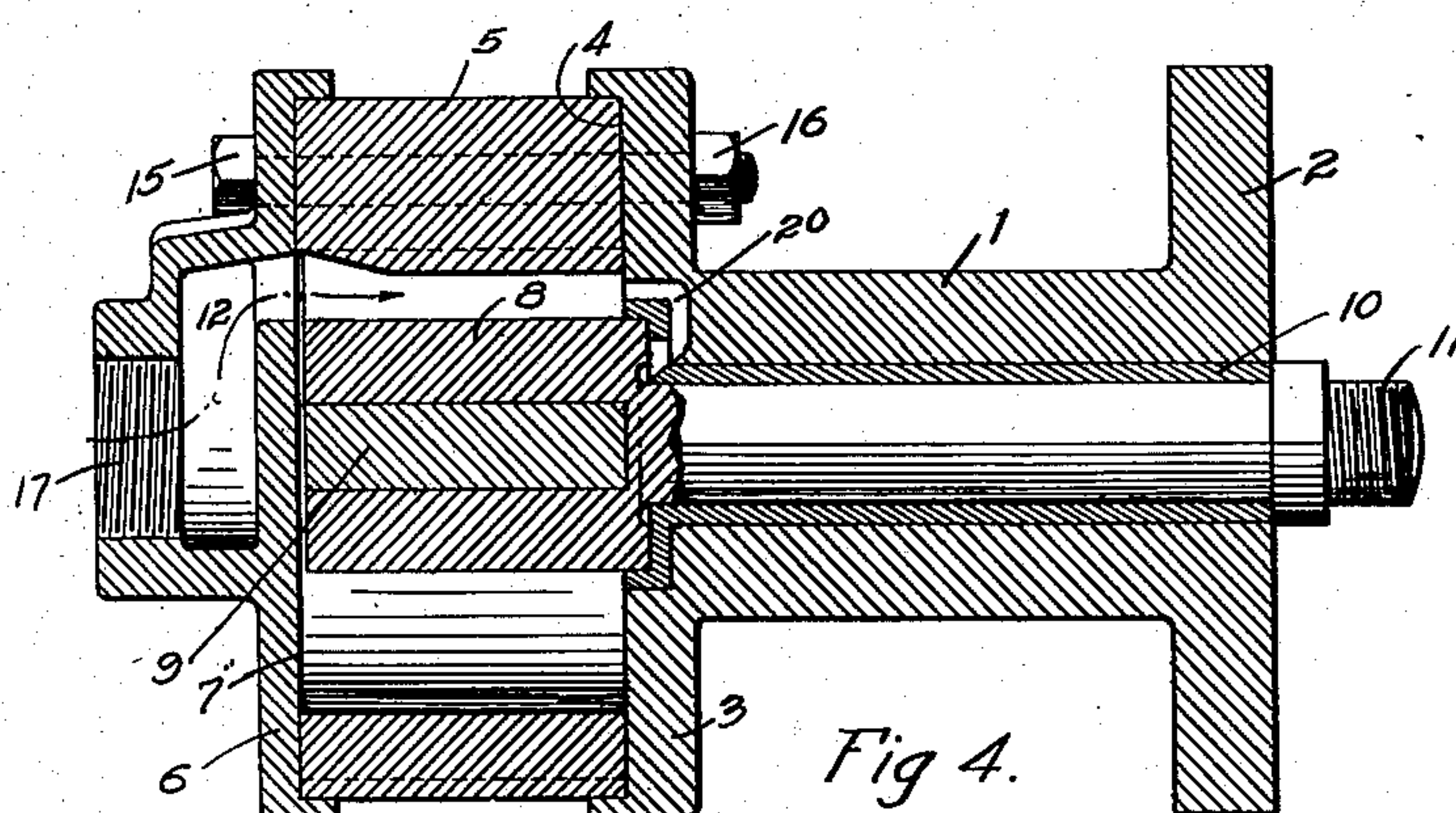
