No. 775,527. PATENTED NOV. 22, 1904.

F. EGGE.

STEAM ENGINE.

APPLICATION FILED DEC. 17, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

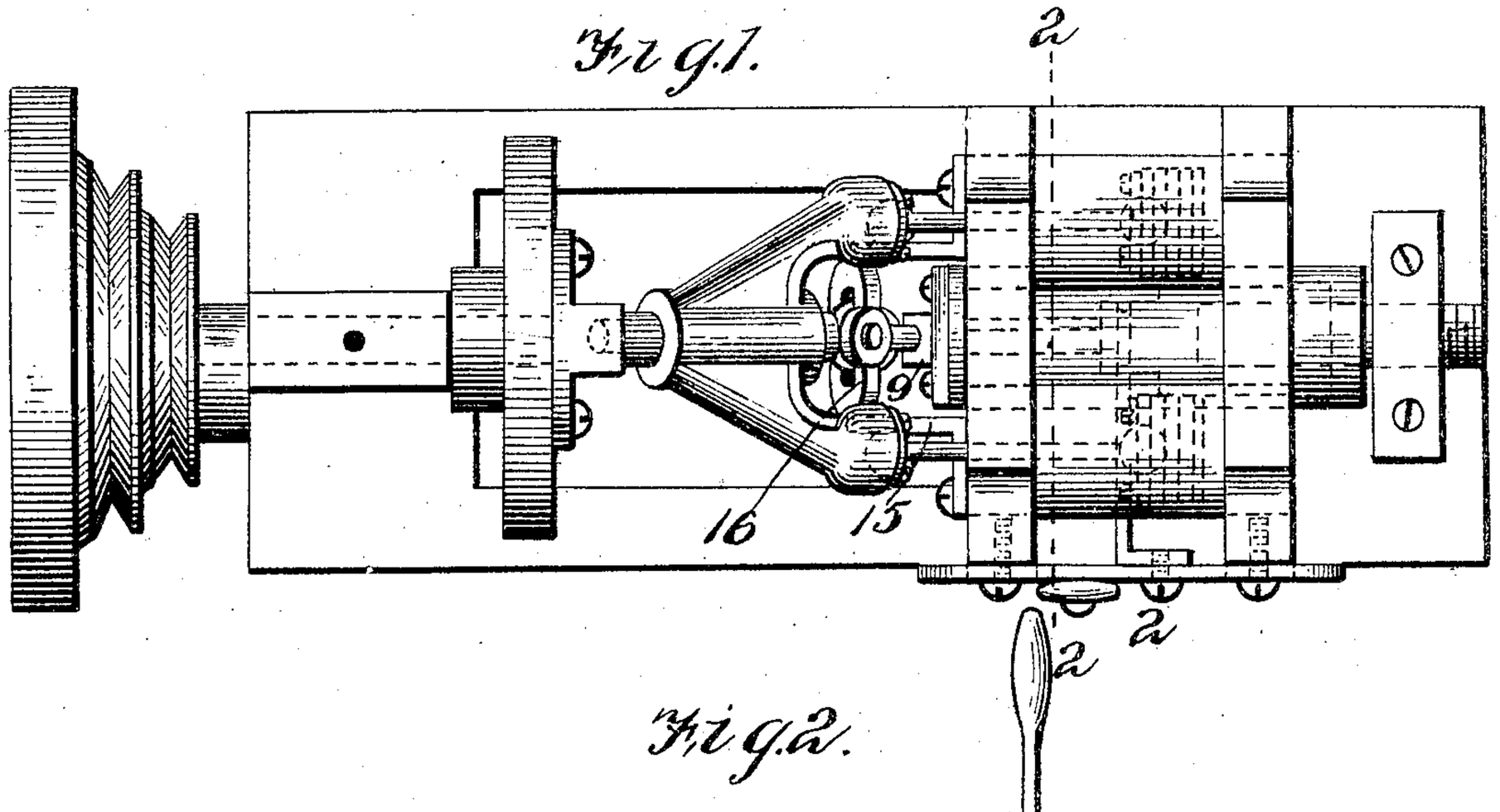

Fig. 2.

