

(No Model.)

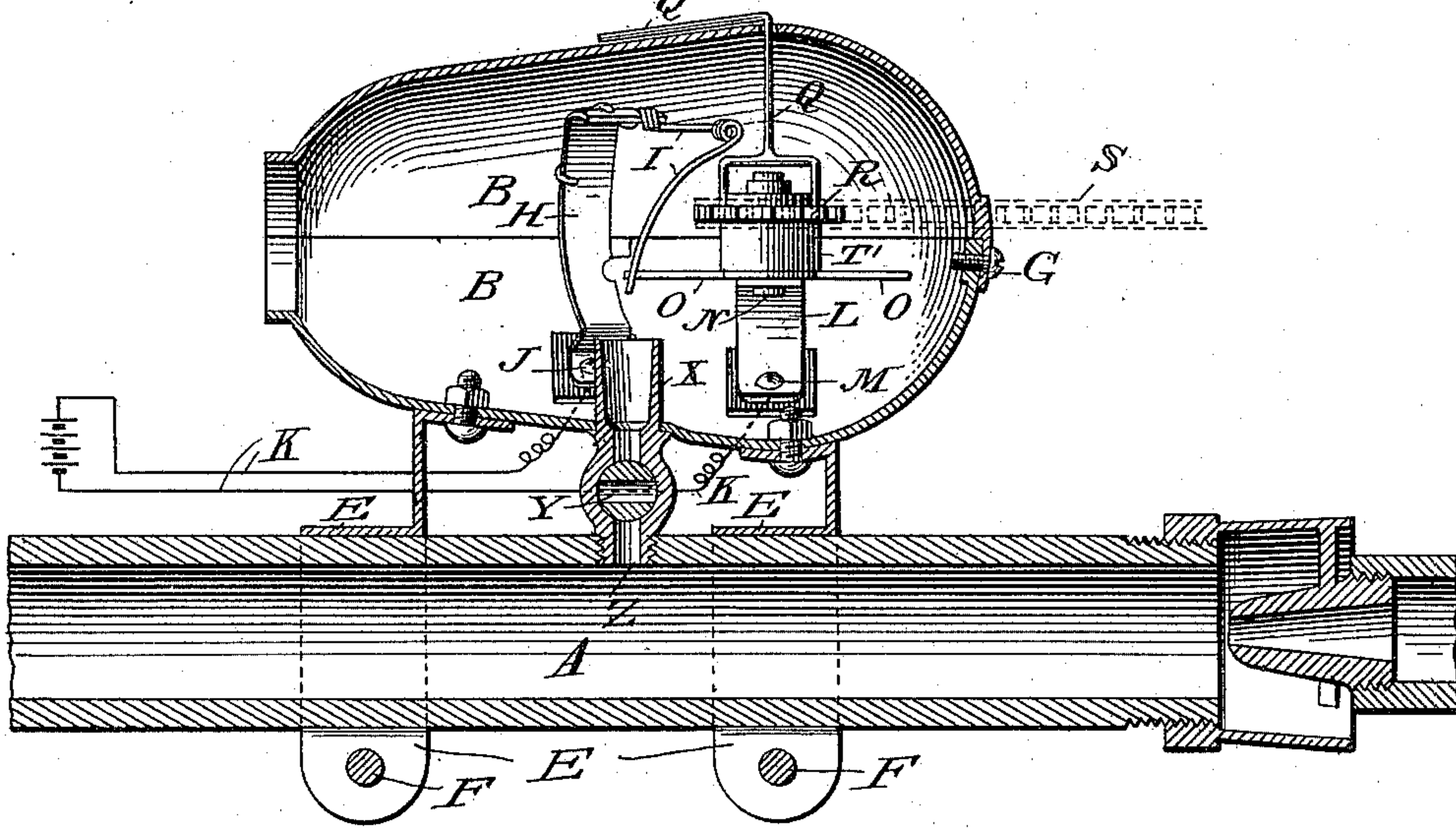
2 Sheets—Sheet 1.

