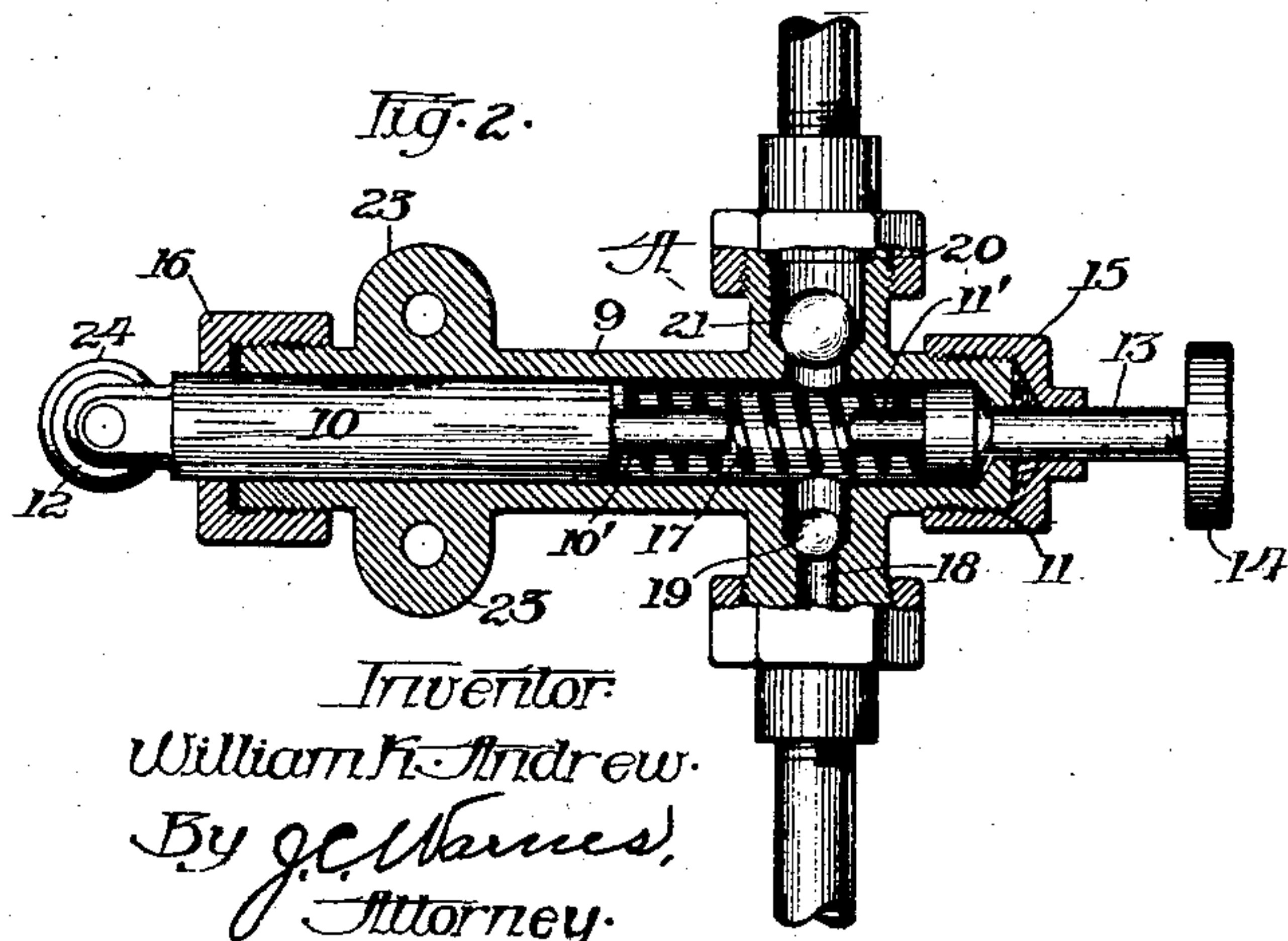
