

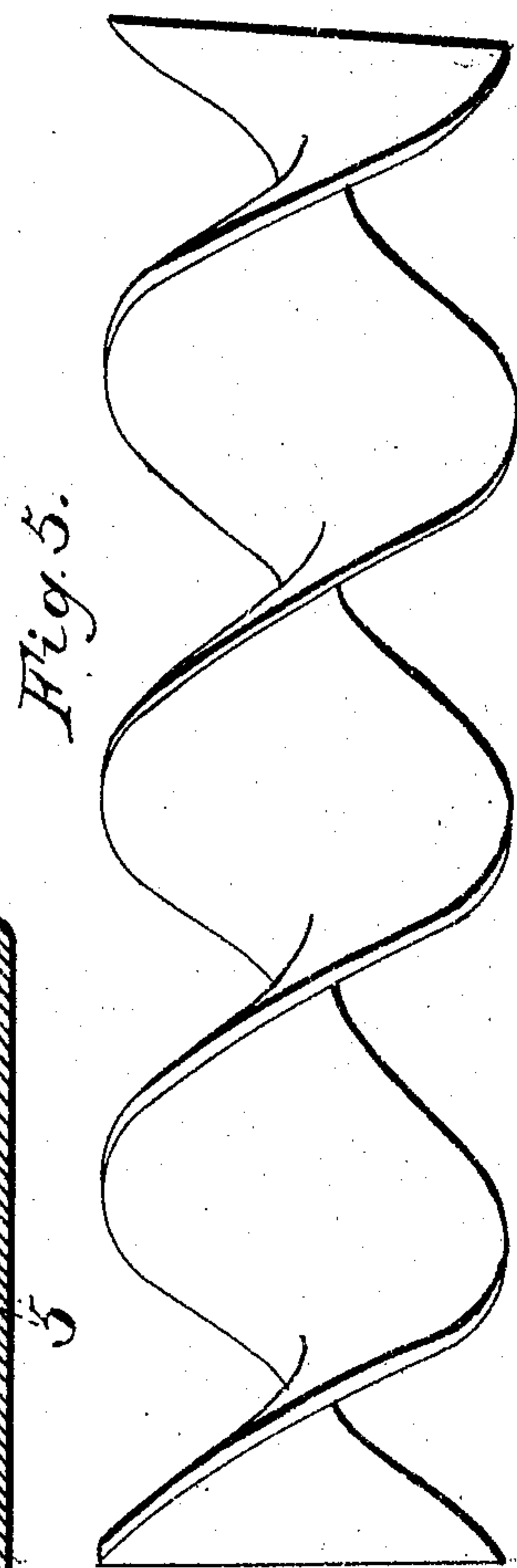
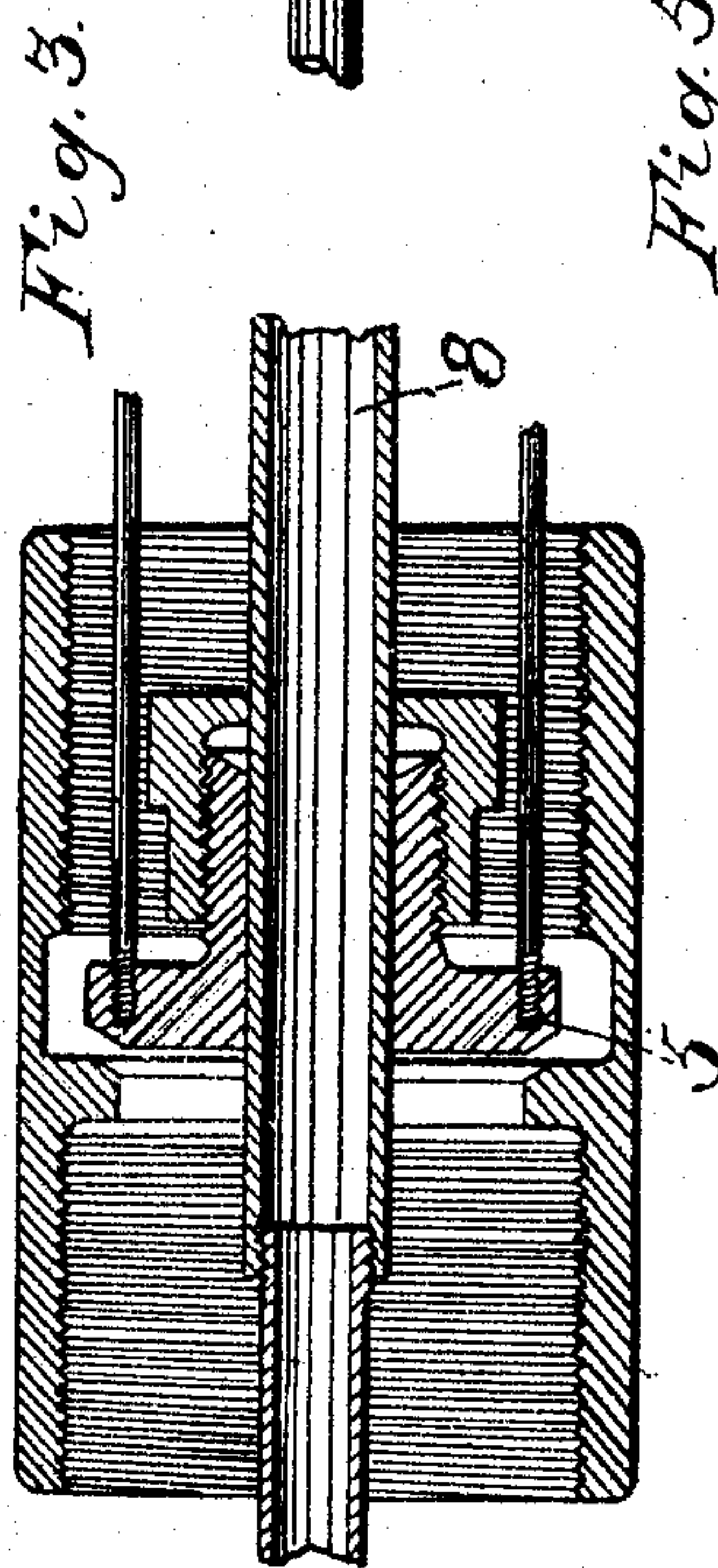