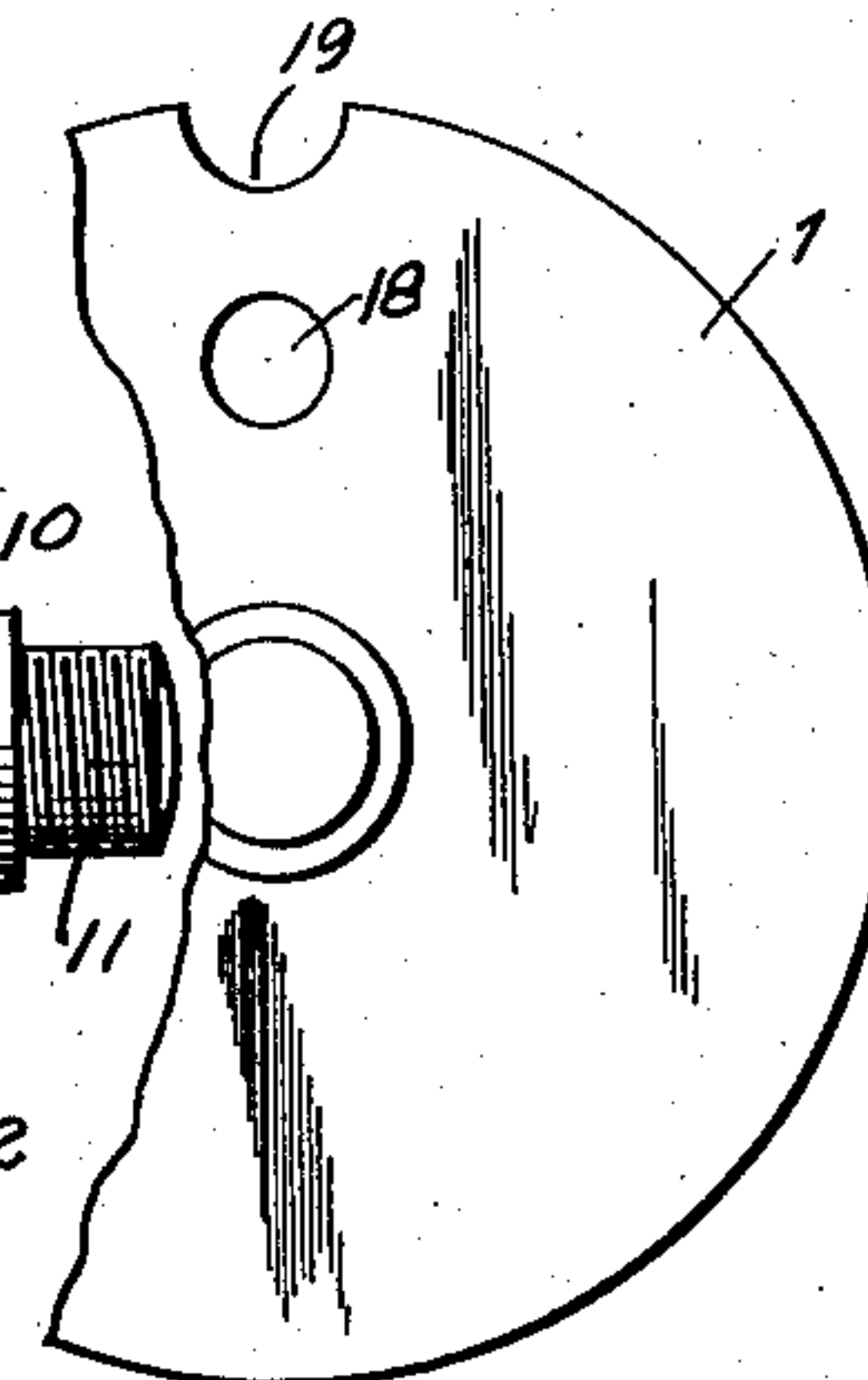
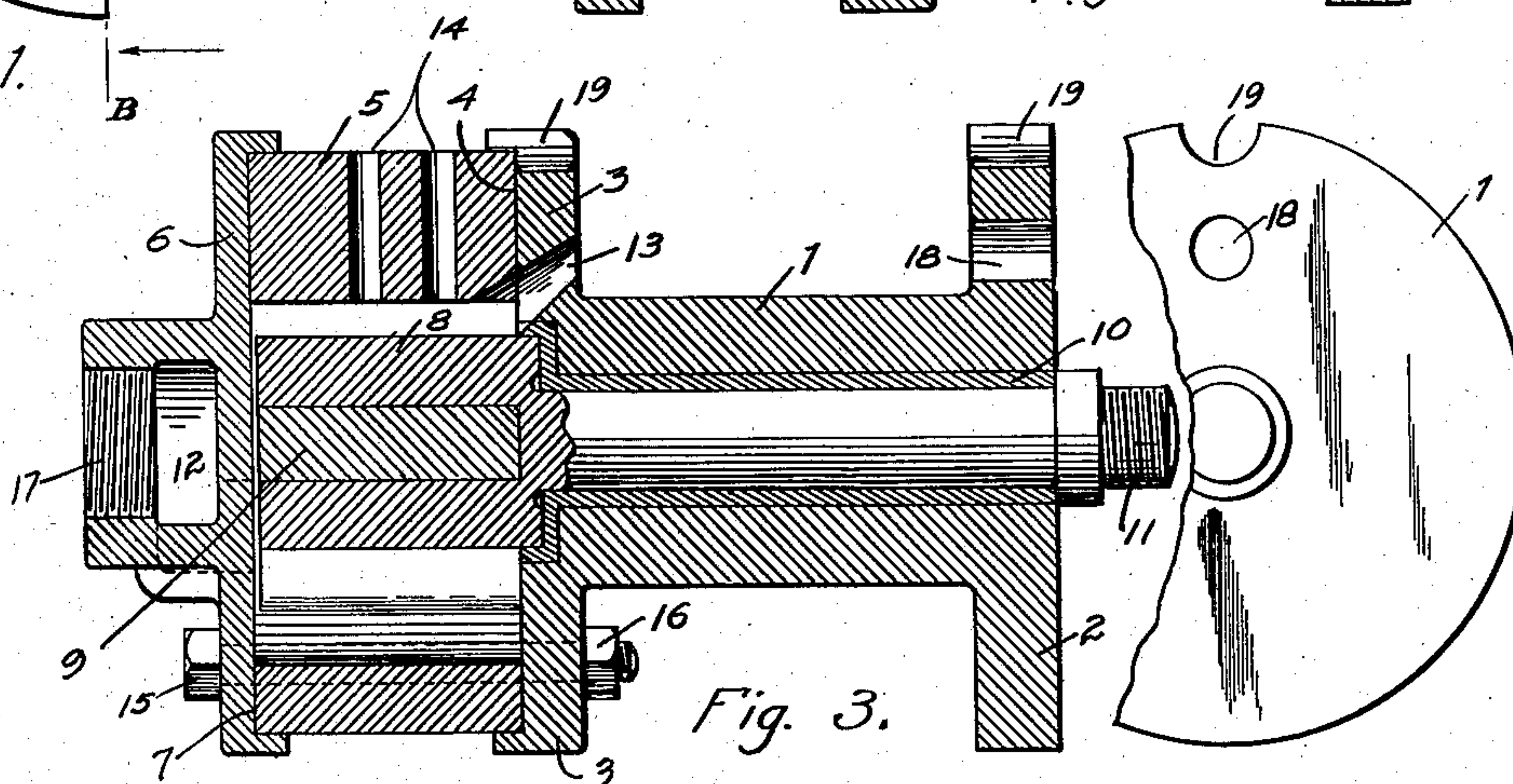
