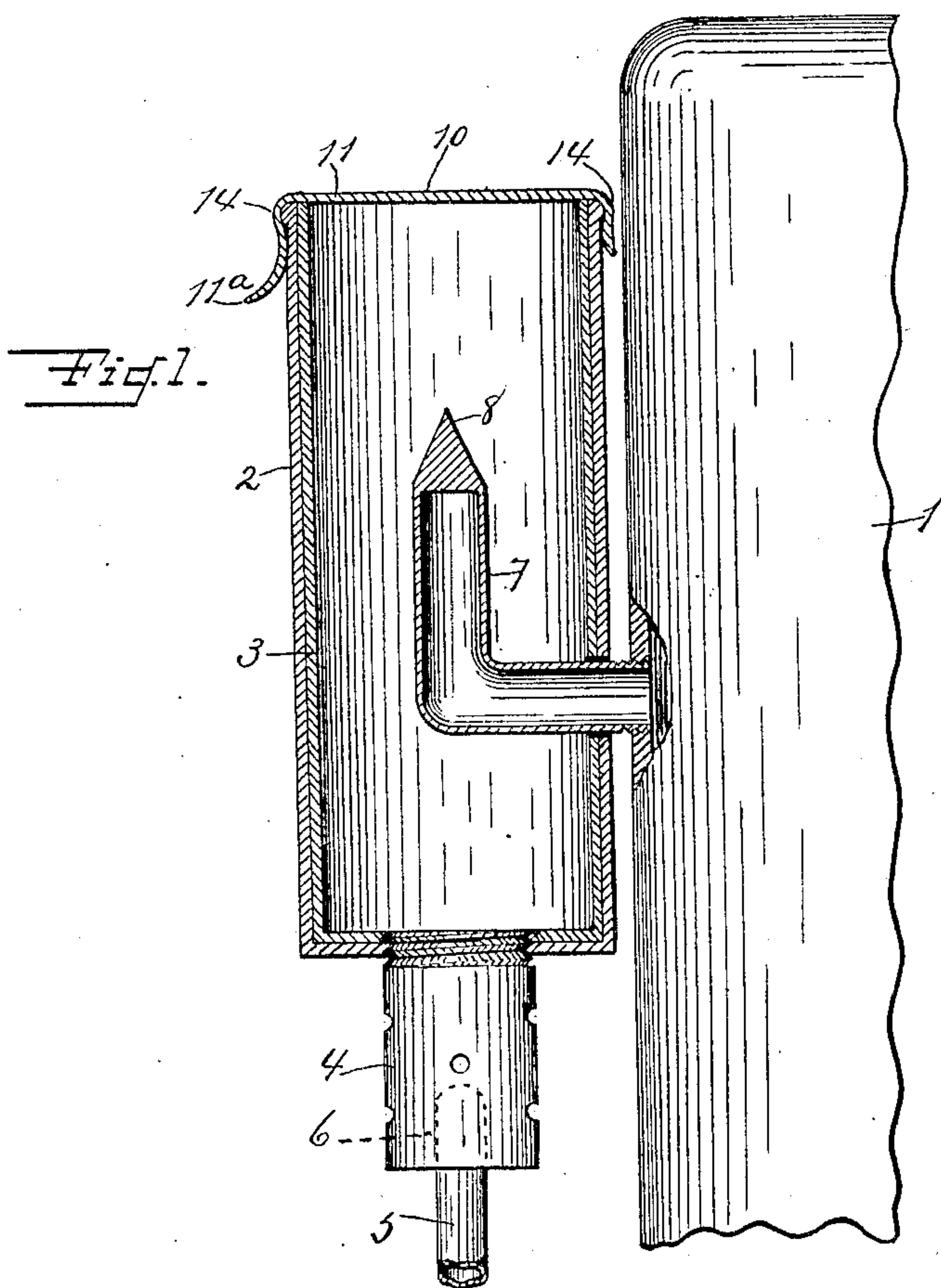