C. EICKMANN.  
ELECTRIC GAS LIGHTING APPARATUS.

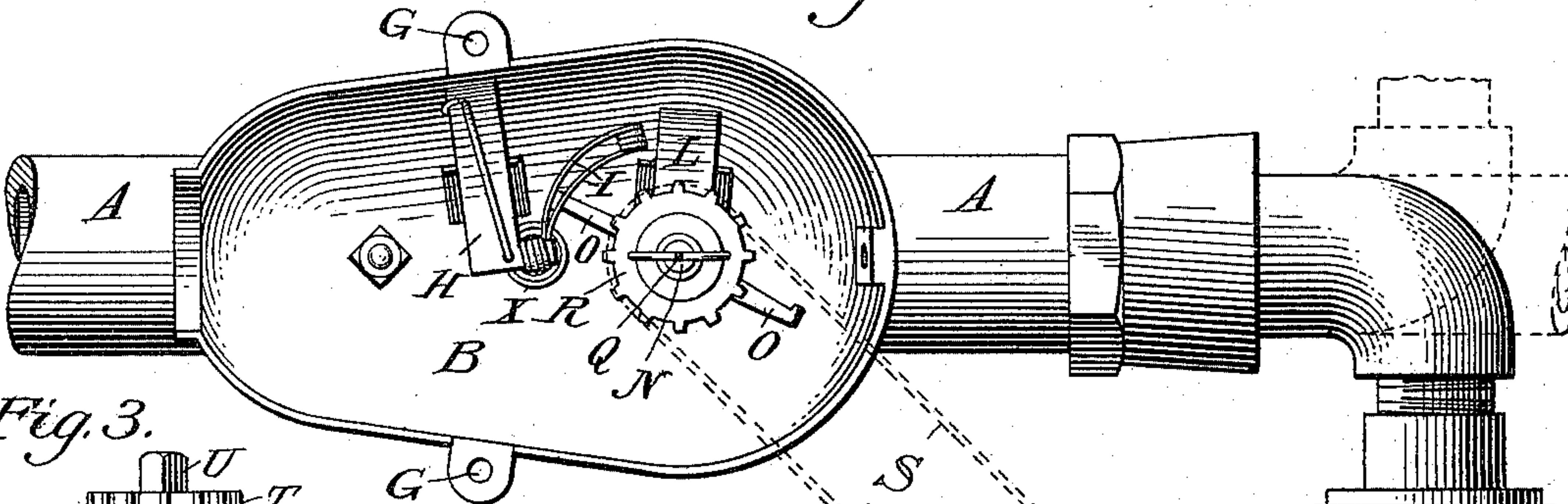
No. 598,316.

Patented Feb. 1, 1898.