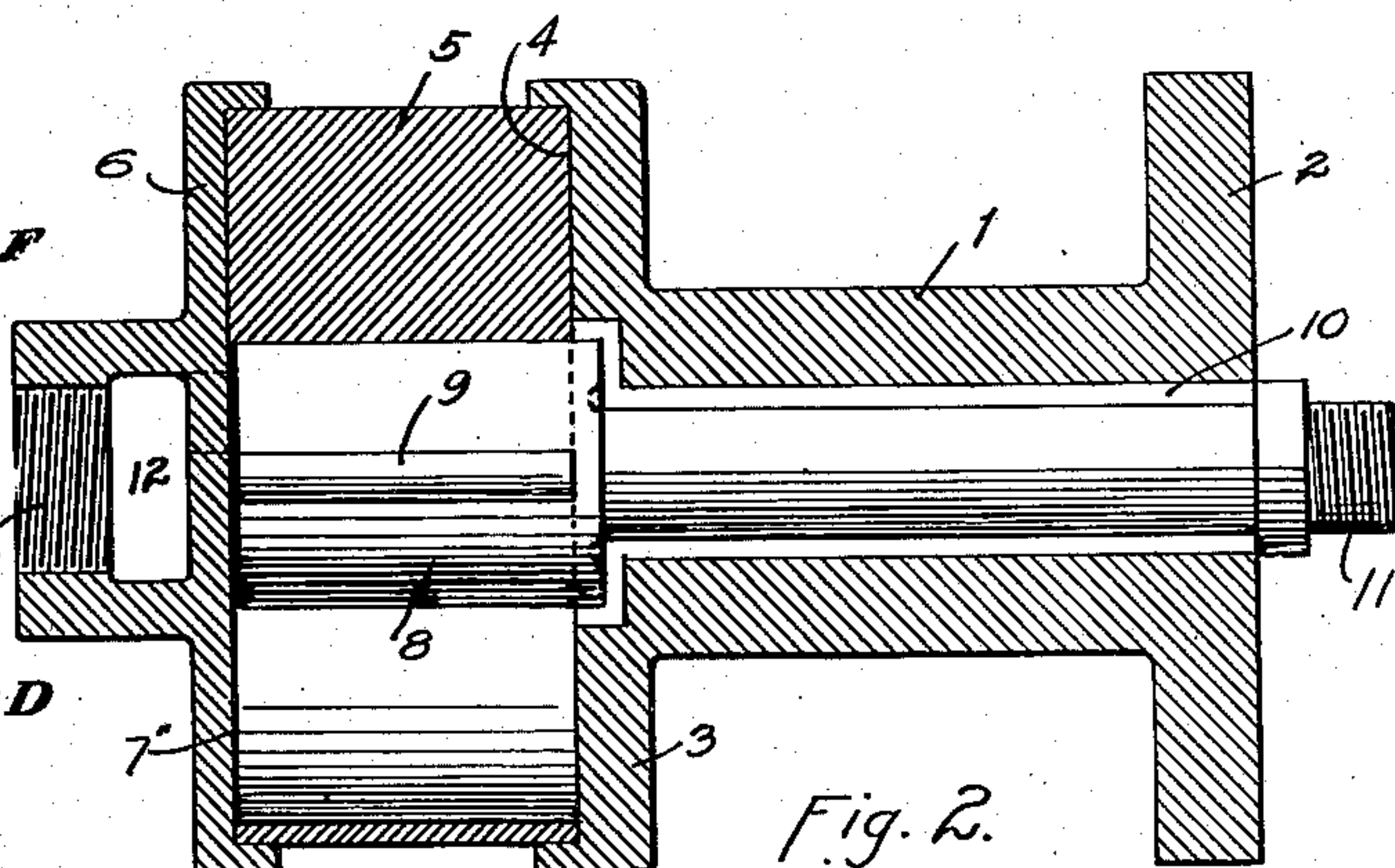