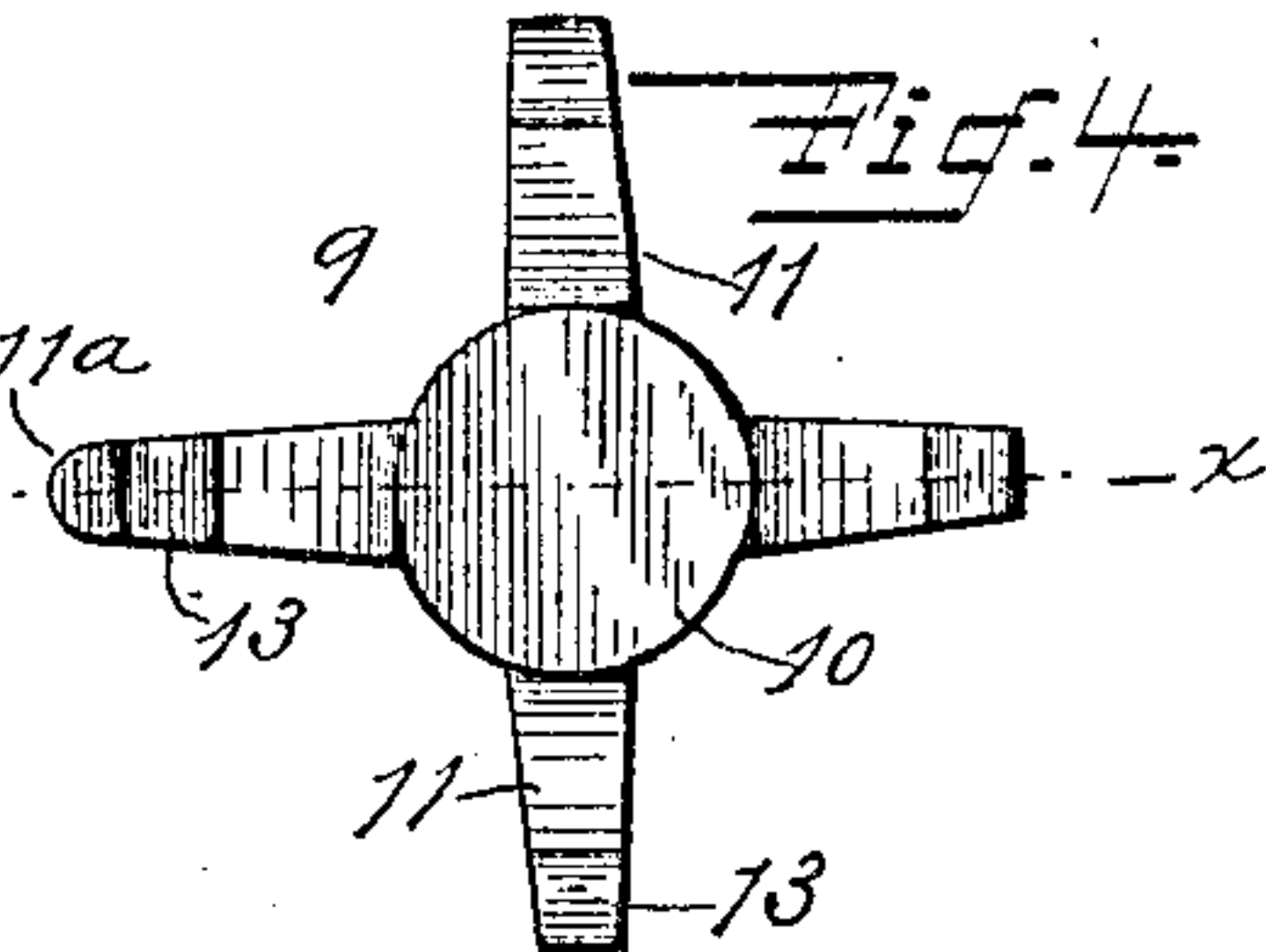
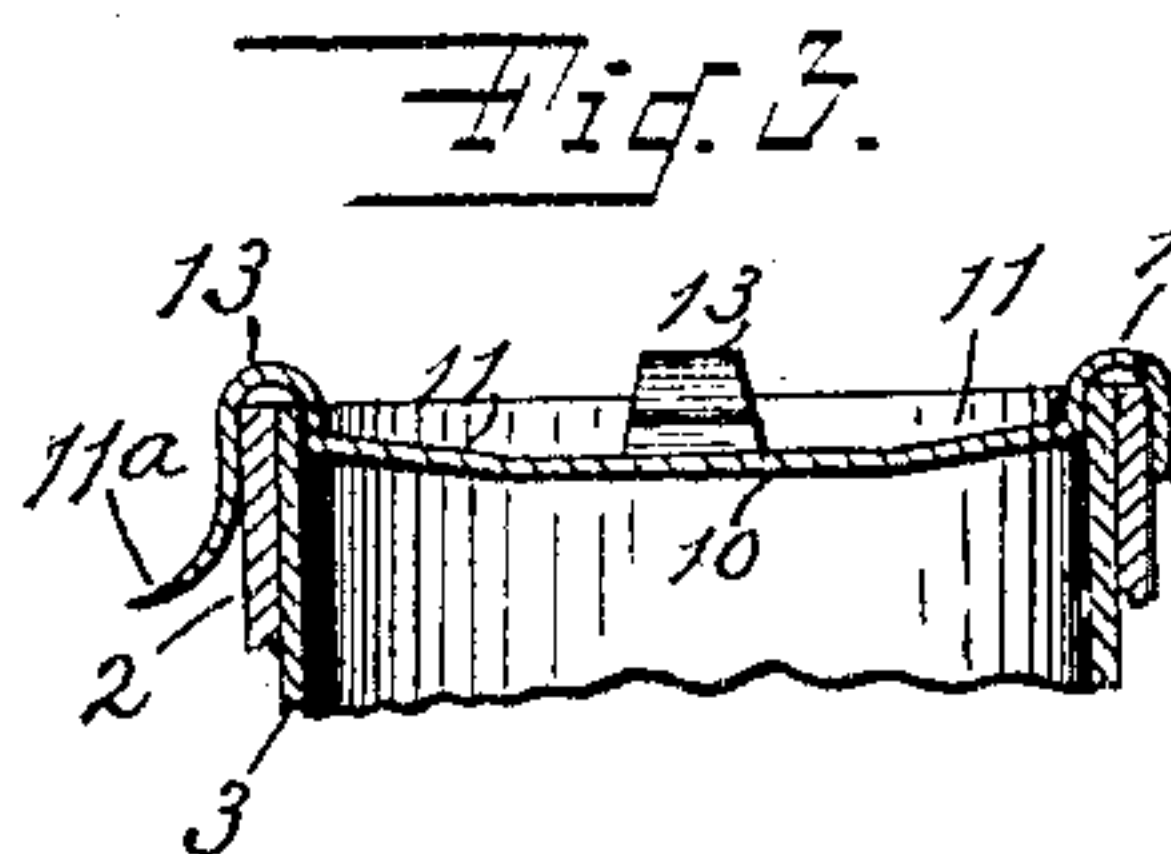