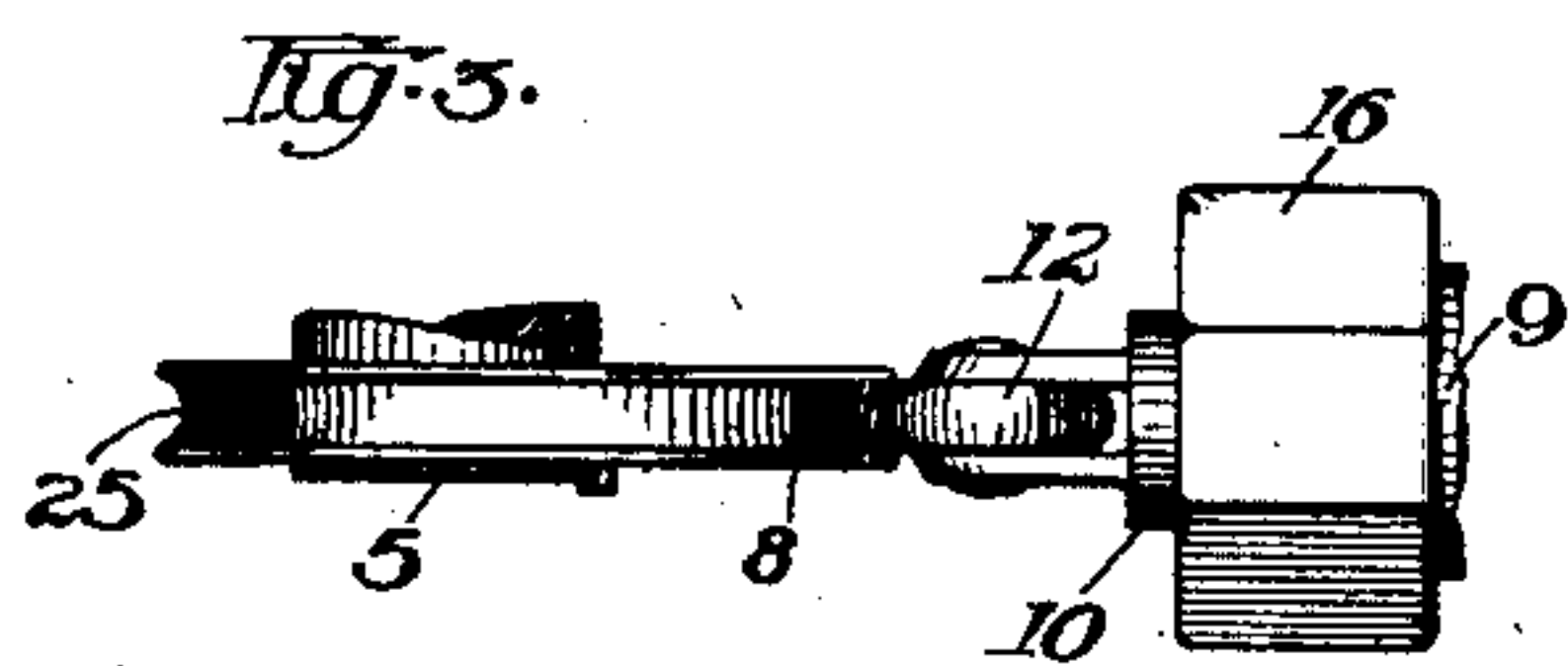