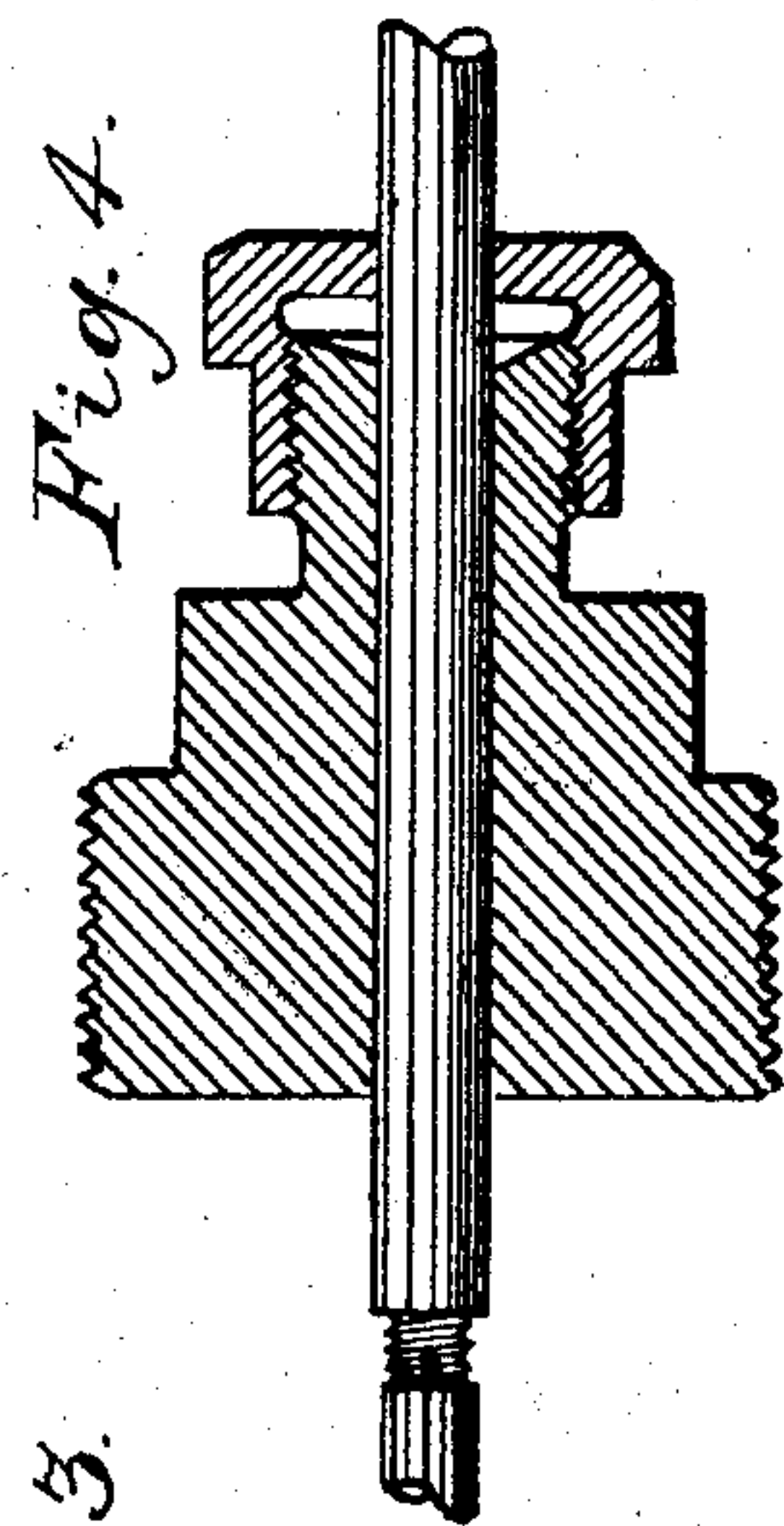
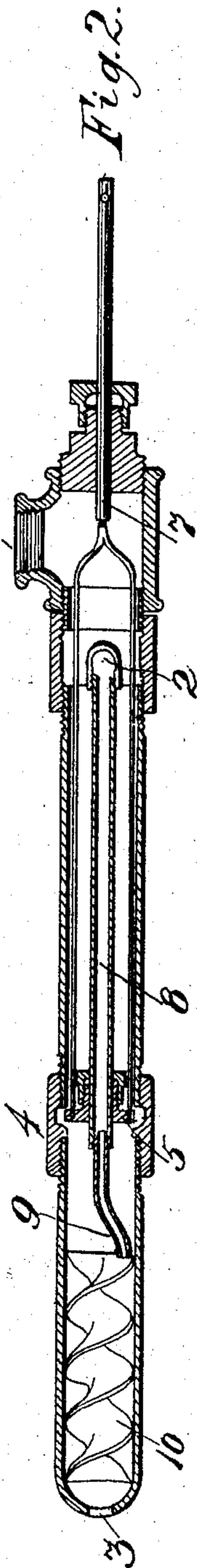