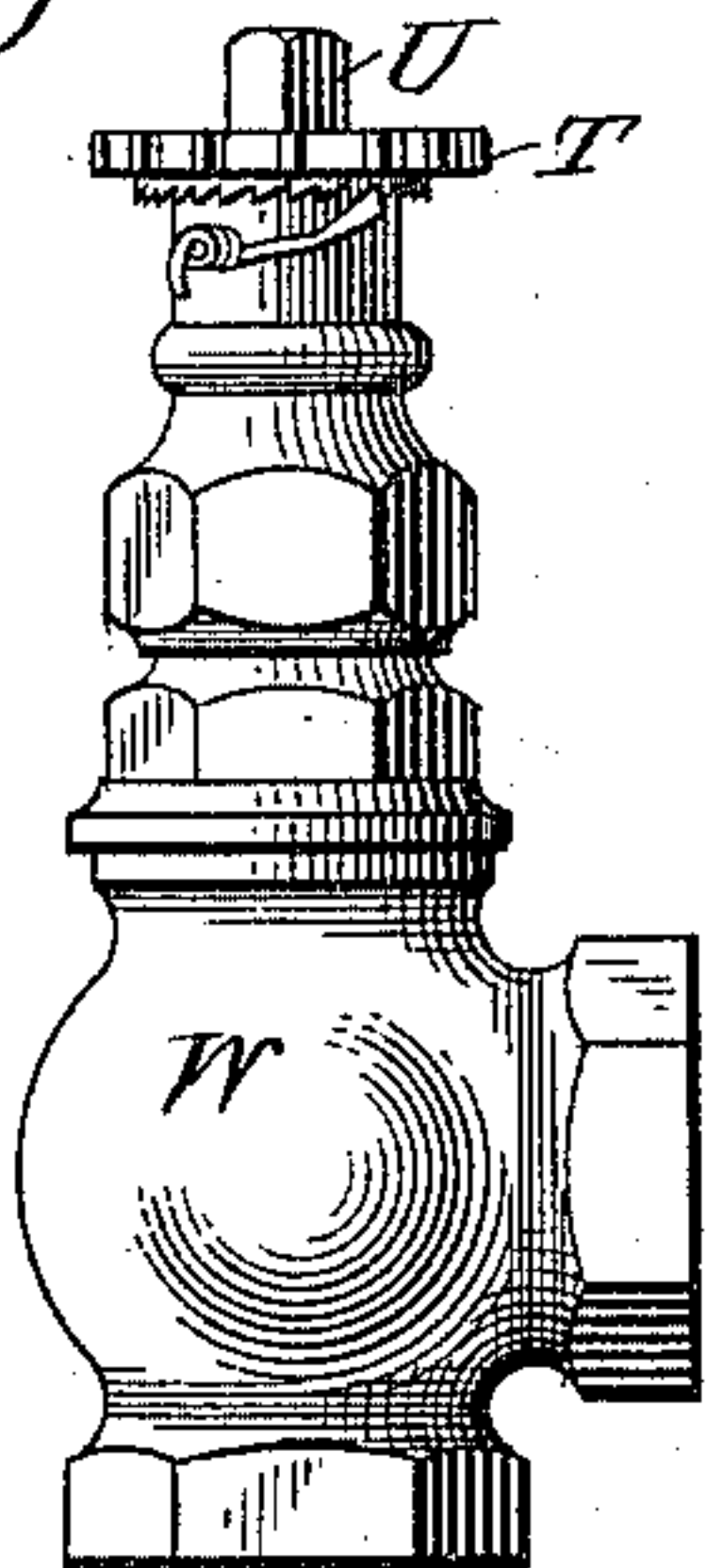
*Fig. 1.*



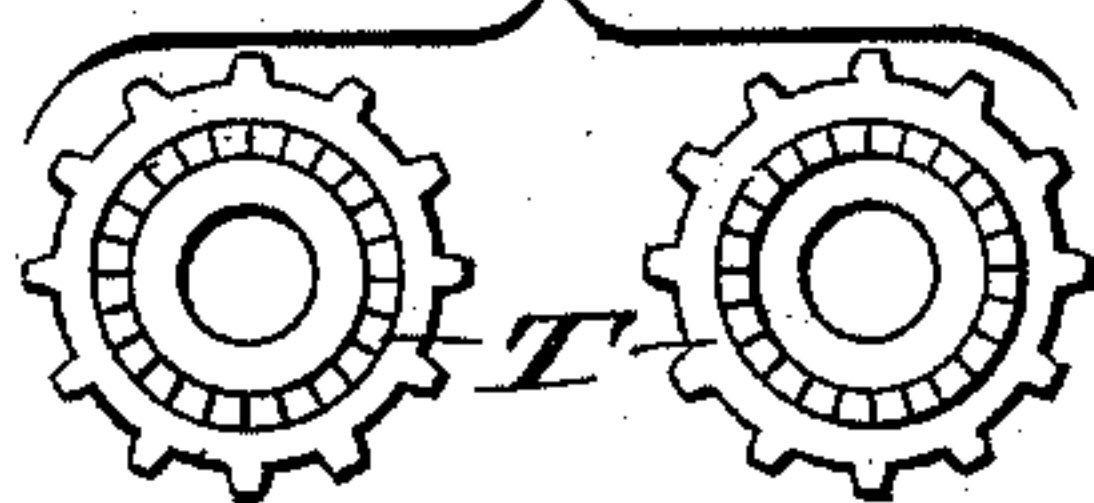
*Fig. 2.*