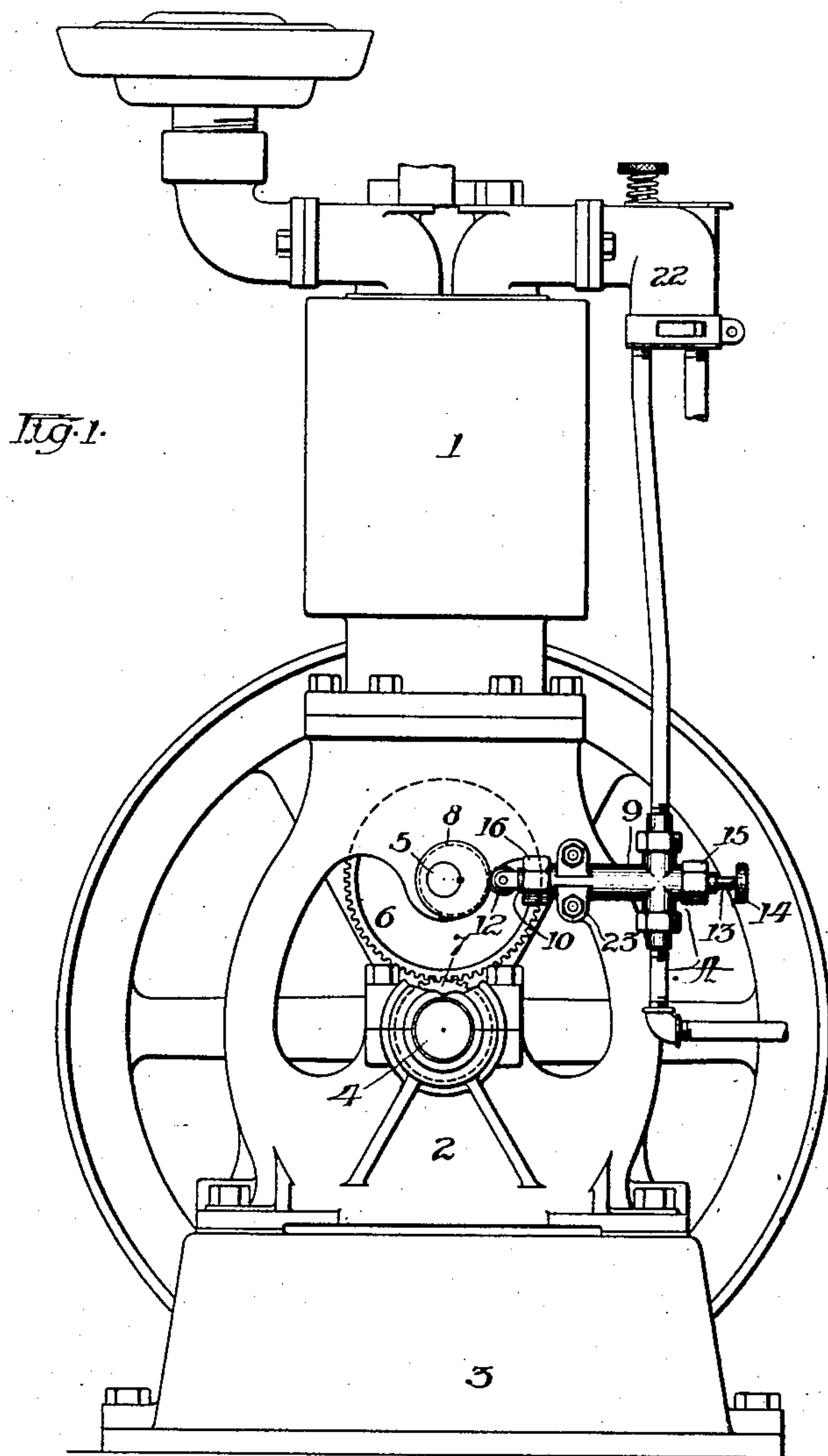