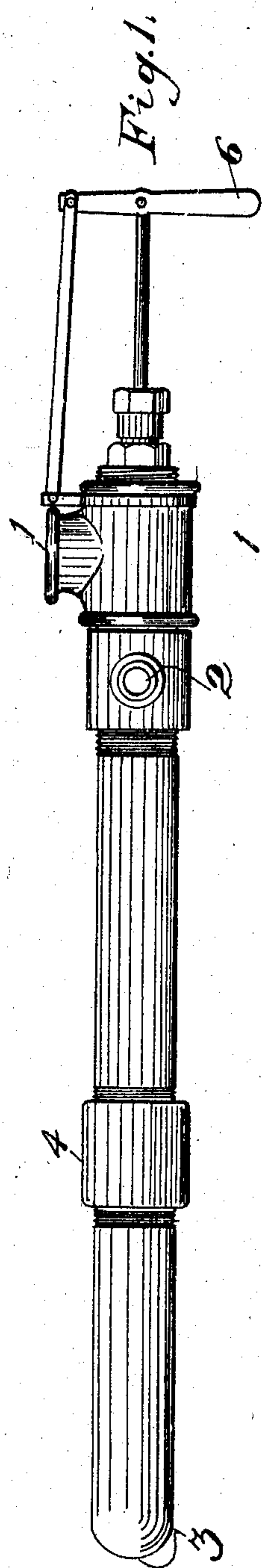
No. 772,546.