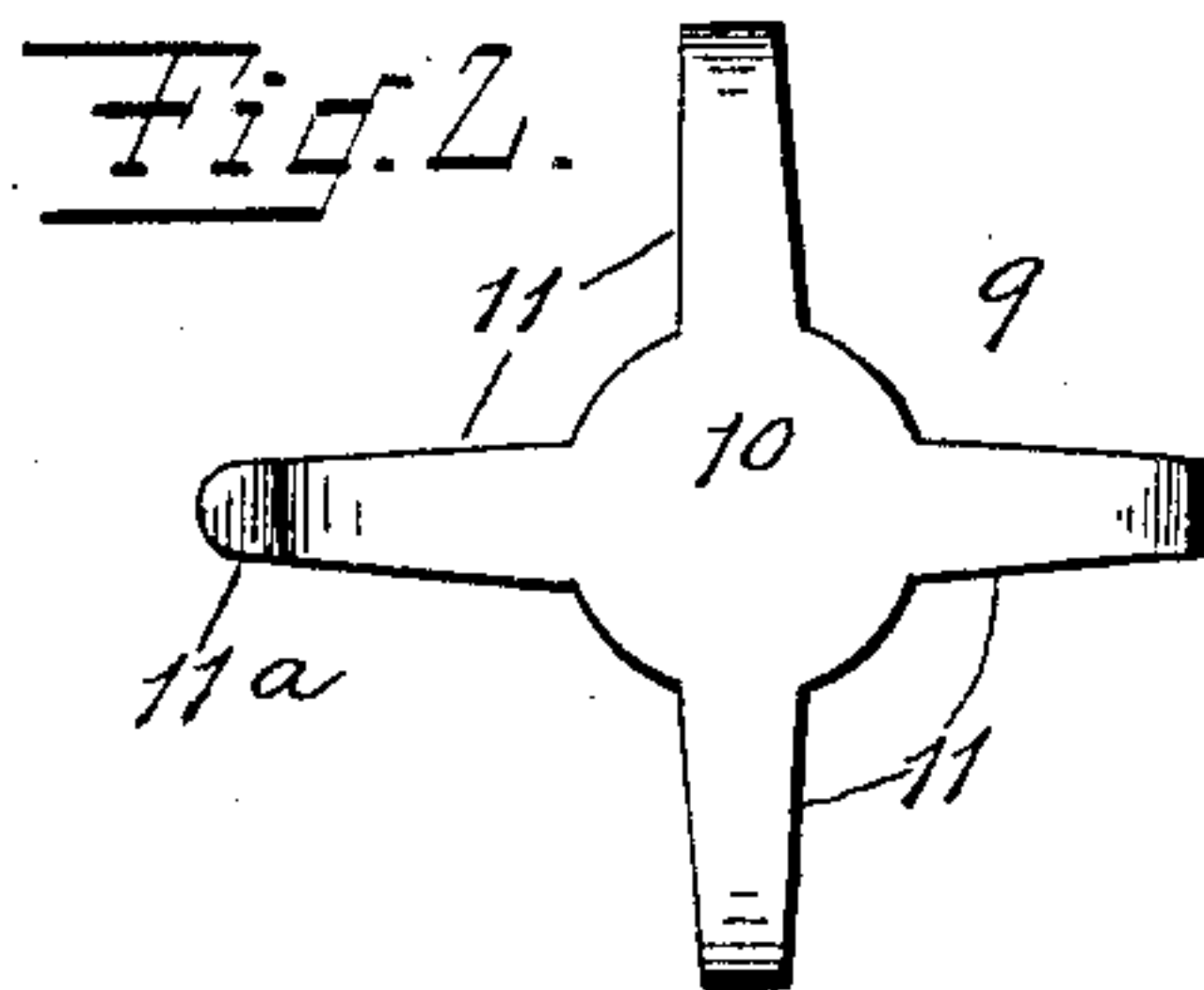


