

(No Model.)

2 Sheets—Sheet 1.

C. D. BETTS.

APPARATUS FOR BURNING NATURAL GAS.

No. 457,245.

Patented Aug. 4, 1891.

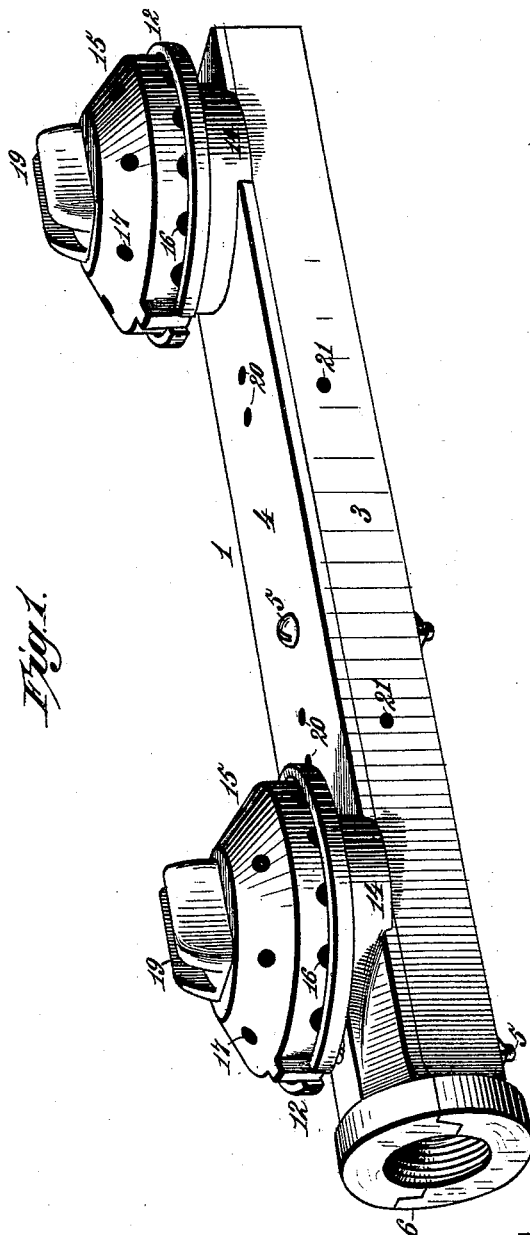


Fig. 1.

Witnesses.
Robert Everett
J. A. Rutherford

Inventor:
Charles D. Betts
By *James L. Norris*
Norris

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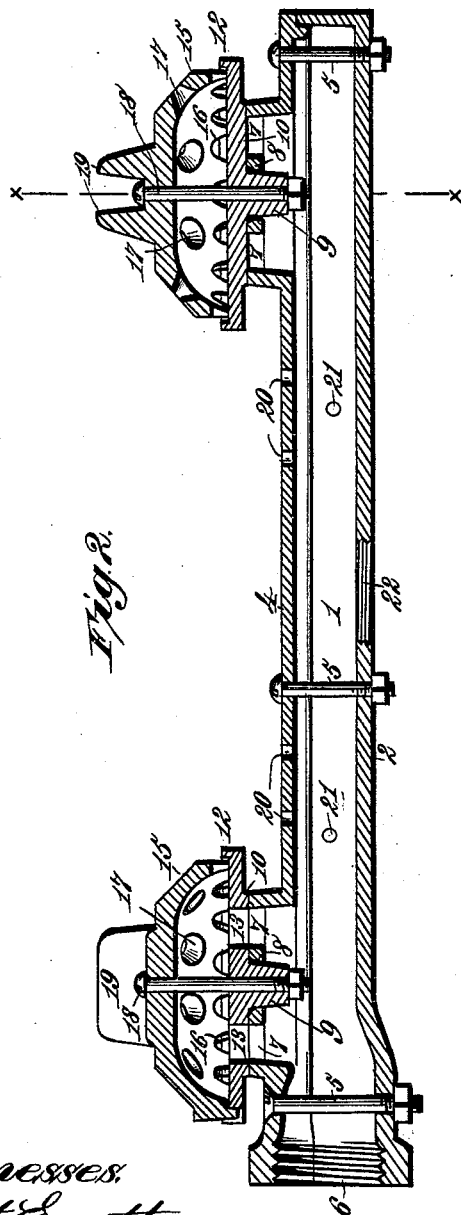


Fig. 2.

Fig. 4.

