shown in Figs. 11 and 12, are also cored at 23 on their inner faces for lightness.

In the modification shown by Fig. 13, the piston consists of two complementary castings 24 and 25, having hubs 26 and 27, respectively. The inner end of one of said hubs is provided with an annular recess 28 to receive an annular lip 29 on the other segment, whereby the castings 26 and 27 are held in alinement when secured together by the rod 30, which connects the two parts of the piston together. Each of these castings has flanges 31 and 32 which form the annular receiving recess 33 for the expanding ring 12 and segments 7.

In Figs. 14, 15 and 16, the segments 7 are shown as provided with an annular groove 34 on the periphery thereof. The expanding ring near each end thereof, is provided with a hole 25 which is in alinement with a hole 36 in the segment and which communicates with the annular groove in the segments. By this construction, the pressure of any steam which may have entered between the ring 12 and the head of the valve will be equalized with the pressure, if any exists, in the groove 34. This will force the segments to contract to a certain extent or ease them, and thereby prevent them from binding against the side of the valve chamber due to the internal pressure against the said segments. Figs. 17 and 18 show a modification of this construction, in which the segments are provided with two grooves 34, each of which communicates with the opening in the expanding ring through the openings 36 in the segments. By this construction, the bearing surfaces of the segments against the valve chambers are reduced to the annular parts marked 7^a. In the modification shown by Fig. 19, these bearing surfaces are still further reduced by widening the groove 34, leaving two slightly narrow bearing surfaces 7^b on the periphery of the packing formed by the segments.

I have provided certain parts of this construction with screw-threaded tap openings 60 A for the purpose of putting in screw-threaded bolts or tools to separate and handle the parts as they are assembled or taken apart.

As many changes could be made in the above construction and many apparently 65 widely different embodiments of my inven-

tion could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. I desire it also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, in which, as a matter of language, might be said to fall therebetween.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A packing, comprising a plurality of segments, each segment having connecting jaws and tongues at opposite ends, and pins passing through said jaws and tongues to connect said segments together.

2. A packing comprising a plurality of segments having jaws and tongues at their opposite ends, said jaws and tongues having openings therein, and pins passing through said openings to connect the segments together and to permit them to have a hinged connection, said pins being of less diameter than the holes to permit expansion and contraction of said segments.

3. A device of the class described, having an annular recess, packing in said recess comprising a series of segments connected together to permit expansion and contraction of the same, and an expanding ring between the said segments and a head.

4. A device of the class described, having an annular recess, a head packing in said recess comprising a series of segments connected together to permit expansion and contraction of the same, an expanding ring acting upon the said segments, and a filler between said expanding ring and head.

5. In a device of the class described, a head having an annular recess, a packing in said recess comprising a series of segments connected together to permit expansion or contraction, an expanding split ring interposed between said segments and head, and means to maintain the joints between the segments and the said split ring in staggered relation to each other.

6. In a device of the class described, a head having an annular recess, packing in said recess comprising a series of segments connected together, said segments having an annular groove on the periphery thereof, one or more of the segments having holes therethrough, and an expanding ring between the head and segments having a hole in one end thereof which communicates with the hole of the segment.

7. In a device of the class described, a head having an annular recess, packing in said recess comprising a series of segments, each segment having an annular groove on the pe-

riphery thereof, one or more of the segments
having a pin extending therethrough, an ex-
panding ring between the segments and the
head, said ring having an opening therein
5 which communicates with an opening in the
segments, and means to prevent the seg-
ments and the ring from moving in an axial
relation to each other.

In witness whereof I have hereunto set my
hand at the city, county and State of New 10
York, this 12th day of May, 1906.

JOSEPH ALVAH SCOTT.

In presence of—

HENRY BOSSONG,
JOHN J. RANAGAN.