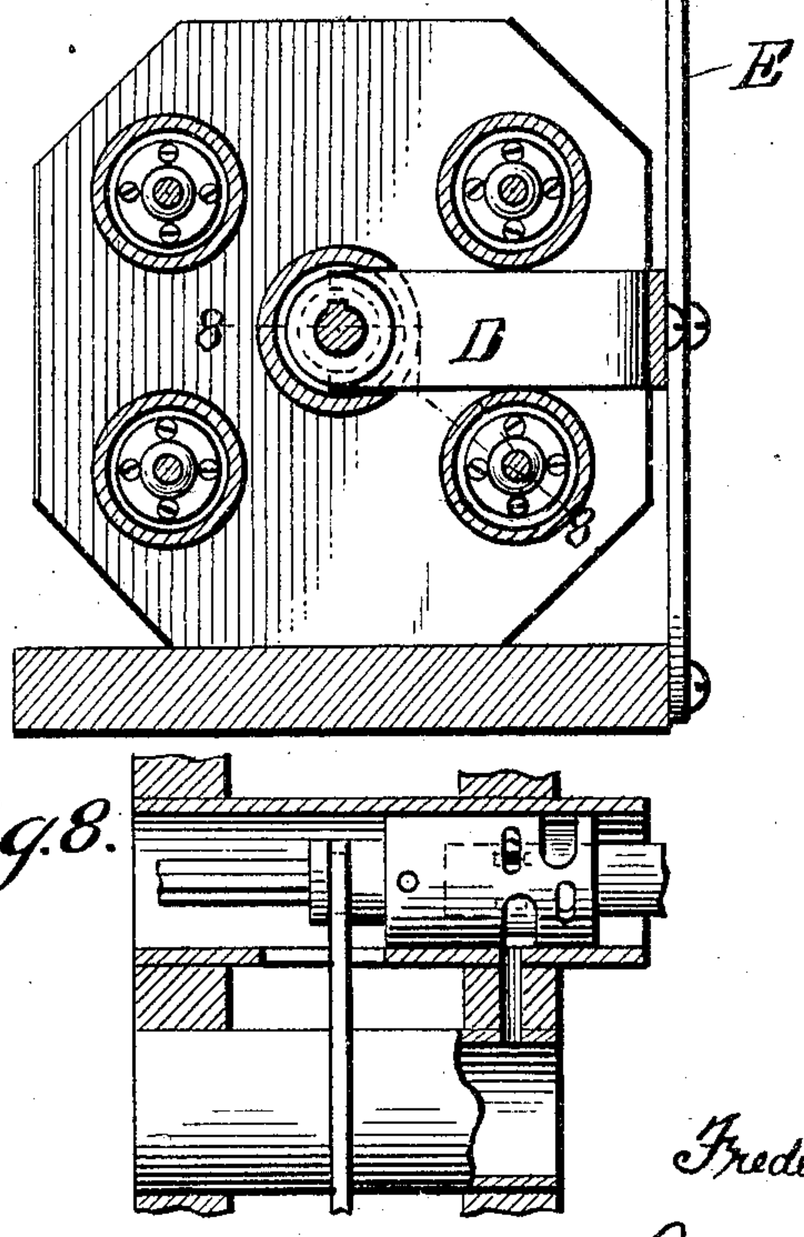

Fig. 8.