PATENTED OCT. 18, 1904.

H. H. WATTS.
OIL BURNER.

APPLICATION FILED FEB. 17, 1903.

NO MODEL.



WITNESSES:

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HENRY H. WATTS, OF BAKERSFIELD, CALIFORNIA.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 772,546, dated October 18, 1904.

Application filed February 17, 1903. Serial No. 143,778. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. WATTS, a citizen of the United States, residing in the city of Bakersfield, county of Kern, State of California, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification.

My invention relates to the class of oil-burners using steam or compressed air as auxiliaries in the combustion process, and has for its object to provide means of producing an approximately complete combustion of crude oils in an economical and handy manner.

My object is accomplished by means illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my burner, showing the coupling 1 for pipe to oil-supply, coupling 2 for pipe to steam or compressed-air pipe, and combustion end 3; Fig. 2, a longitudinal section of Fig. 1; Figs. 3 and 4 and 5, details of parts shown in Fig. 2.

Similar figures refer to similar parts throughout the drawings.

Referring to Fig. 2, the oil to be burned is admitted at 1, flows into and fills the space between 1 and coupling 4, in which it is held by a valve 5, controlled by the hand-lever 6, Fig. 1, through the forked rod 7. Within this space thus made by the outer pipe is a smaller inner pipe 8, having an opening 2 communicating with a source of steam or air supply. When steam is used, it is therefore surrounded by the oil in the space between the opening 2 and the valve 5, said space thus serving as a heating-chamber and obviating the need or expediency of warming the oil outside the burner. The valve 5 is adjusted to permit a flow of oil adequate to the demand for combustion which enters the space 9 and flows to the entrance of the mixing-nozzle 10. The inner tube is bent, as shown at 9, Fig. 2, and that part of the outer tube which the end of said inner tube approaches normally occupies the position of a floor, being adjusted to remain lower than the other parts, so that the oil dropping into the space marked 9, Fig. 2, runs along said floor and is readily sprayed by the force of the fluid from the inner pipe 8. The weight of the oil brings it to the bot-

tom of the burner, and an important feature of my invention is the bringing of the spraying means near the bottom and not near the center or top. The bent portion of said inner tube is hereinafter designated indifferently as the "depressed" or "bent" portion. A blast from said steam-pipe tends to pick up and blow into said mixing-nozzle particles of oil off the floor of the burner. In the mixing-nozzle a separable spiral mixer, Fig. 5, is provided which gives the mixed steam and vapor a whirling motion under the influence of the steam's force, thus causing a thorough mixing thereof. The object of the depressed portion of the pipe 8 is to form thereof an atomizer, tending to transmit into the mixing-chamber only the vapor of the oil and not its liquid.

After mixture in the nozzle 10 the vapor is emitted from the burner-holes 3, where it is ignited.

It will be noted by reference to the drawings that my burner does not operate after the manner of a *vena contracta*, nor is its object to produce an inrush of atmospheric air at or near the atomizing-point. The atomizer simply picks up the particles of the oil and blows them into the mixing-nozzle, where the mixing process is completed.

Steam is used for the atomizing process where the oil is not specially warmed before being introduced into the burner. Where special apparatus is applied outside the burner to warm the oil, I use air in the pipe 8, Fig. 2.

The reason I use the steam in the inner tube is that by so doing I make the burner act automatically in holding the steam-pressure in the boiler up to a certain point and no higher or lower. As shown, valve 5 is a simple hand-operated valve and may be adjusted to allow greater or less opening for the oil-flow. When the valve-opening is large, a great pressure of steam in chamber 9 acting directly on the oil in the opening will tend to hold back its flow, and when the valve-opening is small a lower pressure of steam in said chamber will stop the flow of said oil. The steam acts directly against the oil and not by moving the said valve. Therefore the said valve may be adjusted to any desired position for regulat-

ing the flow of oil, said flow stopping when the pressure reaches the value for which said valve is adjusted and beginning again when the pressure falls below this value.

- 5 The mixing-nozzle contains the spiral mixer, Fig. 5, which is shaped like an auger-bit and fits the nozzle loosely. It has no exterior envelop conforming to its spiral shape.

Having described my invention, what I
10 claim as new, and desire to secure by Letters Patent of the United States, is—

1. An oil-burner comprising an oil-receiving chamber controlled by a valve, an inner steam-pipe running through said chamber and
15 acting both as an atomizer and as means of conveying pressure to the oil in said valve-opening whereby the flow of oil is regulated, a mixing-nozzle having a separable interior

spiral piece adapted to give spiral motion to the atomized oil and steam under the pressure 20 of steam from said steam-pipe, and a burner-hole in said nozzle.

2. An oil-burner having an oil-chamber controlled by a valve, a steam-pipe within said chamber extending therethrough and having 25 a depressed portion adapted to cause the steam therefrom to pick up and atomize the oil emitted from said oil-chamber, a mixing-nozzle, and a burner-hole in said nozzle.

In testimony whereof I have hereunto signed 30 my name in the presence of two subscribing witnesses.

HENRY H. WATTS.

Witnesses:

OSCAR THUNE-LARSEN,
HENRY M. MCGILL.