No. 871,883.

PATENTED NOV. 26, 1907.

P. McCUSKER.
BURNER FOR EXPLOSION ENGINES.
APPLICATION FILED MAY 22, 1907.



WITNESSES:
G. R. Richards.
J. B. Chambers.

INVENTOR:
P. McCusker,
By *H. M. Richards,*
Atty

UNITED STATES PATENT OFFICE.

PETER McCUSKER, OF GALESBURG, ILLINOIS.

BURNER FOR EXPLOSION-ENGINES.

No. 871,883.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed May 22, 1907. Serial No. 375,172.

To all whom it may concern:

Be it known that I, PETER McCUSKER, a subject of the King of England, and a resident of Galesburg, in the county of Knox and State of Illinois, have invented a new and useful Burner for Explosion-Engines, of which the following is a specification.

My invention relates to burners for explosion engines, and particularly to that class or type thereof in which gasoline, naphtha or like fuel is employed, the flame arising from the combustion of which surrounds and heats an ignition pipe or plug, a portion of which plug is within the heating chamber and the other end of which is connected with and opens into the cylinder. In the usual type of burner for such purposes, the flame is permitted to pass freely out of the heating chamber, whereby great loss of heat is entailed and the ignition pipe is not maintained at the sufficiently high temperature to insure regular ignition. This results not only in waste of fuel but the pipe is not at all times heated to such degree that uniform explosions of the vapor in the cylinder occur.

The main object of my invention is to provide a simple, durable, inexpensive and effective means whereby the otherwise wasted heat may be utilized; and a second object is to furnish such means of such form or construction that it may be instantly attached to and firmly held in place on the burner or combustion chamber or detached therefrom without injury to the operator.