Witnesses

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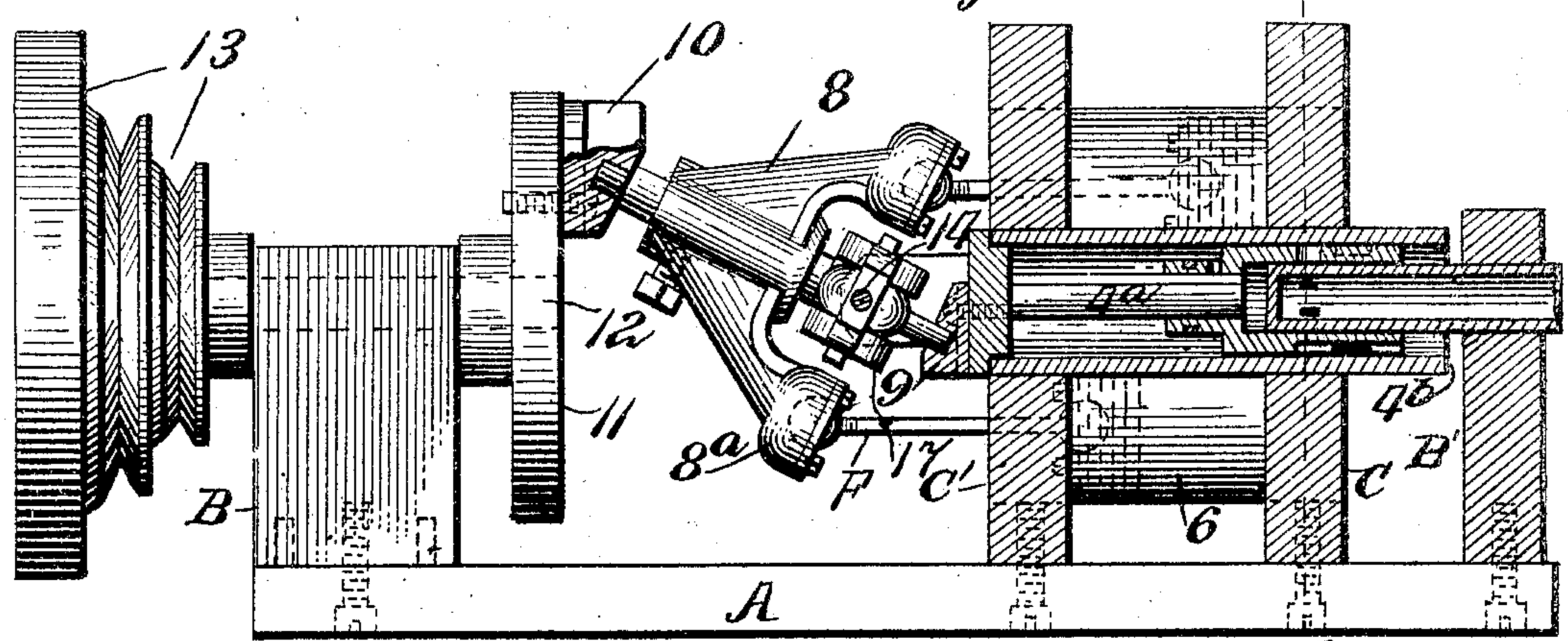
NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.



