

No. 803,336.

PATENTED OCT. 31, 1905.

C. V. FRISK.
ENGINE.

APPLICATION FILED APR. 26, 1905.

2 SHEETS—SHEET 1

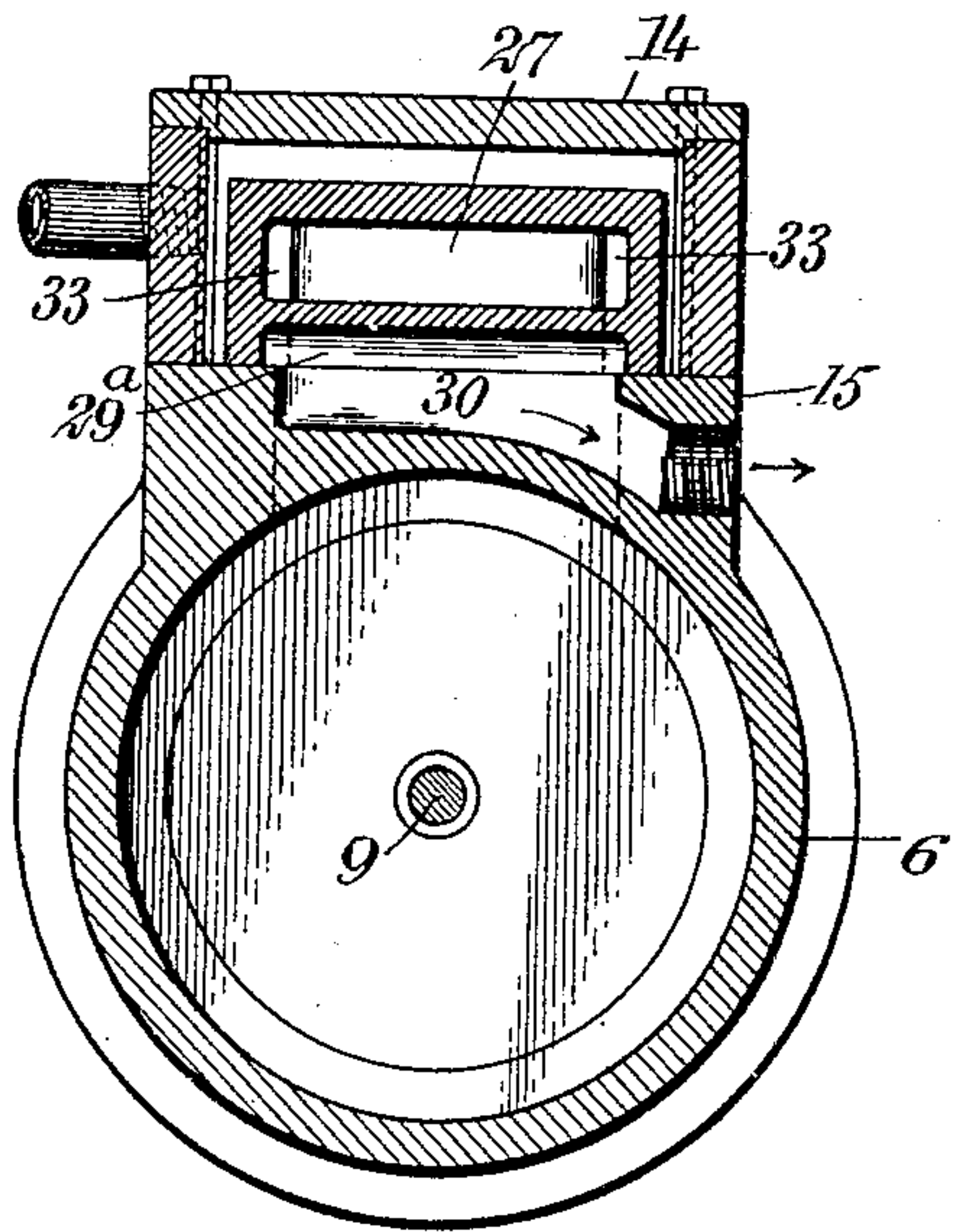
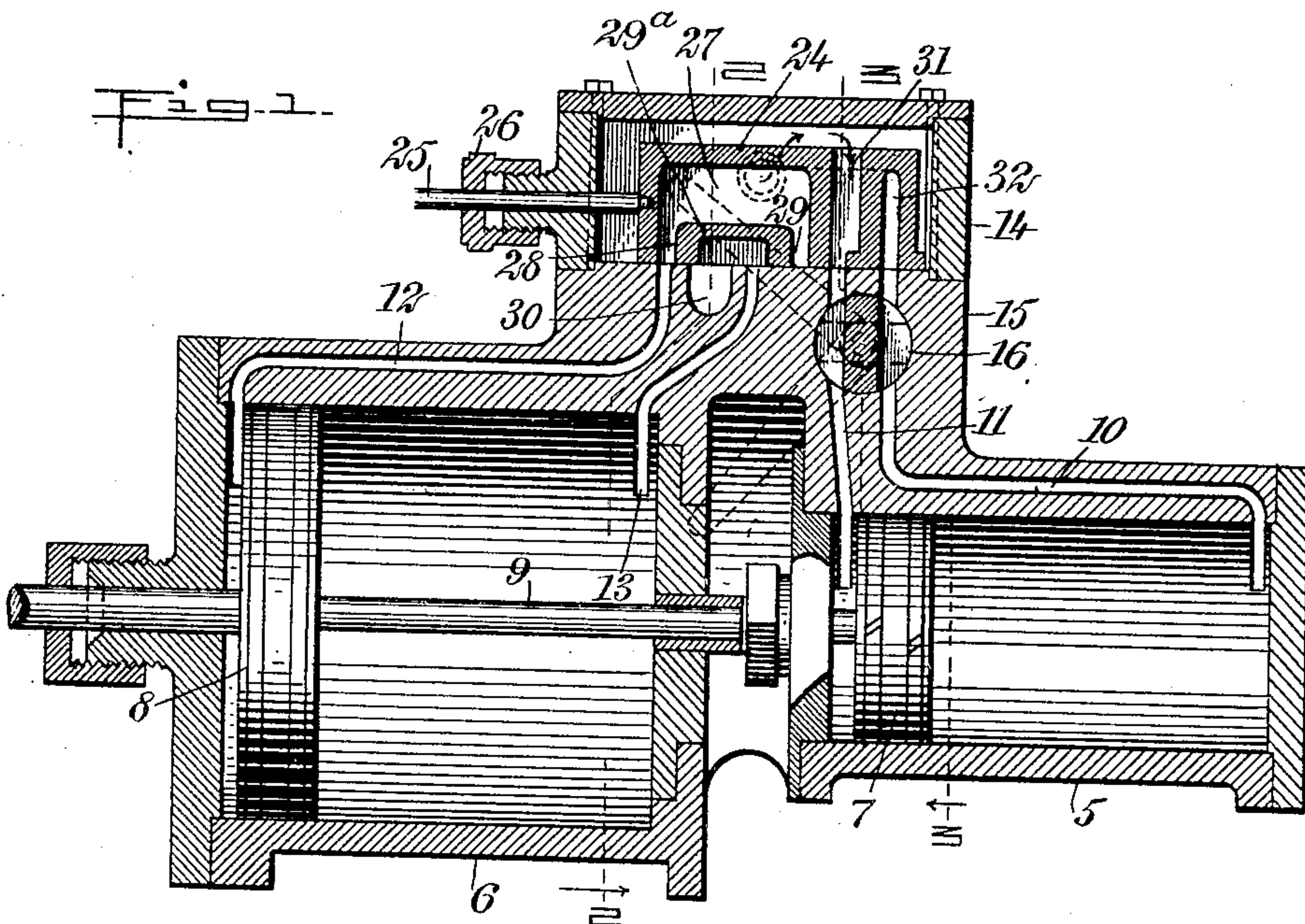