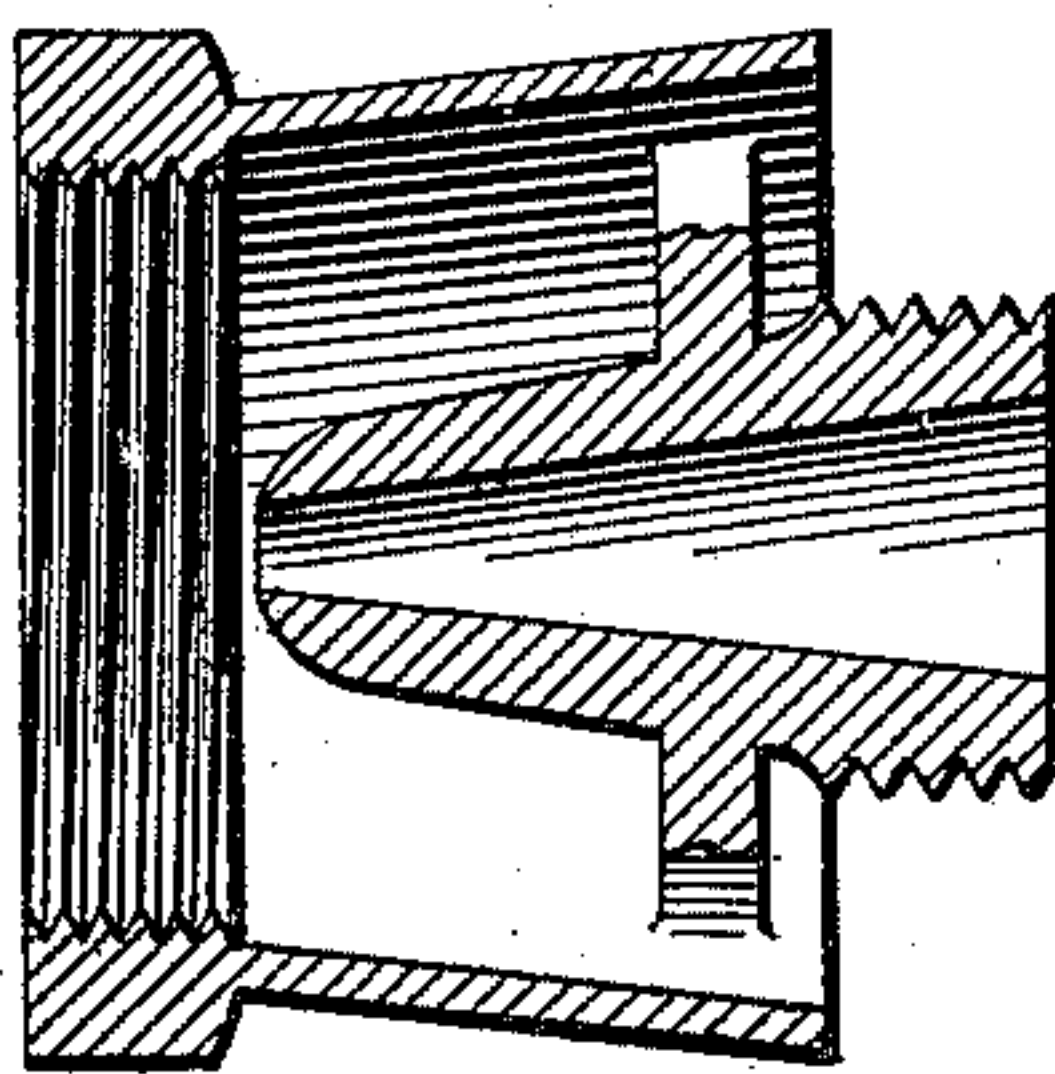
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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