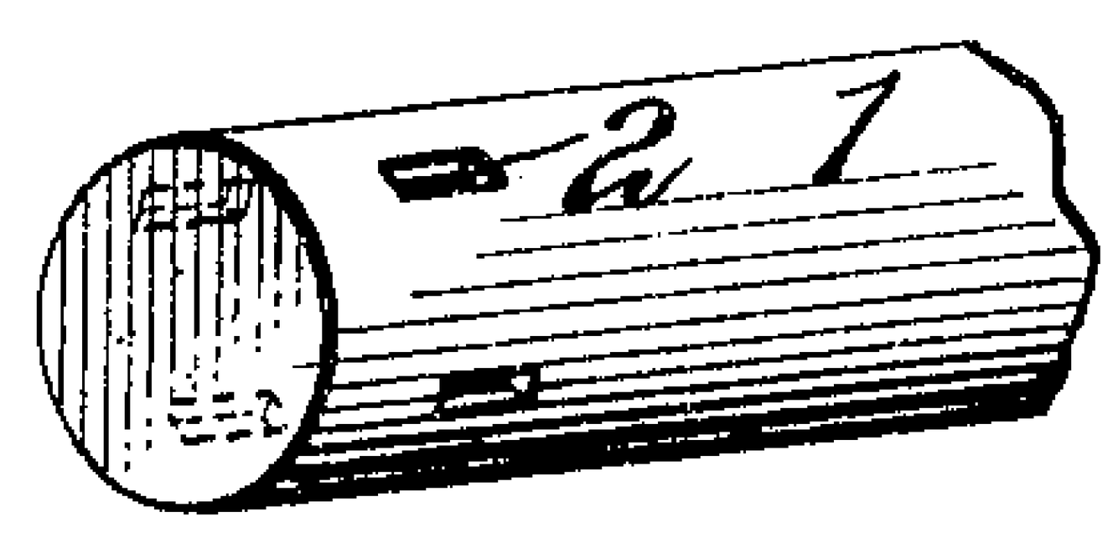


Fig. 7.

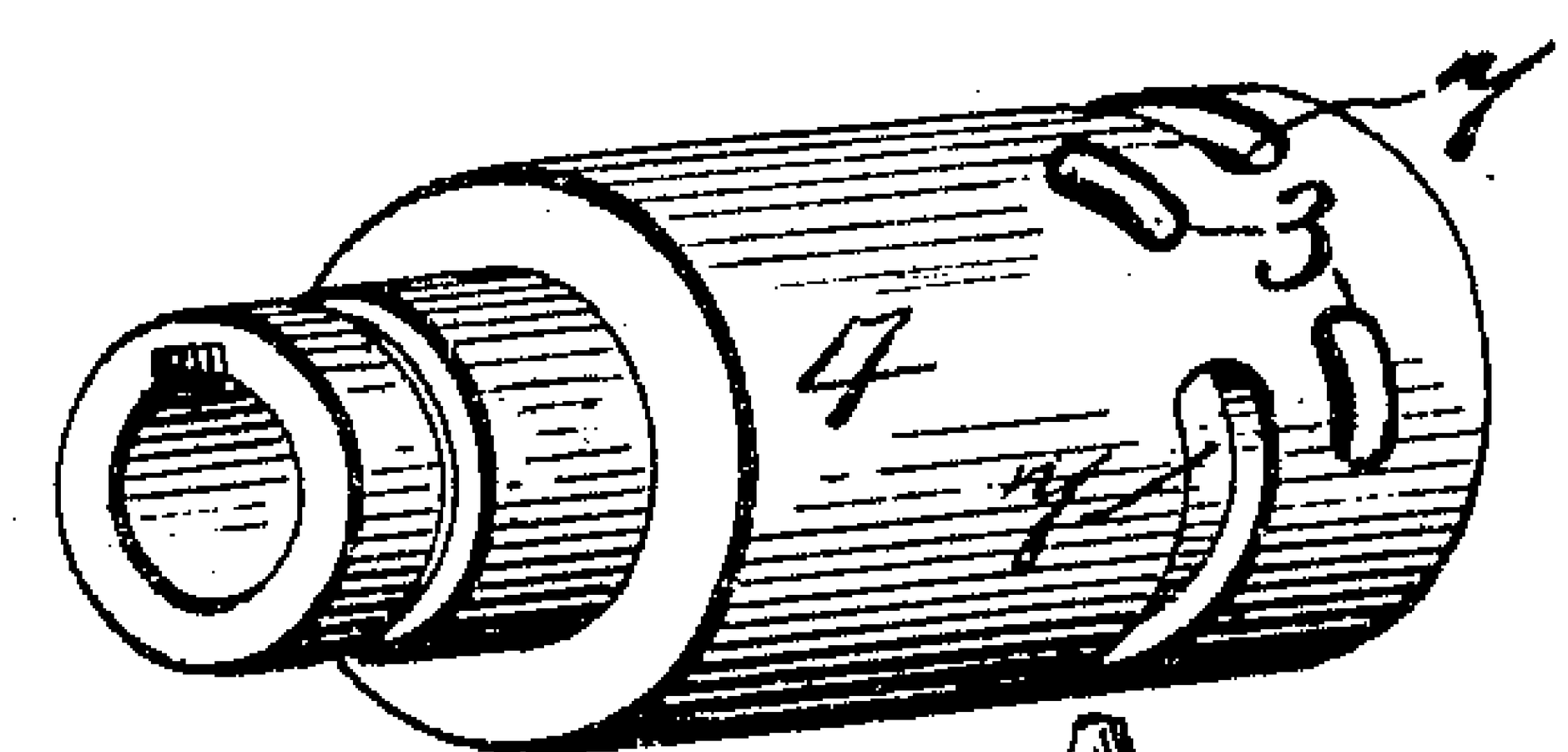


Fig. 5.