Fig. 2.

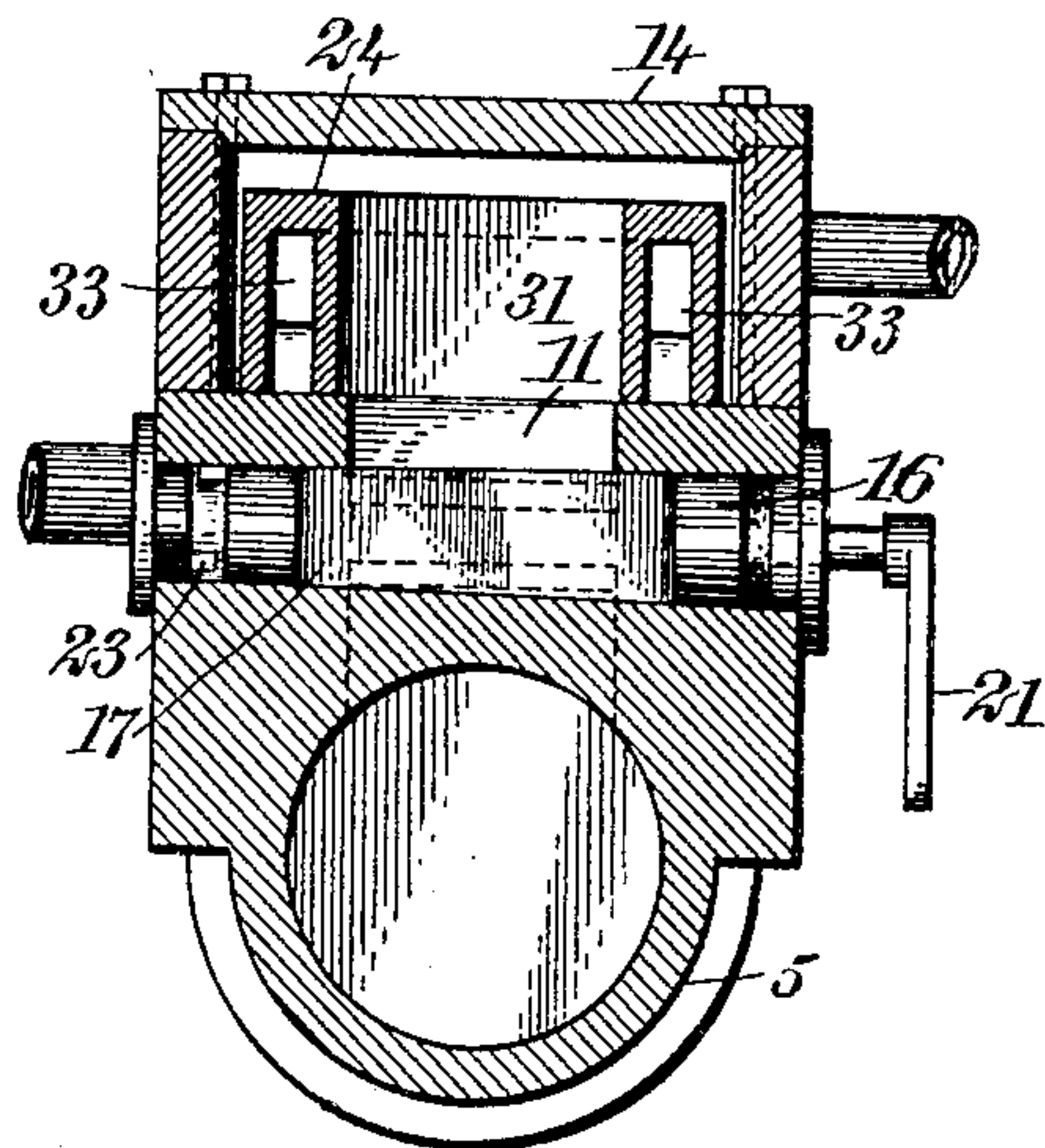


Fig. 3.