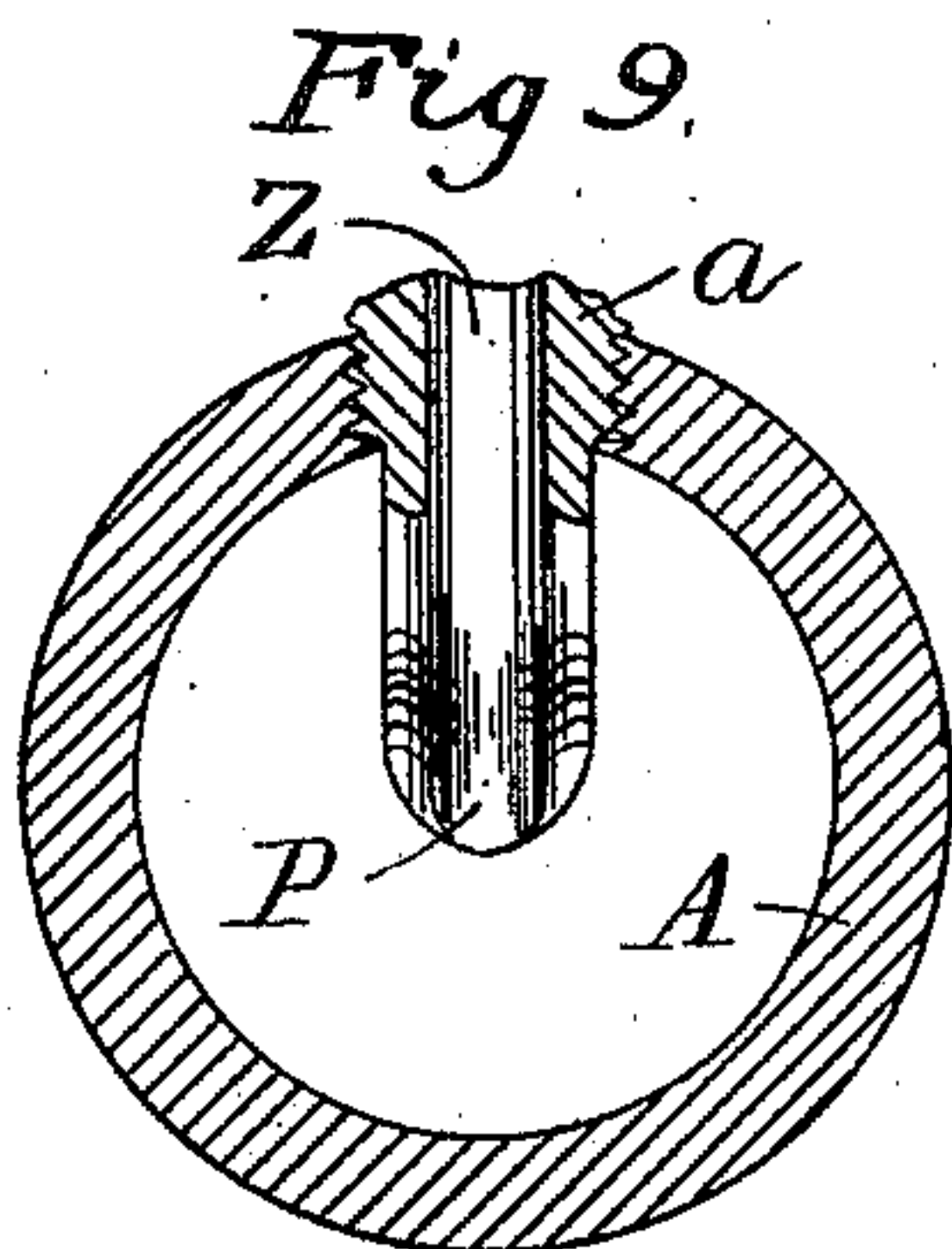
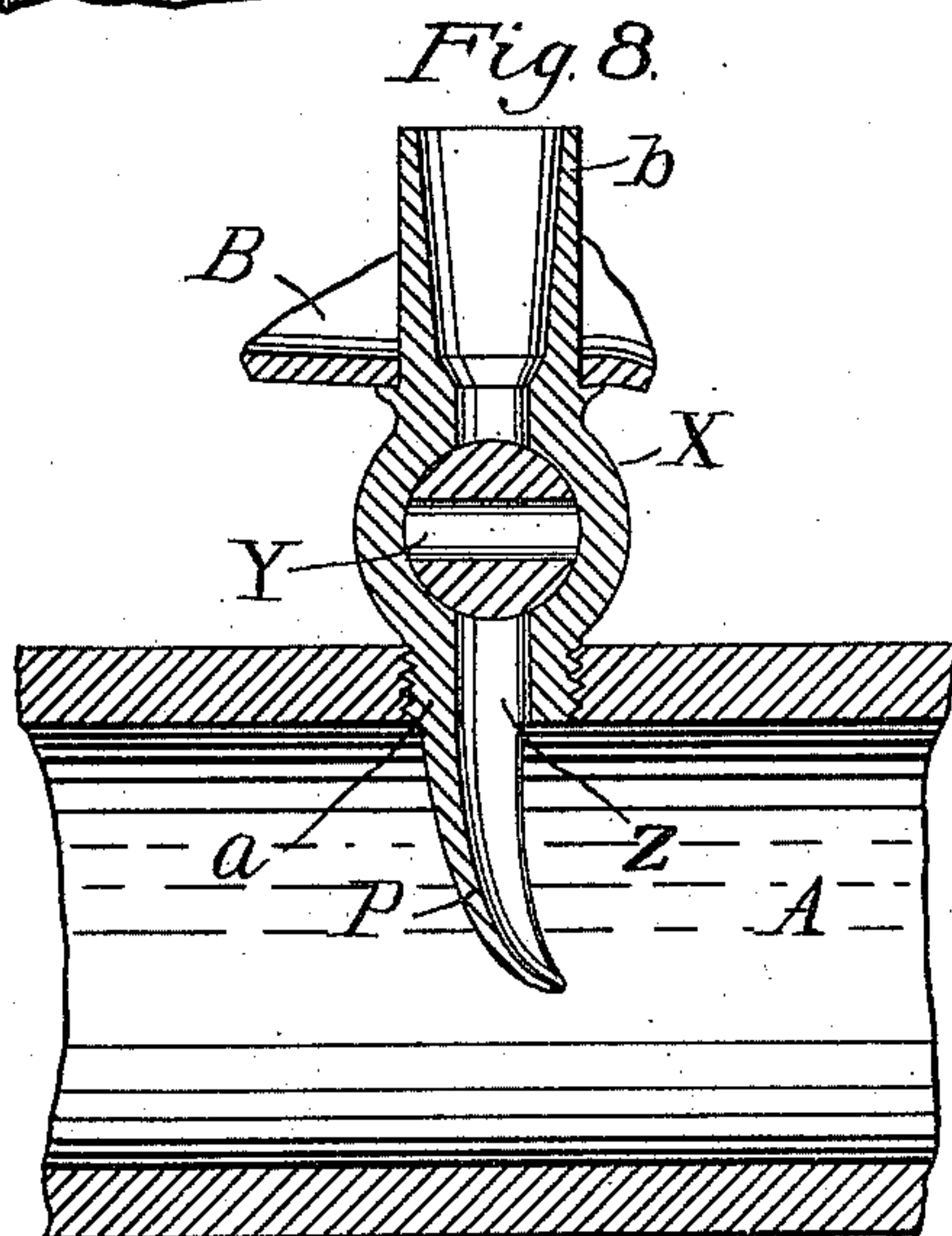
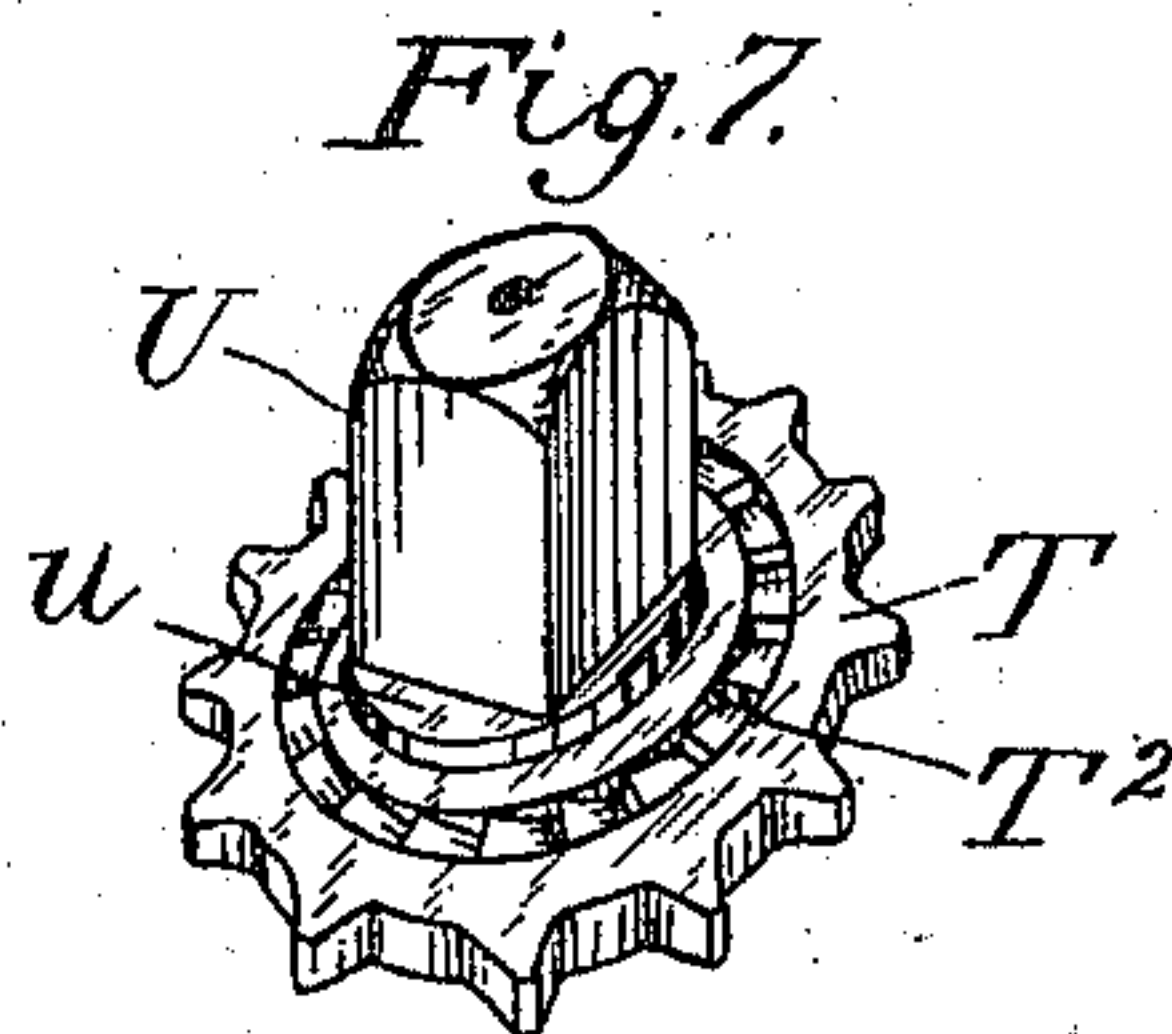