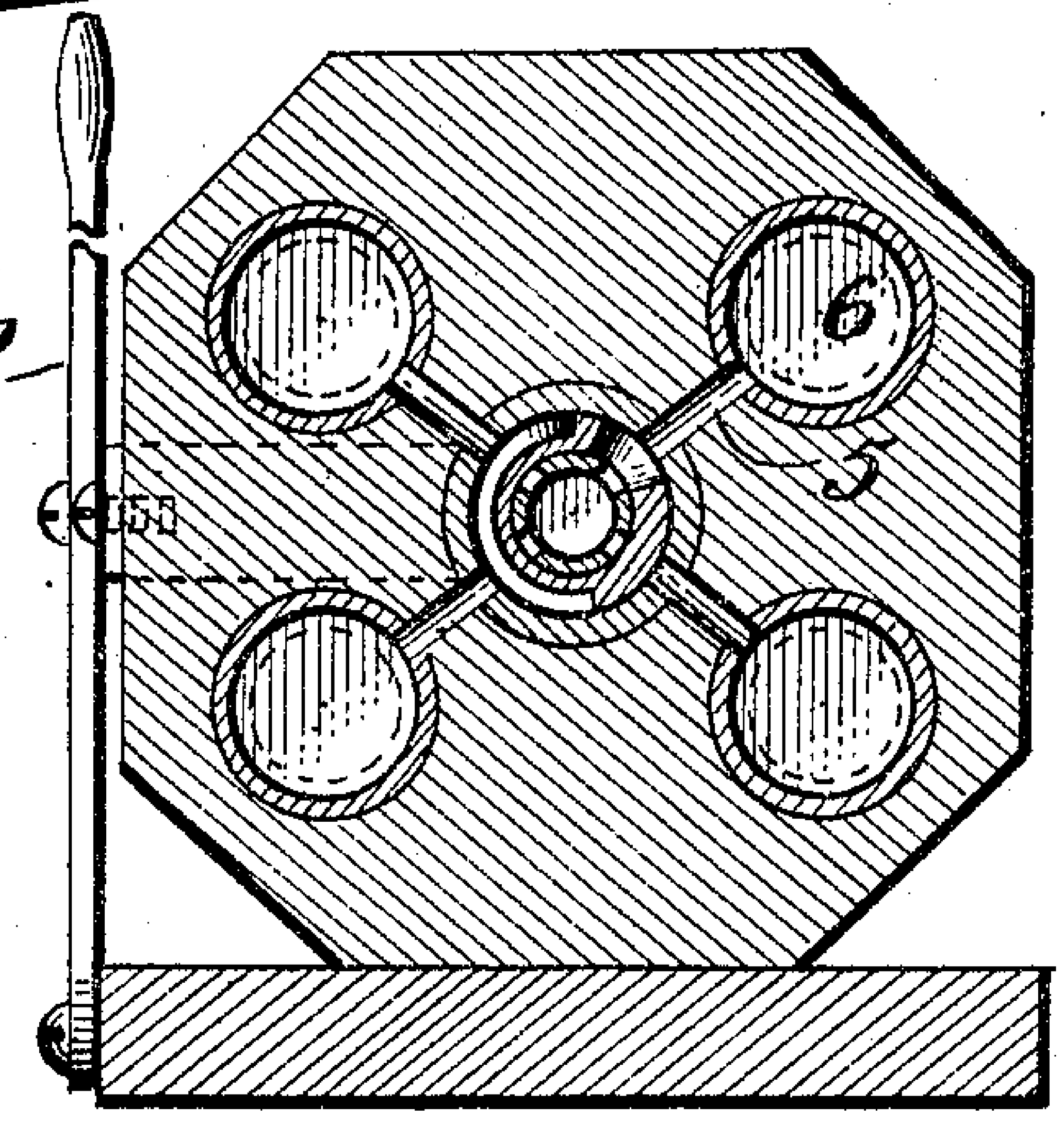