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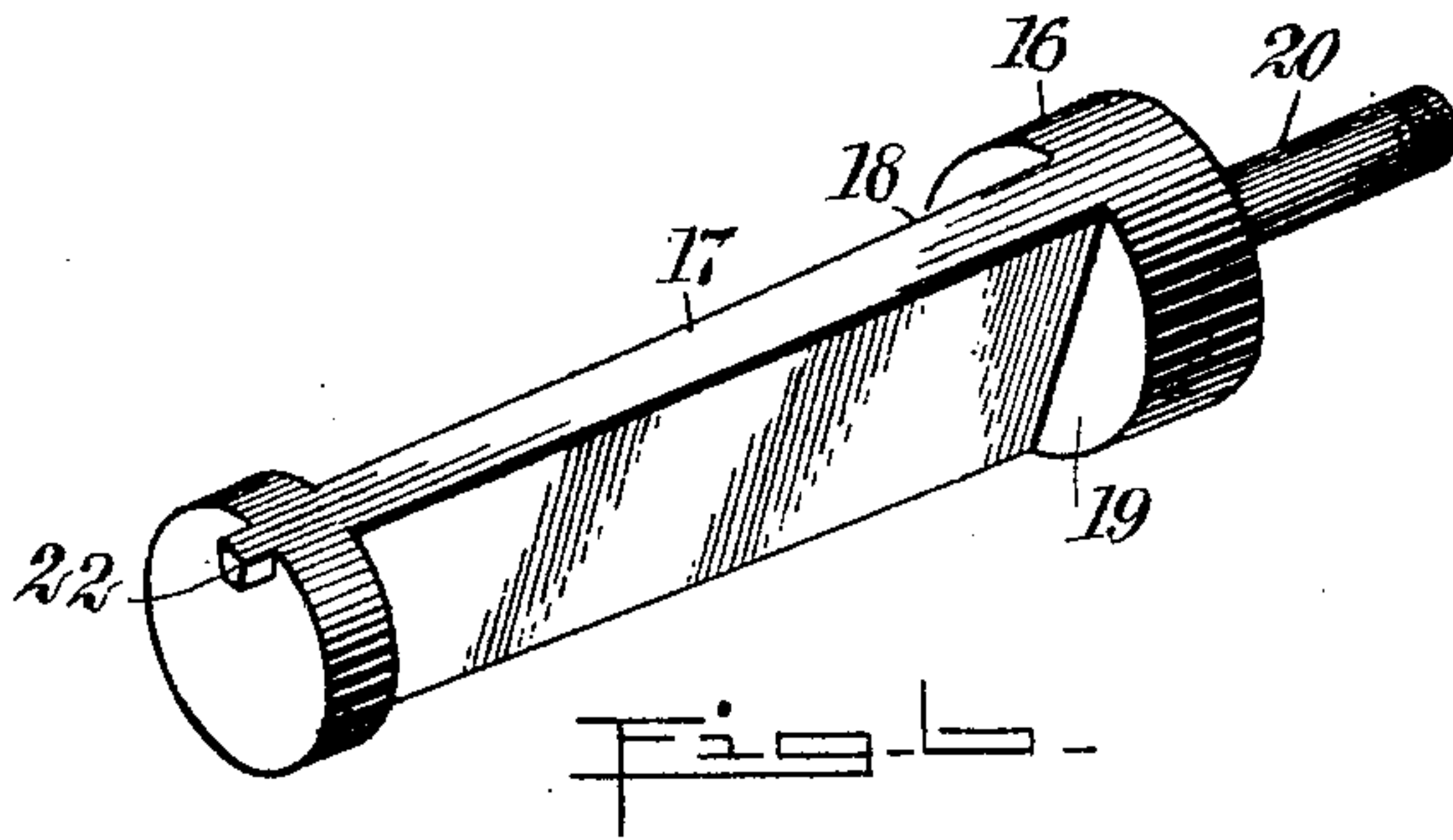
