(No Model.)

S. T. J. BRAY.

APPARATUS FOR BURNING HYDROCARBON OILS.

No. 441,467. Patented Nov. 25, 1890.

Fig. 1.

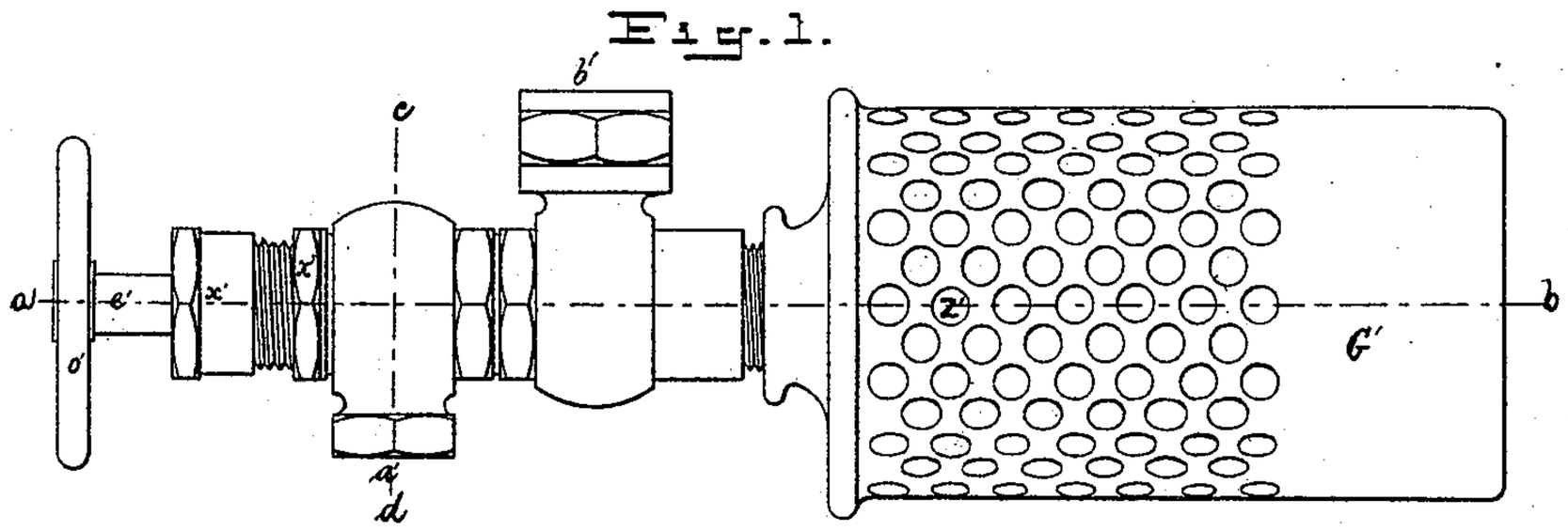


Fig. 2.

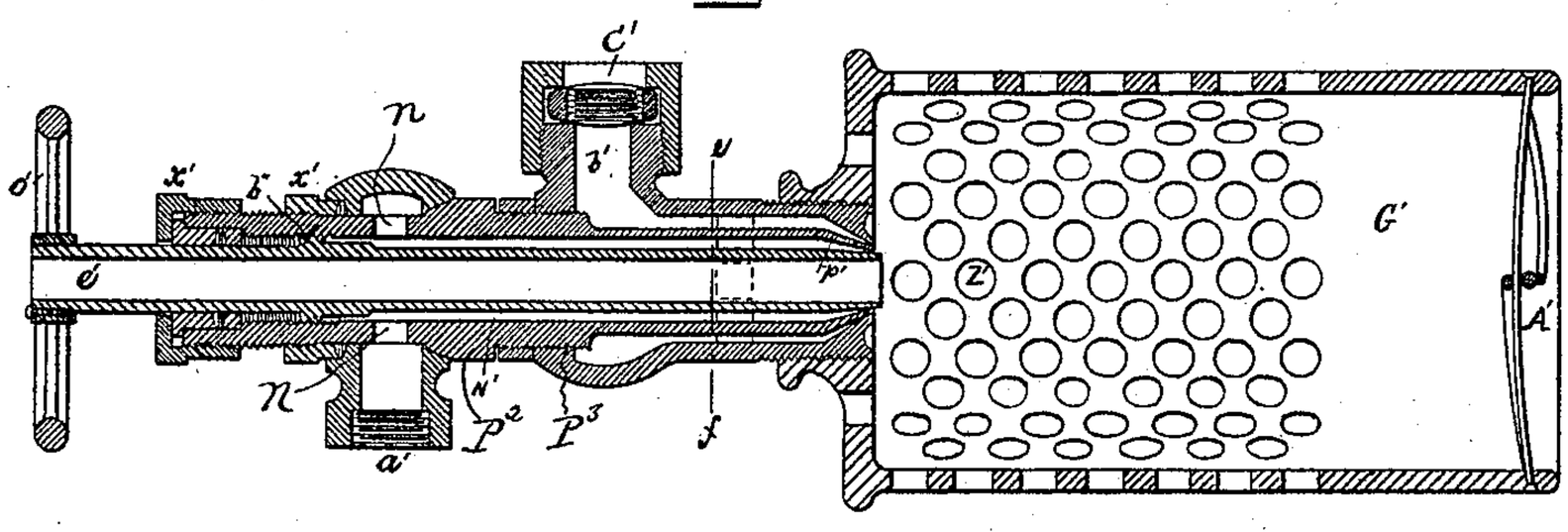


Fig. 3.