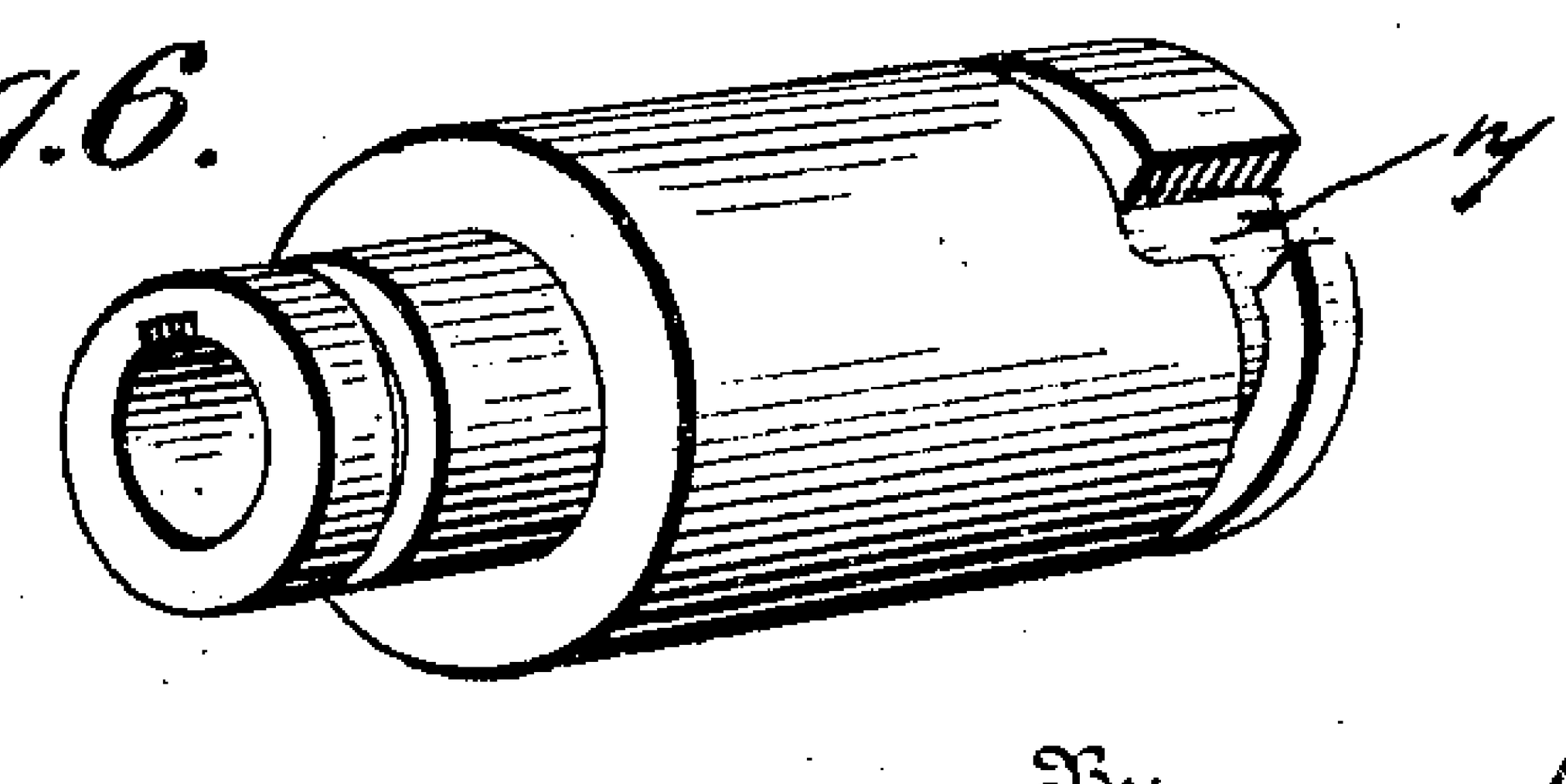