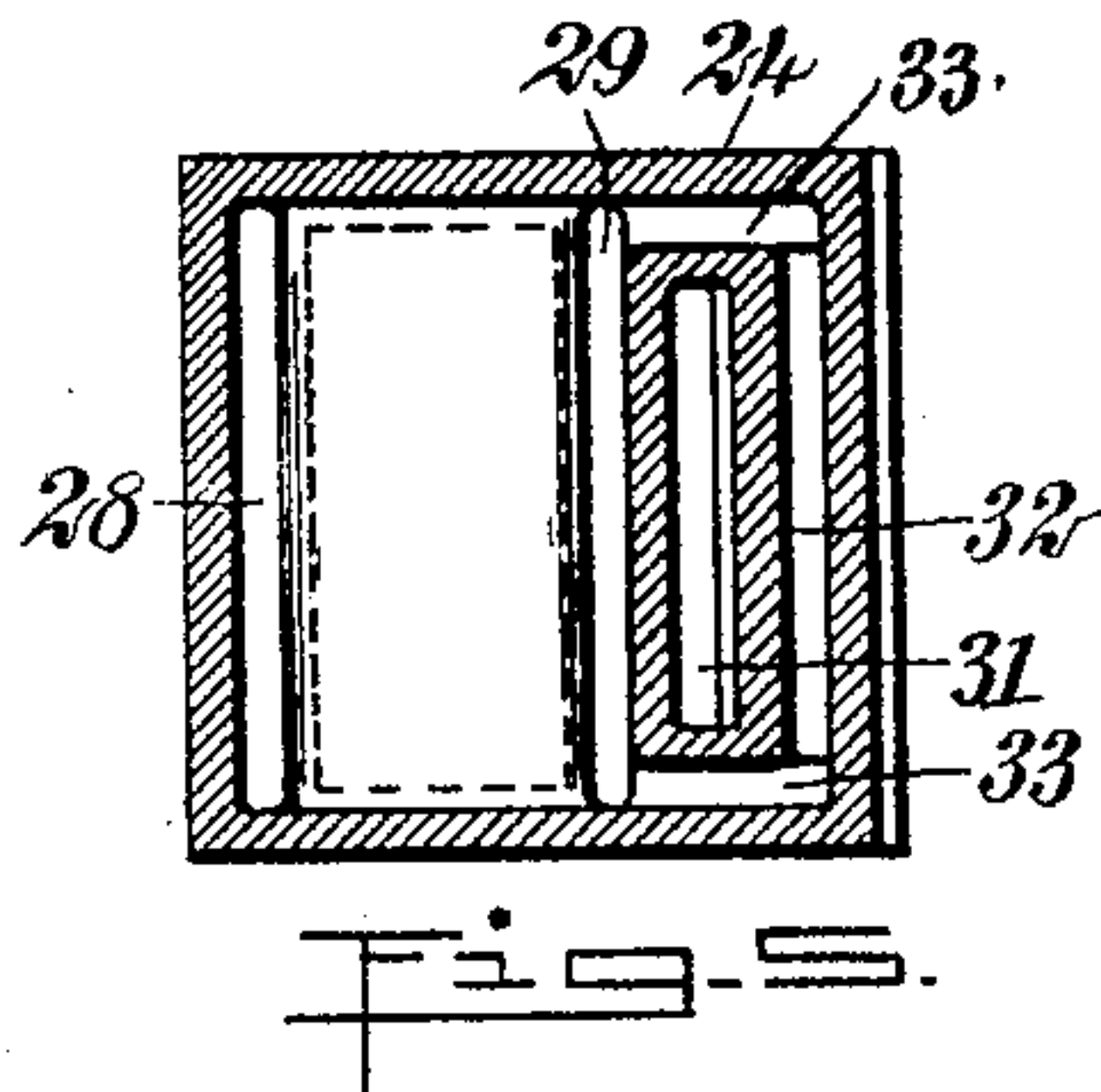
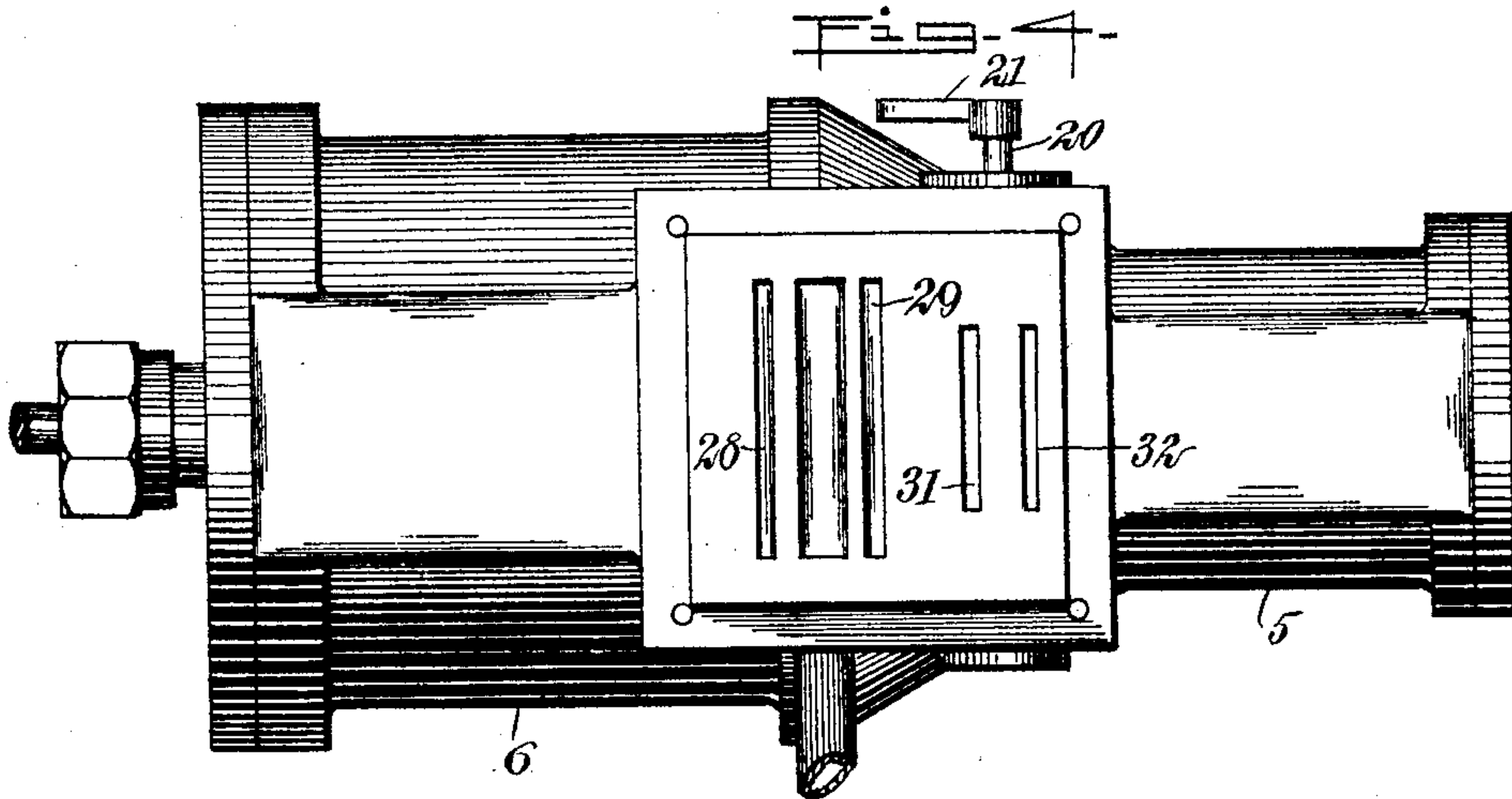
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CARL VICTOR FRISK, OF CHICAGO, ILLINOIS.