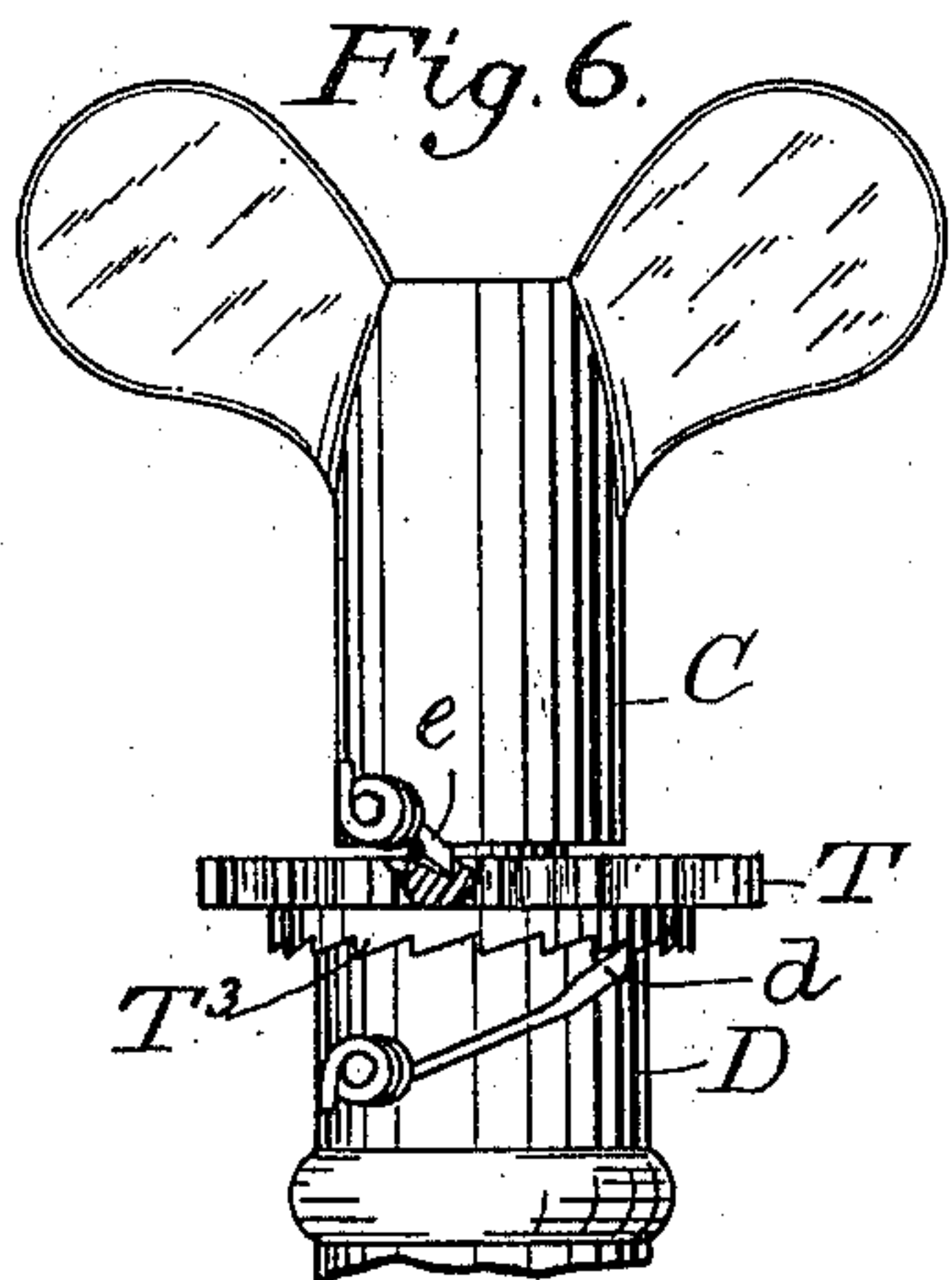
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# UNITED STATES PATENT OFFICE.