No. 883,849.

PATENTED APR. 7, 1908.

W. K. ANDREW.
OIL PUMP FOR EXPLOSIVE ENGINES.

APPLICATION FILED NOV. 29, 1907.



Witnesses:

J. N. Daggett.

F. W. Hoffmeister.

Inventor

William K. Andrew.

By J. C. Barnes,
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM K. ANDREW, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

OIL-PUMP FOR EXPLOSIVE-ENGINES.

No. 883,849.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed November 20, 1907. Serial No. 404,201.

To all whom it may concern:

Be it known that I, WILLIAM K. ANDREW, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Oil-Pumps for Explosive-Engines, of which the following is a complete specification.

This invention relates to oil supply pumps for internal combustion engines, the object being to provide a simple and effective pump for effecting the oil supply, such pump being adapted to be operated either mechanically from some moving part of the engine or by the operator when providing an initial oil supply in starting.

In the accompanying drawing forming a part of this application—Figure 1 represents a side elevation of an engine, in connection with which the improved pump is shown. Fig. 2 is an enlarged detail showing a longitudinal section of the pump; and Fig. 3 is a detail plan showing the end of the plunger, the crowned roller on the end thereof and the groove in the plunger actuating cam.

The engine is of the vertical type, the cylinder 1 thereof being mounted upon the frame 2, which rests upon the base 3. In the frame 2 journals the crank shaft 4, and above this is the shaft 5, upon which is fixed the usual two-to-one gear wheel 6, driven by the pinion 7 on said crank shaft. To the shaft 5 is also fixed the cam 8, which constitutes the mechanical means for operating the pump. To the frame 2 of the engine, adjacent to the cam 8, is fixed the pump, which is designated as a unit by A. This pump comprises the cylinder 9, in the bore of which, at each end, are fitted the pump plungers 10 and 11. The plunger 10 is mechanically operated in one direction by means of the cam 8, an anti-friction cam-engaging roller 12 being suitably journaled on the projecting end of said plunger. The manually operated plunger 11, which is fitted in the opposite end of the pump cylinder 9, is provided with a projecting stem 13. To the outer end of this stem is fixed a button 14 to be engaged by the hand of the operator for actuating the plunger. The gland 15 fits over the stem 13 of the plunger 11, while the gland 16 provides a tight joint for the other end of the pump cylinder. The pump plungers 10 and 11 are provided with the inwardly projecting stems 10¹ and 11¹, re-

spectively, these stems engaging the coil spring 17, which is interposed between the said plungers. The working stroke of the plunger 10 is positively effected by means of the cam 8 and that of the plunger 11 by means of the operator, while both plungers are returned to their end positions by means of the single spring 17.

Oil is drawn into the pump cylinder 9 through the oil conduit 18, which is controlled by the valve 19, while the conduit so controlled by the valve 21 conducts the oil to the constant level cup 22 of the engine. To prevent angular or turning movement of the plunger 10 and consequent deflection of the roller 12 from its plane of rotation, the said roller is crowned and fits into a corresponding groove in the cam 8, as clearly shown in Fig. 3. The crown 24 on the roller 12, with the groove 25 in the cam 8, constitute means for preventing angular movement of the said plunger. Lugs 23, formed integral with the pump cylinder 9, afford means for securing the pump A to the frame 2 of the engine.

What I claim as my invention, and desire to secure by Letters Patent, is:

1. In an oil supply pump for explosive engines, in combination, a pump cylinder, a mechanically operated plunger fitted in one end thereof, a manually operated plunger fitted in the other end thereof, and valve-controlled oil conduits leading to and from said pump cylinder.

2. In an oil supply pump for explosive engines, in combination, a pump cylinder, a mechanically operated plunger fitted in one end thereof, a manually operated plunger fitted in the other end thereof, a single spring interposed between the plungers and operating to hold them in their outward position, and valve-controlled oil conduits leading to and from said pump cylinder.

3. In an oil supply pump for explosive engines, in combination, a pump cylinder, coaxially arranged plungers fitted in the ends thereof, one of said plungers being mechanically operated and one manually operated, inwardly projecting stems formed on the ends of said plungers, a spring interposed between the plungers and engaging the stems thereon, and valve-controlled oil conduits leading to and from said pump cylinder.

4. In combination with an explosive en-

gine provided with a rotating cam, an oil supply pump comprising a pump cylinder, a plunger provided on its projecting end with an antifriction roller and adapted to be actuated by said rotating cam of the engine in one direction, means for preventing angular movement of said plunger, a second plunger fitted in the opposite end of said cylinder, arranged coaxially with respect to the first mentioned plunger and adapted to be manually operated, a single spring interposed be-

tween the two plungers and operating to hold them in their outward position, a valve-controlled oil conduit entering the pump cylinder between said plungers, and an alining valve-controlled oil conduit leading therefrom. 15

WILLIAM K. ANDREW.

Witnesses:

B. C. WAIT,
F. R. FLYNN.