ENGINE.

No. 803,336.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed April 26, 1905. Serial No. 257,489.

To all whom it may concern:

Be it known that I, CARL VICTOR FRISK, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Engine, of which the following is a full, clear, and exact description.

This invention relates to improvements in steam-engines of the tandem or compounding type, the object being to provide a novel form of valve mechanism whereby the live steam may be first directed into the low-pressure cylinder for starting the engine, thereby giving a much greater power than that of a simple single-cylinder engine.

Other objects of the invention will appear in the general description.

I will describe an engine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of an engine embodying my invention. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a plan with the valve and steam chest removed. Fig. 5 is a section through the slide-valve, and Fig. 6 is a perspective view of an intercepting valve employed.

Referring to the drawings, 5 indicates the high-pressure cylinder and 6 the low-pressure cylinder, and operating in the cylinders are the pistons 7 8, connected together by the rod 9. A port 10 leads into one end of the high-pressure cylinder 5, and a port 11 leads into the other end thereof, while a port 12 leads into the outer end of the low-pressure cylinder and a port 13 communicates with the inner end thereof. These several ports open outward or into the valve and steam chest 14, mounted on a raised portion 15 on the cylinders. Extended through this raised portion 15 is a plug-valve 16, having a longitudinal central wedge-like portion 17, at the sides of which are ports 18 19. On the extended stem 20 of the plug-valve is an actuating-lever 21, and it will be noted that the plug-valve is tapered, so that it may be forced inward to take up or compensate for wear. The plug-valve is limited in its rotary movement by means of a lug 22 on its inner end engaging with a fixed lug 23.

Arranged in the casing or chest 14 is a valve

24, here indicated as a slide-valve, from which a stem 25 extends outward through a stuffing-box 26. The valve has a live-steam chamber 27, provided with a port 28, designed to communicate with the port 12, and also with a port 29 for communicating with the port 13. Arranged in the slide-valve is an exhaust-chamber 29^a, from which the exhaust passes into the exhaust-port 30 of the engine. The ports 28 and 29 are designed to control the passage and discharge of steam for the ports of the low-pressure cylinder. The slide-valve has an inlet-port 31, designed to permit the passage of steam from the steam-chest to the port 11, and adjacent to the inlet-port 31 is an exhaust-port 32, which communicates with the steam-chamber 27 through side ports 33.

In the operation when the intercepting valve 16 is turned to the position indicated by dotted lines in Fig. 1 the high-pressure cylinder will be cut out. The steam from the steam-chest will then pass through the inlet-port 31 to the port 11, thence across through the port of the valve that may be uppermost, thence through the port 10 to the exhaust-port 32, from which the live steam passes to the chamber 27, and thence to the low-pressure cylinder through the port 12, this passing of the steam taking place when the parts are in the position indicated in Fig. 1. As the valve is moved to the left the exhaust-port 32 will communicate with the port 11 and the port 10 will be wholly open to receive steam from the steam-chest. This steam will pass across the valve 16 and thence through the exhaust-port 32 and the slide-valve to the inner end of the low-pressure cylinder through the port 13, the exhaust of course taking place through the port 12. When a sufficient speed shall have been attained, the intercepting-valve is to be turned to the position indicated in full lines in Fig. 1, and then of course the live steam from the boiler first passes into the high-pressure cylinder and the exhaust into the low-pressure cylinder. It is obvious that when compounding is not desired the intercepting-valve may be left in the position indicated by dotted lines in Fig. 1 and the work will be performed by the piston in the low-pressure cylinder, and while the steam is passing through the port of valve 16 suction and compression are prevented in said valve 16 in permitting the air to pass from the cylinder 5 through port 10, thence across lower part of valve 16 to port 11 to the inner end of the cylinder, also keeping oil in the cylinder.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An engine having high and low pressure cylinders, a steam and valve chest having communication with opposite ends of the two cylinders, a slide-valve in said chest, and an intercepting-valve between the slide-valve and high-pressure cylinder for cutting off the steam-supply to the high-pressure cylinder and directing the same to the low-pressure cylinder.

2. An engine having high and low pressure cylinders, a steam and valve chest, ports leading from the steam and valve chest into opposite ends of the cylinders, an intercepting-valve for controlling the passage of steam through the ports leading into the high-pressure cylinder, and a slide-valve having a steam-chamber the said slide-valve operating to con-

trol the passage of steam through the ports leading into the opposite ends of the low-pressure cylinder, the said valve also having an inlet-port for communicating with one of the ports leading into the high-pressure cylinder and also having an exhaust-port for communicating with either of the ports leading into the high-pressure cylinder, the said exhaust-port communicating with the steam-chamber in the slide-valve.

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

CARL VICTOR FRISK.

Witnesses:

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JOHN S. PERRY,
T. H. McCORKLE.