In the accompanying drawings which illustrate a preferred embodiment of my invention: Figure 1 is a vertical, central sectional elevation, showing also a fragment of an engine cylinder; Fig. 2, a plan of a preferred form of the reflecting plate shown at Fig. 1; Fig. 3, a sectional view of the plate shown at Fig. 4 and a fragment of the combustion chamber, taken in the plane of the line $x-x$, Fig. 4; and Fig. 4, a modification of the plate shown at Figs. 1 and 2.

Referring to the drawing by numerals, the same one indicating the same part in the different figures, 1 represents a cylinder which may be of any desired form and construction, and is provided with a piston and means of gas supply, not shown. These form no part of my invention and need not be further herein described.

2 indicates a cylindrical combustion chamber or chimney and 3 its lining of asbestos

or other non-heat-conducting material or substance. Threaded into the lower end or bottom of the chamber 2 is an air supply pipe 4 through which passes a fuel-supply pipe 5 provided with a constricted nozzle or tip 6. These are parts of an ordinary construction of burner and operate in the usual manner. Ordinary drip pans and valves, not shown, are also provided.

Threaded into the cylinder at any suitable portion thereof is one end of an ignition pipe 7, the other end, 8, of which is a conical or pointed heat retaining plug which extends through the wall of and is located, as shown, within the combustion chamber. This also is of a well known construction.

9 represents my improved reflecting plate, formed preferably of a metal susceptible of receiving and sustaining a high polish or burnish, and resilient. It comprises a hub from which radiates a series of arms 11, the end of each of which is bent downwardly and inwardly to clasp and securely hold it from displacement on the wall of the combustion chamber. One, at least, of the arms 11 is elongated and at its extremity 11^a turned outwardly to such extent that it will not burn nor blister the fingers of the operator when grasped by him to remove it from the combustion chamber for cleaning or for any other purpose when it is in a heated condition.

In the modifications I have shown the hub or disk 10 is depressed and the radial arms are bowed or arched at 13 to fit snugly over the wall of the combustion chamber, which construction permits a somewhat firmer grip than that shown at Figs. 1 and 2.

The plug is kept heated by the flame from the vapor generated from the fuel supplied to burner tip 6 by pipe 5. The successive charges of explosive vapor in cylinder 1 are forced up into the interior of the ignition plug, and there ignited, as well understood. It is essential for perfect operation that said pipe be constantly and uniformly heated and that the heat be intense.

As has hereinbefore been stated, in burners of this character as heretofore constructed the flame would pass entirely through the heating chamber entailing a great loss in heat. To obviate this the reflecting plate is removably secured to the top of the heating chamber to partly cover it, whereupon the heat is reflected or turned back by it and especially by the polished or burnished hub

and arms. I have found in use that a saving of over one-half of the fuel heretofore used is effected, and that the explosions are uniform and positive, whereas I have experienced great difficulty in operating the burner without the reflector. Should it be desirable for any purpose to remove the plate from the combustion chamber when hot, the same is readily effected by grasping the extension or handle 11^a which, because of its distance from the chamber and from the horizontal arms of the plate, is comparatively cool.

Being of resilient material the wall of the chamber will be so firmly clasped by the terminals or extensions of the radial arms that when the device is employed on an engine which is itself moving and which is subjected to great and sudden jars and jolts, the plate will not be disturbed from its normal position. I have successfully operated the device on railway turn tables which are subjected to extreme jars from heavy locomotives striking them, sometimes causing the

light, when no plate is used, to be jolted with such force that it would be extinguished.

Having thus described my invention, its nature and advantages, I claim as new and desire to secure by Letters Patent:

In a burner for explosion engines provided with a heating chamber and an ignition pipe therein, a removable heat reflector adapted to be secured over the open end of the heating chamber, being formed of a single thin plate of resilient metal and consisting of a central hub smaller than the end of the chamber and outward-projecting arms bent downward at their ends to clasp the outer sides of the walls of the chamber.

In witness whereof I hereunto subscribe my name at Galesburg, in the county of Knox and State of Illinois, this 26th day of April, 1907.

PETER McCUSKER.

Witnesses:

MARY McCUSKER,
H. M. RICHARDS.