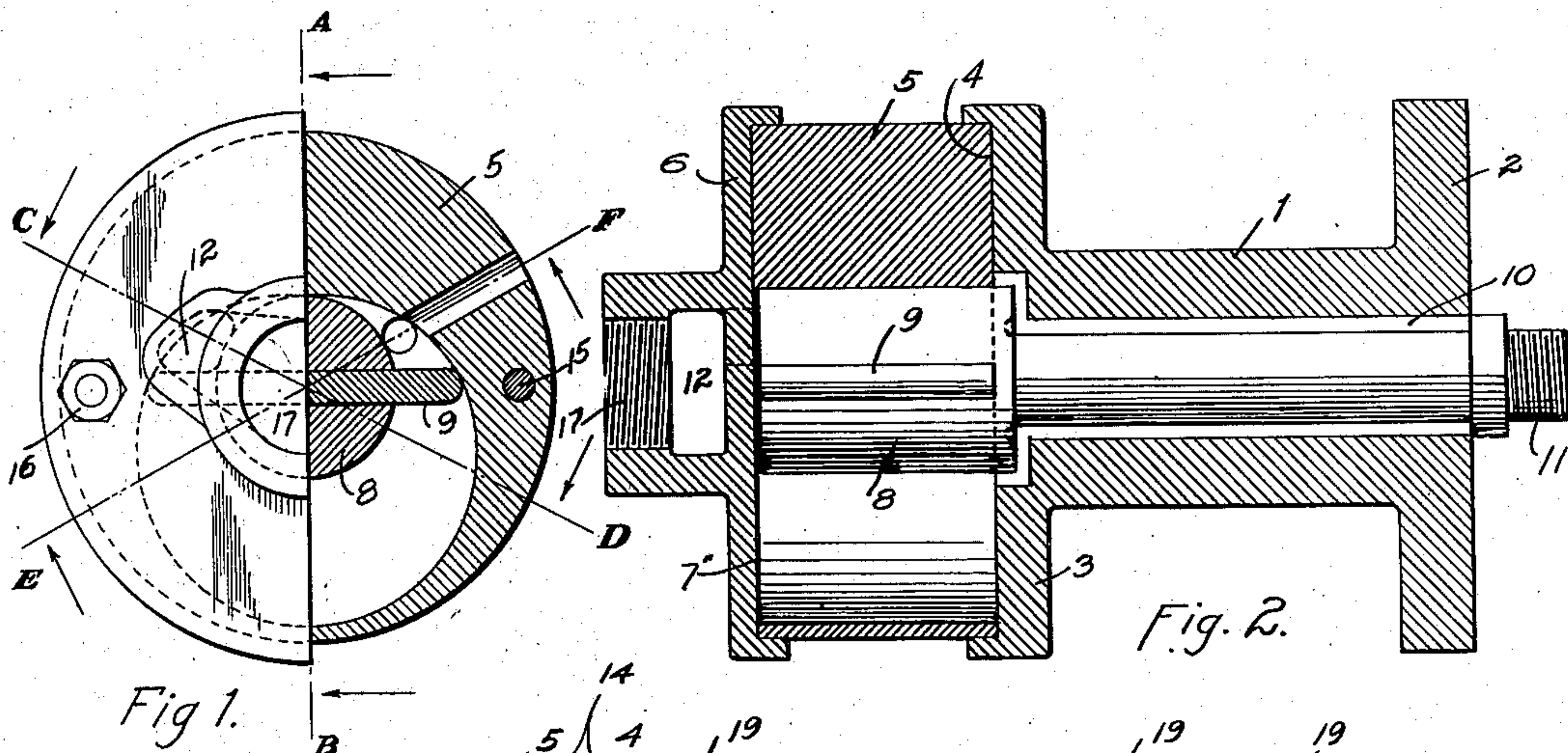


