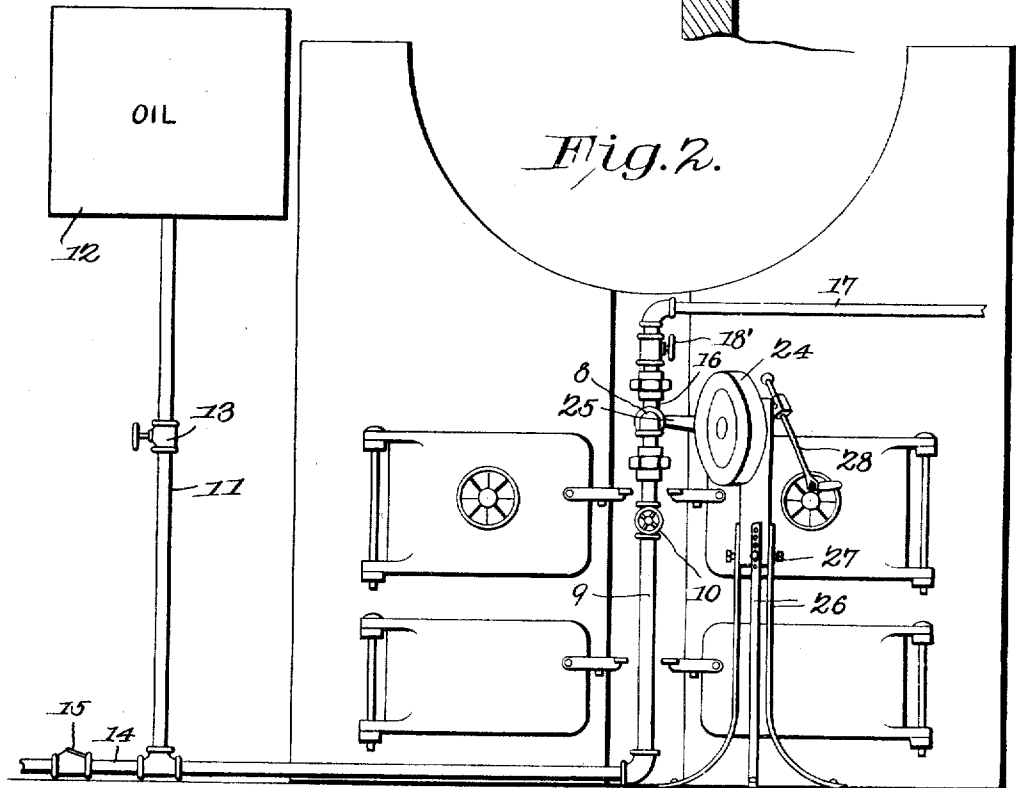
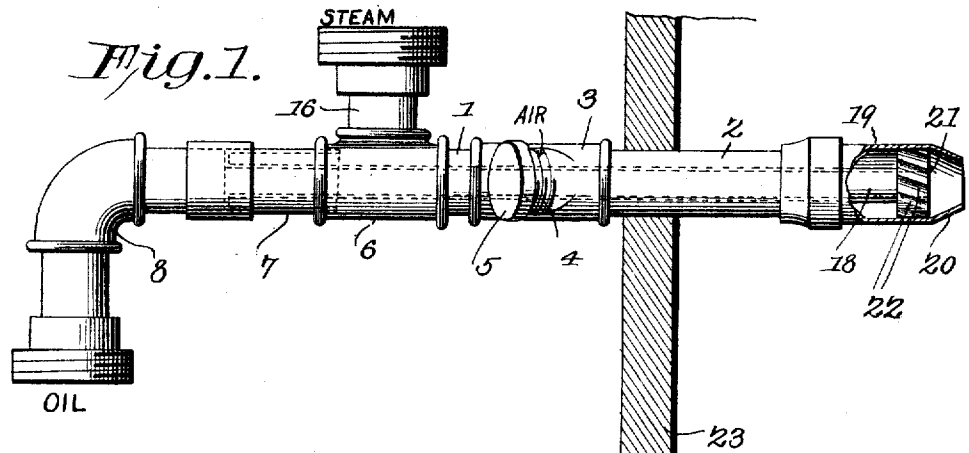


No. 828,804.

PATENTED AUG. 14, 1906.

E. A. BIRD.  
HYDROCARBON BURNER.  
APPLICATION FILED APR. 10, 1905.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWARD ABRIM BIRD, OF BUNKIE, LOUISIANA.

## HYDROCARBON-BURNER.

No. 828,804.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed April 10, 1906. Serial No. 254,829.

*To all whom it may concern:*

Be it known that I, EDWARD ABRIM BIRD, a citizen of the United States, residing at Bunkie, in the parish of Avoyelles and State of Louisiana, have invented a new and useful Hydrocarbon-Burner, of which the following is a specification.