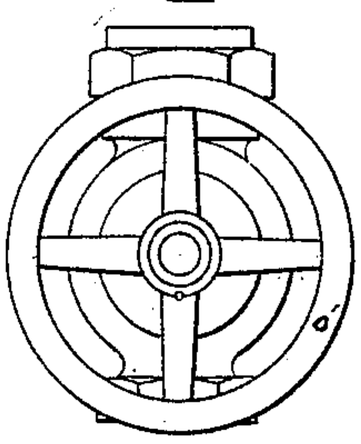


Fig. 4.

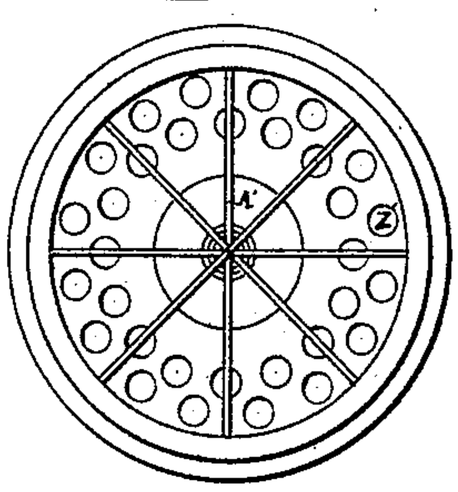


Fig. 5.

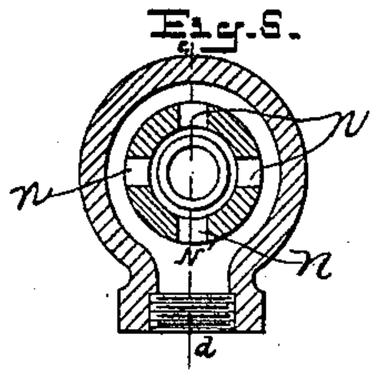
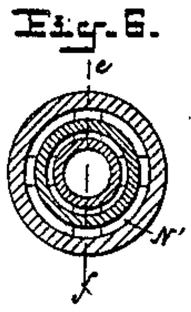


Fig. 6.



WITNESSES:

George Baumann

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UNITED STATES PATENT OFFICE.

STEPHEN THOS. J. BRAY, OF MOSCOW, RUSSIA.

APPARATUS FOR BURNING HYDROCARBON OILS.

SPECIFICATION forming part of Letters Patent No. 441,467, dated November 25, 1890.

Application filed December 6, 1889. Serial No. 332,786. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN THOS. J. BRAY, a British subject, and a resident of Moscow, Russia, have invented certain new and useful Improvements in Apparatus for Burning Hydrocarbon Oils, of which the following is a specification.

My invention has for its object certain improvement in apparatus for burning hydrocarbon oils, or what is commonly called "liquid fuel."

In the accompanying drawings, Figure 1 is an elevation of my said apparatus as ready for use. Fig. 2 is a longitudinal section of the same on the line *a b*, Fig. 1, and Figs. 3, 4, 5, and 6 are end views and sections on lines *c d* and *e f*, respectively, of the instrument.

The tube *b'* has a steam-inlet at *c'*, and the inner surface of its discharge end is made cone-shaped. A pipe *p'*, screwing into the steam-tube and having its discharge end cone-shaped both externally and internally, is adjustable in the tube by means of the screw part p^3. Passing through the pipe *p'* is a pipe *e'*, adjustable therein by means of the screw part at *i'*. The oil (from any suitable reservoir) enters by the inlet *a'* and passes through openings *n*, Figs. 2 and 5, in the pipe *p'*, into the space N', between the pipes *p'* and *e'*. By adjusting the ends of these different pipes with regard to each other any suitable amount of steam and oil may be permitted to pass out. The pipe *e'* is an adjustable regulating-spindle, which admits the oil to be consumed to come in contact with the steam, and which is made tubular to admit a central current of air to relieve the vacuum which would otherwise be formed, and to insure a regular flow of the oils to be burned.

The mode of operating the instrument is as follows: Steam is turned on into the space *b'* and regulated to suit the requirements by means of the adjusting-cone *p'*, which may be turned by hand or by a wrench at p^2, and which when once set requires no further adjustment. The oils to be burned are allowed to flow without hinderance into a space *a'*, Fig. 2, and by unscrewing a hand-wheel O' the oils will pass through space N' and coming in contact with the steam, will be completely atomized and driven forward into the furnace. As seen by the drawings, the cone-shaped outlet for the steam is more convergent than that for the oil. Thus the flow of steam is forced directly into the stream or spray of oil.

I fit to the burner a cylindrical shield G', (shown in the drawings,) into which air is blown through holes Z', and the open outer end of this shield has a few wires A' at right angles to the axis of the shield. Against these wires the atomized oils are dashed, so that the gases or vapors composed of oils, steam, and air are intimately mixed, and from this point begins a broad, steady, and economical flame.

I wish it to be understood that I do not confine myself to the size of any part shown in the drawings, nor to the kind of metal or material it may be made of; but

I claim as my invention—

A burner consisting of an outer steam-tube with a conical discharge end, an adjustable oil-tube within the latter, and a central regulating-spindle hollow to admit air, in combination with a shield fitted to the end of these tubes and provided with air-inlets, and with a few wires at its outer open end at right angles to the axis of the shield to break up and complete the mixing of the oil, air, and steam, all substantially as described.

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

STEPHEN THOS. J. BRAY.

Witnesses:
HERMANN KRAUSCH,
I. JAKISCH.