No. 885,731.

PATENTED APR. 28, 1908.

P. J. DARLINGTON.
ROTARY MACHINE.

APPLICATION FILED SEPT. 10, 1907.



WITNESSES:

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PHILIP J. DARLINGTON, OF PITTSBURG, PENNSYLVANIA.

ROTARY MACHINE.

No. 885,731.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed September 10, 1907. Serial No. 392,148.

To all whom it may concern:

Be it known that I, PHILIP J. DARLINGTON, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have
5 invented a certain new and useful Improvement in Rotary Machines, of which the following is a full, clear, and exact description.

My invention relates to the general class of rotary machines and as described and illustrated herein is more particularly adapted to
10 that kind of machine which is designed to be passed through boiler tubes and is used in connection with boiler tubes to remove the scale therefrom. It will be evident however
15 that my improvements are adapted for other purposes than that just described.

One of the objects of my invention is to simplify the construction of rotary machines and to reduce the cost of manufacturing the
20 same and to so adapt it that it may be readily used for various sizes of boiler tubes as well as for general purposes where rotary machines are employed.

Moreover by means of my invention the
25 parts of my machine are easily inspected and repaired; these and other advantageous features resulting from the employment of my device will be readily seen to those who are skilled in the art.

30 Referring to the drawings Figure 1 is a view partly in plan and partly in section of my rotary machine. Fig. 2 is a section taken on the line A—B of Fig. 1. Fig. 3 is a section taken on the line E—F of Fig. 1. Fig. 4
35 is a section taken on the line C—D of Fig. 1. Fig. 5 is a partial end view of Fig. 3.

In the drawings I show a head 1 having at one end the flange 2 and at the other end a flange 3. The flange 3 is provided with a
40 recessed seat 4 into which the casing 5 is adapted to seat. At the opposite end of my machine is a head 6 provided with a recessed seat 7 into which the casing 5 is adapted to seat; the casing 5 being thus held between
45 the recessed seat 4 of the head 1 and the recessed seat 7 of the head 6.

The casing 5 and the heads 1 and 6 are secured together by means of bolts 15 and nuts 16. The casing 5 is provided eccentrically with a longitudinal bore or chamber.
50 Mounted eccentrically in this chamber, and concentrically with reference to the exterior of the casing, is a piston 8 which is slotted, and loosely mounted in the slot is a blade or
55 piston wing 9 adapted when traveling in the bore of the casing 5 to at all times be in con-

tact with the periphery of the bore. The piston 8 is journaled at one end in the split bushing 10 which is mounted in the head 1. The outer end of the piston 8 is screw threaded as shown at 11 and this provides means
60 for attaching thereto any desired tool. The other end of the piston 8 is laterally unsupported and thereby the slot formed in the piston is left open at that end of the piston.
65 By means of this construction the slot in the piston is very cheaply and quickly formed and moreover the piston blade can be quickly placed in the slot and removed therefrom by simply removing the head 6.