CHRISTIAN EICKMANN, OF INDIANAPOLIS, INDIANA.

## ELECTRIC GAS-LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 598,316, dated February 1, 1898.

Application filed July 3, 1897. Serial No. 643,484. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN EICKMANN, a citizen of the United States, residing at 151 Keystone avenue, Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Electric Gas-Lighting Machine for Lighting Gas in a Stove, Grate, or Furnace, of which the following is a specification.

My invention relates to the class of gas lighting or igniting apparatus adapted to be used in connection with a stove, furnace, oven, or lamp in which gas is consumed; and it consists in a machine or apparatus partly attached to and in connection with the supply-pipe leading to the burner proper by which the gas is utilized and also in connection with the stove, said machine consisting mainly in a vessel in which ignition and explosion take place to ignite the gas escaping from the burner, novel mechanism by which ignition is produced, and in the parts and combination of parts embodied in said apparatus, as will be more fully described hereinafter and claimed.

My object is to provide an apparatus of this description which may be more particularly adapted to be used in connection with stoves, ranges, or heaters of any description and which may be applied outside of the grate or combustion-chamber, so as to be free from exposure to damage by the heat of the furnace, and therefore durable and inexpensive in operation, and which may also be cheaply constructed and easily manipulated.

A further object is to provide such an igniter as may be safely operated in domestic use without danger of explosion in the stove from overaccumulation of gas before being ignited, as frequently occurs when a fire is started by the match or other common means.

These objects are fully attained in my invention, illustrated in the accompanying drawings, and hereinafter described.

Referring to the drawings, Figure 1 represents a central vertical sectional view of a supply-pipe and my attached explosion vessel in which the sparking mechanism is shown in elevation; Fig. 2, a top plan view of my machine, the cover of the explosion-chamber being removed to expose the sparking mechanism; Fig. 3, an elevation of a main gas-

valve having my improvements; Fig. 4, a top and a bottom plan of the sprocket-wheel operating with the main valve; Fig. 5, a central section of a gas-mixer; Fig. 6, an elevation of a fragment of main-valve case, showing the connected operating-key and sprocket-wheel; Fig. 7, a perspective of top of main-valve spindle and its sprocket-wheel; Fig. 8, a vertical central sectional view of a fragment of a supply-pipe having a gas-valve attached for admitting gas to the explosion-chamber, and Fig. 9 a transverse section of supply-pipe and front elevation of deflector attached to the priming-valve.

In the drawings, for convenience of description, A designates the supply-pipe; B, the explosion-chamber; C, the operating-key; W, the main valve; X, the priming-valve, and O the circuit-breaker.

In constructing my apparatus I provide a suitable vessel, preferably of iron, which may be suitably cast and comprising an explosion-chamber B, in which part of my operating mechanism is incased. The chamber has a priming-valve X, communicating with it, and also a suitable opening adapted to be connected directly to a stove or other furnace or by means of a connecting-pipe. Otherwise the chamber-walls are practically closed. A convenient shape is that shown, but other suitable shapes may be adopted, this being intended for use with a stove or similar heater. The vessel is preferably made in two parts and secured together by means of bolts G, and it is mounted above the supply-pipe A and secured thereto by means of suitable brackets E and bolts F. The supply-pipe leads from the source of supply to a suitable burner within the grate or combustion-chamber of a furnace and usually has a mixer similar to that shown interposed in the supply-passage. A main valve W permits gas to reach the mixer and pass to the burner. The valve W may be of the usual form of globe-valve, but having an extended end D to the packing-nut and having its valve-spindle U extending above the end D sufficiently to receive the sprocket-wheel T, above which is a shoulder *u*, and above this the spindle is of square or other form adapted to receive an operating-key C. The sprocket-wheel T has a circular central hole fitting movably over



the circular portion of the spindle U and has ratchet-teeth  $T^2$  in a circle at its upper face, preferably sunk below the surface, and similar teeth  $T^3$  at its under face, but preferably raised. The latter teeth are engaged by a spring-pawl  $d$ , secured to the case D, and the teeth  $T^2$  are engaged by a spring-pawl  $e$ , secured to the outside of the key C, the latter having a suitable opening in its end adapted to pass over the top of the spindle U and operate it.

The priming-valve X is preferably made in the simple form shown, in which the revolving plug having the passage Y is used and by which a small quantity of gas passing through the supply-pipe is admitted to the explosion-chamber above, into which the upper end  $b$  of the valve protrudes. From the plug upward the passage enlarges, so as to permit an unrestricted flow of gas. The shank  $a$  of the valve is secured into a suitable threaded hole in the pipe A and has attached to it a deflector P, of scoop shape, protruding into the pipe A in the path of the gas to deflect a portion of it into the passage Z of the valve.