Fig. 4.

Fig. 6.



Witnesses

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No. 775,527. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

FREDERICK EGGE, OF BRIDGEPORT, CONNECTICUT.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 775,527, dated November 22, 1904.

Application filed December 17, 1903. Serial No. 185,551. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK EGGE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention consists in certain improvements in steam-engines; and it comprises certain features of novelty in the construction and arrangement thereof, all as hereinafter more fully described, and specifically pointed out in the claims.

In the annexed drawings similar letters and numerals of reference indicate corresponding parts in all the views where shown, in which—

Figure 1 is a top plan view of my invention. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a side elevational view partly in section. Fig. 4 is a vertical sectional view taken on line 4 4 of Fig. 3. Figs. 5 and 6 are enlarged detached detail views of the valve-sleeve 4, hereinafter described, which is therein shown in different positions. Fig. 7 is an enlarged detail view of the steam-supply pipe, hereinafter referred to; and Fig. 8 is a section on line 8 8 of Fig. 2.

The structure is preferably mounted upon a suitable base A, with end standards B B′, and provided with supporting heads or standards C C′, the former of which is centrally perforated for the steam supplying and controlling means and the latter thereof provided with perforations therefor as well as for the steam-cylinders, or, if desired, both standarns C C′ may be similarly provided with coincident openings therefor with suitable cylinder-heads (not shown) properly supported in position at the ends of said cylinders.

Referring now more particularly to Fig. 3, 1 is a steam-supply pipe, which is provided with ports 2, disposed radially around said pipe near the inner end thereof, which is otherwise closed. Upon said steam-supply pipe 1 is a sleeve 4, provided with steam-ingress ports 3, adapted to be brought into coincidence with the steam-ports 2 of supply-pipe 1, with intervening fillers of metal integral with said sleeve 4, adapted to cut off the supply of steam when the steam-ports are not in coincident, while ports 5 lead radially to the steam-cylinders 6 of the engine, which cylinders may be of any desired construction or form, but which cylinders are disposed substantially parallel and are supported between said standards C C′. Said sleeve 4 is adapted to be shifted longitudinally upon an actuating-shaft 4^a by means of a yoke D, engaging with said sleeve and connected with an operating-lever E, said yoke D and lever E being best shown in Fig. 2 of the drawings and being used only when it is desired to reverse the engine, and thereby drive the actuating-shaft 12 in an opposite direction. Within said steam-cylinder 6 are pistons of any preferred type of construction, and connected therewith are piston-rods F, which piston-rods are preferably connected therewith by a ball-and-socket joint or any preferred type of accommodating connection and are connected with the gyrating head 8 through a similar ball-and-socket connection with the arms 8^a thereof, said head 8 being yieldingly supported in a boss or extension 9, connected rigidly with said sleeve 4, which sleeve 4 also has exhaust-openings 7 larger than the steam-ports 3, before referred to, for the purpose of providing a quick exhaust of steam from said steam-cylinders when the exhaust-ports are brought into proper position for permitting steam to pass therethrough into the central surrounding sleeve 4^b and from thence to the atmosphere. The gyrating head 8, supported at 9, is also connected with the lug or boss 10, which is rigidly fixed upon a disk 11, rotating with the actuating-shaft 12, which carries at its opposite end driving-pulleys 13 of any preferred type or contour, The head 8, being connected to the boss 10 by means of a fixed shaft and sustained at a fixed angle with relation to the disk 11, necessarily requires that its opposite end shall be yieldingly connected with the lug 9 upon the shaft 4^a, and this is provided for by means of a yielding or substantially ball-and-socket pinned connection 14, (best shown in Figs. 1 and 3,) which may be of any specific construction which will an-

swer the purpose of an accommodating connection between the brackets 15 and yoke 16, connected with the head 17 of said accommodating connection.