This invention relates to that class of hydrocarbon-burners which are used especially for the purpose of generating heat in boiler-furnaces and in which the oil is mixed with steam or air as it is being discharged into the combustion-chamber of the furnace.

The invention has for its object to simplify and improve the construction and operation of this class of burners and to provide means whereby the burner may be started and combustion supported until sufficient pressure of steam has been generated in the boiler to operate the burner.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claim.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a side view, partly in section, of a burner constructed in accordance with the principles of the invention. Fig. 2 is a front elevation of a boiler-furnace, showing the improved burner applied thereto in position for operation and showing also the blower used for starting the burner.

Corresponding parts in both figures are indicated throughout by similar characters of reference.

The body of the improved burner consists of two pipe-sections 1 and 2, connected by a joint 3, having an obliquely-disposed branch 4, for which a closure, which may be in the nature of a cap 5, is provided. The burner-body is provided near its outer end with a T 6, the outer end of which receives a nipple 7,

having at its outer end an elbow 8, which is connected with the source of oil-supply by means of a pipe 9 of relatively large diameter and having a valve 10. The pipe 9 is connected by a stand-pipe 11 with the supply-tank 12, from which oil may be fed by gravity to the burner, the stand-pipe being provided with a valve 13, whereby the supply may be regulated. The stand-pipe is also in communication with a pipe 14, having a check-valve 15, through which oil may be pumped into the tank or reservoir 12. The lateral branch 16 of the T 6 is connected with a source of steam-supply by means of a pipe 17, having a valve 18.

Secured in the nipple 7 and extending longitudinally through the burner-body is an interior pipe 18 of relatively small diameter and which extends beyond the inner section 2 of the burner-body and into a nozzle 19, suitably connected with the burner-body and having a contracted mouth or opening 20. Upon the inner pipe 18 within the nozzle is mounted a spreader 21, consisting of a disk fitting peripherally within the nozzle and provided in its periphery with a plurality of spirally-disposed grooves 22.

By employing the connecting-nipple 7, as herein described, it is possible to use an oil-supply pipe of large cross-sectional area as compared with the cross-sectional area of the pipe 18, through which the liquid fuel is conveyed to the nozzle. A steady flow through the burner-pipe 18 is thus insured at all times.

The burner is supported for operation in the front wall 23 of the furnace, and when the various connections have been made, as herein described, it is in condition for operation.

In connection with the improved burner and for the purpose of starting the same when no steam is available there is used a blower, (shown conventionally at 24,) the casing of said blower being provided with a spout 25, adapted to engage the obliquely-disposed branch 4 of the joint 3 of the burner. The blower is supported upon a stand, including legs 26, which are adjustably connected with the body of the stand by means of set-screws 27, in order that the blower-casing may be properly adjusted to enable the nozzle 25 to be inserted into the open end or mouth of the branch 4 after removing the closure from the latter. The fan of the blower may be driven by hand by means of a crank 28, and gearing may obviously be used to speed the fan.

When a fire is to be started in the absence of steam-pressure, the blower is connected up with the burner, as shown in Fig. 2. After opening the oil-regulating valves to the desired extent the blower is started, thus forcing air through the burner-body around the internal pipe 18 and through the spirally-disposed grooves 22 in the disk 21, thus forcing the oil through the nozzle in the form of a whirling spray which when ignited will burn freely. The operation of the blower is kept up until steam has been generated and raised to the desired degree of pressure. The blower may then be disconnected from the burner. The opening of the branch 4 is closed by the cap or closure 5 and the steam-valve 18 is opened, thus causing steam to take the place of the air previously injected.

The improved burner, as will be seen from the foregoing description, is extremely simple in construction and operation, and it may be easily and accurately regulated as to the relative supply of steam and burning fluid. The entire absence of needle-valves is considered a great advantage, inasmuch as the various passages are thereby rendered less liable to become choked or obstructed.

Having thus described the invention, what is claimed is—

A hydrocarbon-burner comprising an outer tube, an inner tube having a single outlet-opening at one end and arranged with the outlet end projecting beyond the outer tube, a grooved disk on the extremity of the inner tube and arranged with its end surface flush with the outlet end of the latter, a nozzle secured to the outer tube and extending on opposite sides of the disk, said nozzle having a contracted mouth beginning directly at the end of the disk and discharge ends of the grooves thereof and arranged with its opening axially in line with the outlet-opening of the inner tube, separate air and steam inlet connections included within and forming parts of the outer tube and disposed intermediate the ends of the inner tube, and a fuel-supply pipe connected with the inner tube.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD ABRIM BIRD.

Witnesses:

J. J. FURLOW,  
E. H. TALIAFERRO.