Within the chamber B are standards H and L, the former being secured to the wall by a bolt J, combining an insulated binding-screw, to which one of the wires K, forming an electric circuit from a suitable battery, is connected, and the latter being likewise secured by a similar insulated screw M, to which is connected the other wire K, forming the circuit. Both standards are suitably insulated from the walls of the vessel. The standard H supports the stationary electrode I, which is so formed as to permit of its springing somewhat when rubbed by the opposite electrode. Its depending point is turned at an angle from the path of the circuit-breaker O, so that the latter shall strike it from the back and pass under its point.

A vertical axle N is secured to the standard L, and upon it are mounted the rotating electrodes or circuit-breakers O O, one or more of which may be employed. As shown, this is a horizontal bar having a central axle-hole and resting upon the top of the standard, being carried by a non-conducting block  $T'$ , to which is secured a sprocket-wheel R, and a chain S connects this with the wheel T, so that both wheels rotate in unison, but only in one direction, as actuated by the pawl  $e$  when the spindle U is turned to open the main valve, a movement of the wheels in an opposite direction being prevented by the pawl  $d$ , as the electrode I is designed to be rubbed by the arms O only in one direction. The wheel R has a stem Q secured to it, which extends through an aperture in the top of the vessel and is turned over to form an indicator-finger to show the direction in which the bars O point in relation to the electrode I. Suitable gage-marks may be applied to the upper surface of the vessel around the stem.

The main valve W may be placed at any convenient place in the supply-pipe line, so

that the chain S may properly run over the two wheels R and T.

In operation the priming-valve X is first opened and then the main valve W is opened, admitting gas to the burner and through the priming-valve to the igniting-chamber B, the movement of the main-valve spindle causing the bars O or electrodes to swing into contact with and rub the electrode I, forming an electric circuit, which being broken as the contact is broken a spark is thrown off, causing a slight explosion of the gas which has entered the chamber B, such explosion forcing the flame into the furnace, thereby igniting the gas escaping there from the burner. The priming-valve is then closed to prevent gas from escaping by leakage through the chamber above and to prevent further combustion in the chamber, which, if continued, would damage the apparatus. The chamber being comparatively tight, the flame from the furnace cannot enter it to cause damage.

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

1. A gas-igniting apparatus comprising a vessel having an explosion-chamber adapted to be connected to a furnace, and from which a flame may be propelled into a furnace, a duct between said chamber and a supply-pipe, a valve in said duct, electrodes in said chamber electrically connected, and means by which said electrodes may be connected in an electrical circuit and said circuit broken automatically by operating the main supply-valve, substantially as shown and described.

2. In a gas-igniting machine, the combination with a main supply-pipe, of an explosion-chamber in communication with the grate or main combustion-chamber, a priming-valve having a duct communicating between said main supply-pipe and said explosion-chamber, a flexible stationary electrode, a movable electrode or circuit-breaker, means by which said electrodes are connected in an electrical circuit, a main supply-valve in the line of said supply-pipe, and means by which said movable electrode shall be operated to form and break contact with said stationary electrode automatically when said main valve is opened but which shall permit said movable electrode to remain at rest when said main valve is being closed, substantially as shown and described.

3. In a gas-igniting machine, the combination with the main supply-pipe, of the vessel having the explosion-chamber, the priming-valve provided with the deflector extending into said main pipe and adapted to deflect gas into said priming-valve the stationary electrode in said chamber and electrically connected, the movable electrode in said chamber and electrically connected, the sprocket-wheel operating said movable electrode, the main supply-valve having on the case thereof a spring-pawl, the sprocket-wheel loose on the spindle of said main valve, ratchet-teeth at the under side of said last sprocket and en-



gaging said pawl on said valve-case, ratchet-teeth at the upper side of said last sprocket-wheel, the key adapted to operate said main-valve spindle and provided with the spring-pawl engaging the said upper ratchet-teeth, by which the sprocket-wheel on said main valve is caused to rotate when said main valve is being opened and to remain at rest when said valve is being closed, the chain by which said sprocket-wheels are connected, and means by which said vessel is supported and connected to a furnace, substantially as shown and described.

4. In a gas-igniting machine, the combination with the supply-pipe, of the vessel having the explosion-chamber, means for connecting said chamber with a furnace, the priming-valve adapted to conduct gas from said supply-pipe to said chamber, the electrode in said chamber electrically connected, the main supply-valve connected to said pipe, and means connected with said valve and said electrodes by which a circuit is formed and broken to throw off an igniting-spark, substantially as shown and described.

5. In a gas-igniting machine, the combina-

tion with the supply-pipe and the main valve, of the vessel having the explosion-chamber adapted to be connected to a furnace, the priming-valve having the deflector at its lower end and enlarged discharge-orifice and connecting said supply-pipe with said chamber, the flexible stationary electrode mounted in said chamber and electrically connected, the movable electrode electrically connected in said chamber and adapted to form a contact with said stationary electrode, the sprocket-wheel suitably mounted to control said movable electrode, the sprocket-wheel loose on the spindle of said main valve and having ratchet-teeth on each side inclined in the same direction, the pawl on said main valve engaging the teeth at the under side of said wheel, the key adapted to operate said valve-spindle, the pawl on said key engaging the teeth at the upper side of said wheel, and the chain connecting said sprocket-wheels, substantially as shown and described.

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