70 The head 6 is provided with means, such as the threaded openings 17, for the attachment of the conducting pipe or hose which supplies the motive fluid, which may be either liquid or gaseous. Said head is provided with an inlet port 12, which leads directly into the cylinder 5 and conducts the
75 motive fluid into contact with the blade 9 of the piston 8 to revolve the piston after which it is conducted in part through exhaust port 13 and in part through exhaust ports 14.

80 At 20 I provide a pressure opening which leads from the bore of the casing 5 opposite the inlet port 12 to the rear face of the bushing 10 thereby partially balancing the pressure on the piston 8 and preventing its forward thrust upon bushing 10.

85 In Fig. 5 I have shown at 18 an exhaust port through which the exhaust from port 13 may be carried; and at 19 I have shown a notched opening made in the periphery of the flanges 2 and 3 of the head 1 for the purpose of allowing egress for the exhaust from the ports 14. It will be apparent that the notched opening
90 19 is an alternative construction to that shown at 18, or both the port 18 and the notched opening 19 may be used for the purpose described in the same machine.

95 It should be noted that the piston 8 is always in contact with that portion of the cylinder 5 which is between the inlet port 12 and the exhaust ports already described thus preventing the passage of motive fluid directly from inlet port 12 to the exhaust ports without actuating the blade 9.

100 Having thus described the several parts of my machine I will now describe its operation: Air is admitted through the inlet port 12 and passes thence inside the cylinder 5 behind the blade 9 which it thereby actuates and the
105 blade is thus carried around the periphery of the bore of the casing 5 thus revolving the

piston 8 upon its bearing in the bushing 10 and thereby actuating the tool attached at the end 11 of the piston 8; the air travels back of the blade until it reaches the exhaust ports 13 and 14 when it is conducted partly through the ports 14 exterior to the machine or it may be partly conducted through the exhaust port 13 and thence led through the port 18 exterior to the machine thereby causing a forward movement of the exhaust as it passes from the exhaust port 13 and thence through the ports 18 and 19 exterior to the machine.

It should be noted that my piston is journaled only at one end and thereby the friction of its revolution is diminished and moreover there is no possibility of binding on account of shifting of parts.

It is evident that instead of supporting the heads 1 and 6 by means of the recessed seats 4 and 7 any other suitable means for uniting the heads 1 and 6 and the casing 5 may be employed.

When the air is exhausted through the ports 14 it may be led thence through the notched opening 19 forwardly in the machine and thus the exhaust will be given a forward direction to the exterior of the machine toward the driven tool. While I have shown my device as made up of a rear head 6 and casing 5 and a forward head 1, it is of course possible to combine the casing with either of the two heads.

Having thus described my invention what I claim is:

1. In a rotary machine, the combination with its casing of a piston journaled at one end, means for conducting motive fluid for actuating the said piston and means for partially balancing the pressure of the motive fluid on the rear end of the piston.

2. In a rotary machine, the combination with its casing of a single flanged rear head, a double flanged forward head and means for uniting the said heads and casing.

3. In a rotary machine, the combination of a casing having a piston chamber, and a

piston therein provided with a forward reduced portion journaled in the casing and forming a shoulder with the piston proper, said casing being provided with an inlet for the motive fluid and with a port leading from the chamber to the forward shoulder of the piston to counterbalance the pressure of the motive fluid on the rear end of said piston.

4. A rotary machine comprising a frame provided with a piston chamber and with an axial portion of relatively small diameter and having an enlarged flange at its end, and a rotary piston mounted axially in said frame, the exhaust being from the forward end of said piston chamber and the flange of said frame being provided with an opening for the escape of exhaust.

5. A rotary machine comprising a frame provided with a piston chamber and with a forwardly projecting portion of smaller diameter provided on its end with an enlarged flange, a rotary piston journaled axially in said frame and having a journal portion projecting through said reduced portion and provided with tool carrying means, said piston being slotted, and a piston blade mounted in said slot, the exhaust being from the forward end of said piston chamber and the flange on the reduced portion being provided with an opening for the escape of the exhaust.

6. A rotary tube cleaner, comprising a frame formed with a portion of relatively small diameter having a flange at each end, a rotary piston provided at one end with a slotted portion and journaled at its other end in said small portion of the frame, a piston blade mounted in the slotted portion of said piston, means for furnishing a fluid supply to said piston, and means for conducting the exhaust through the flanges of said frame.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

PHILIP J. DARLINGTON.

Witnesses:

ETHEL A. KELLY,
J. WM. ELLIS.