Any suitable means of lubrication (not shown) may be provided for use in connection with my improved engine, the essentially-novel feature of which is the gyrating head interposed between a plurality of steam-cylinders and having projections connected therewith by means of which the same may be connected from pistons reciprocating in said steam-cylinders and held at a fixed angular relation to means on a driving-shaft, whereby gyrating motion may be transmitted to said head and through the instrumentality thereof conveying a rotary motion to a driving-shaft.

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

1. In a multiplex engine, a plurality of pressure-cylinders, pistons mounted therein, a valve-casing adjacent to the cylinders and communicating therewith, a pressure-supply conduit projecting into said casing, a rotating pressure-controlling member inclosing the end of the said conduit, and means for receiving the movement of the pistons and imparting it to other mechanism the said means also operating the controlling member.

2. In an engine, a plurality of cylinders, pistons moving therein and means for transmitting the motion of the pistons to other mechanism, a valve-casing mounted adjacent to the cylinders and provided with ports connected therewith, a hollow valve moving in said casing, a pressure-supply conduit projecting into one end of said hollow valve, the said conduit having lateral ports arranged in proper relation to the ports of the cylinders, the said valve being also provided with ports for controlling the admission of pressure from the conduit to the cylinders, means for imparting a rotary movement to the valve in accordance with the action of the pistons, and means for moving the said valve longitudinally for reversing the movement of the engine.

3. In a multiplex engine, a suitable support, a driving-shaft and a plurality of steam-cylinders mounted thereon, a fixed supply-conduit centrally disposed, a rotatable ported valve-sleeve thereon in communication with said cylinders, pistons movable in said cylinders, a head on said shaft, a support between said cylinders, a member with a plurality of arms, rotatable in said head, and in said support, and accommodating connections between said member and said pistons.

4. In an engine, the combination of a plurality of cylinders, pistons moving therein, a gyrating member operated by the said pistons and communicating their motion to other mechanism, a valve-casing mounted adjacent to the cylinders, a hollow valve mounted therein, said valve being open at one end, a pressure-conduit extending into the end of the said hollow valve, the conduit being closed at its end and provided with lateral ports, the said hollow valve being also provided with controlling-ports, a shaft movably engaging the said valve and capable of imparting a rotary movement thereto, and means operated by the said gyrating member for rotating the said shaft, and operating the valve in accordance with the movement of the pistons.

5. In an engine, a suitable support, a driving-shaft and a plurality of steam-cylinders mounted thereon, pistons in said cylinders, a centrally-arranged steam-supply conduit, a rotatable valve-sleeve mounted thereon, a stem connected therewith, a head on said stem, an angularly-disposed rotatable member mounted in said head, means for connecting said pistons therewith, and connecting means between said rotatable member and said shaft.

6. In an engine, the combination of a plurality of cylinders, pistons moving therein, gyrating means for receiving the movement of the pistons, a valve-casing mounted centrally of the cylinders, the said casing being opened at one end, a hollow valve mounted in said casing and provided with controlling-ports, a pressure-delivering conduit projecting into one end of said valve, a shaft extending into the other end of said valve, and means for rotating the shaft in conjunction with the operation of the pistons for properly moving the valve to deliver the pressure successively to the different cylinders.

7. An engine comprising a plurality of cylinders, pistons mounted therein, a member connected with all of the said pistons for delivering their motion to other mechanism, a valve-casing having ports connected with the said cylinders, a valve mounted in the said casing, a shaft movably engaging the valve for rotating the same, means for imparting a rotary movement to the said shaft, means projecting into the valve for delivering the pressure to the engine and exterior means projecting inwardly and engaging the said valve for moving it longitudinally with respect to its shaft and the valve-casing for reversing the engine.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK EGGE.

Witnesses:
F. W. Smith, Jr.,
M. T. Longden.