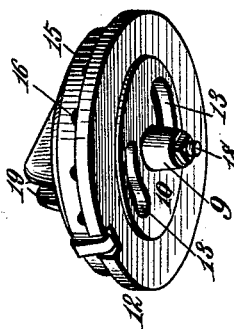
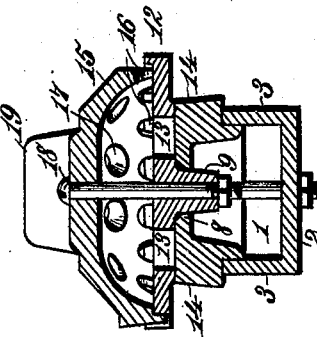


Fig. 3.



Witnesses:
Robert Emmett.
John Rutherford.

Inventor.
Charles D. Betts.
By *James L. Norris.*
Atty.

UNITED STATES PATENT OFFICE.

CHARLES D. BETTS, OF WARREN, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS
TO LEWIS BETTS AND WILLIAM H. PICKETT, BOTH OF SAME PLACE.

APPARATUS FOR BURNING NATURAL GAS.

SPECIFICATION forming part of Letters Patent No. 457,245, dated August 4, 1891.

Application filed January 29, 1891. Serial No. 379,536. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. BETTS, a citizen of the United States, residing at Warren, in the county of Warren and State of Pennsylvania, have invented new and useful Improvements in Apparatus for Burning Natural Gas, of which the following is a specification.

This invention has for its object to provide a novel apparatus for burning natural gas in heating stoves, ranges, furnaces, and other similar structures, and to provide novel means whereby the burner-head can be rotated or turned in a horizontal plane parallel with the horizontal plane of the gas-conduit upon which the burner-head is journaled for the purpose of controlling the flow of natural gas from the conduit into the burner-head.

To accomplish these objects my invention involves the features of construction, the combination or arrangements of parts, and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a perspective view of an apparatus constructed in accordance with my invention for burning natural gas. Fig. 2 is a longitudinal sectional view taken on a vertical plane centrally through the apparatus. Fig. 3 is a transverse sectional view taken on the line *xx*, Fig. 2; and Fig. 4 is a detail perspective view looking at the underside of one of the burner-heads to more clearly exhibit its stud-journal.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, where—

The numeral 1 indicates a hollow casing, which is preferably rectilinear in the direction of its length and square or rectangular in cross-section to form a flat bottom wall 2 and parallel upright side walls 3. The horizontal top wall 4 of the casing is a separate piece and is secured in place by vertical screw-bolts 5, or similar attaching devices, of such construction that the top plate can be conveniently removed or replaced if occasion de-

mands. The casing, constructed as described, constitutes a gas-conduit, which at one end is provided with a screw-threaded neck 6, by which to couple it to a pipe which supplies the natural gas to be burned. The detachable top wall of the conduit is provided near each end with a series of gas-orifices 7, preferably in the form of segmental slots, and between each set of orifices the top wall is formed integral with a socket 8 to receive the cylindrical stud-journal 9, formed centrally with the base-plate 10 of a burner-head 12. These base-plates 10 are each provided with segmental orifices 13, adapted to register with the orifices 7 in the top wall of the gas-conduit in such manner that by axially rotating the burner-head in a horizontal plane which is parallel with the horizontal plane of the gas-conduit the orifices in the burner-head can be placed into or out of coincidence with the orifices 7 in the top wall of the gas-conduit, whereby it is possible to vary the quantity of gas flowing into the burner-head or to entirely cut off the burner-head from communication with the gas-conduit.

The top wall of the gas-conduit is provided near each end with a projecting annular flange or rib 14, to form seats or bearings for the base-plates of the burner-heads, the construction being such that the latter project at right angles, or approximately so, to the gas-conduit.

The burner-heads are each composed of the base-plate described and a hollow or cup-shaped plate or shell 15, provided in its edge, which rests on the base-plate, with gas-delivery orifices 16, and in its body portion with divergent gas-delivery orifices 17. The cup-shaped plate or shell is secured into fixed position by a vertical screw or bolt 18, passing through the stud-journal 9 of the base-plate 10, for the purpose of rigidly connecting these parts so that they rotate or turn in unison.

The burner-heads are each provided with a pair of separate lugs or ears 19 to receive between them a suitable implement, such as a poker, for the purpose of rotating or turn-

ing the burner-head to place its gas-orifice 13 into or out of coincidence with the gas-orifices 7 in the gas-conduit.

I have exhibited the gas-conduit as provided with a pair of rotary burner-heads; but obviously a greater or less number can be employed without departing from the spirit of my invention.

By my improved construction I provide a novel, simple, and efficient apparatus for burning natural gas to utilize the latter in heating stoves, ranges, and similar structures, while the most simple means are present which render it convenient to vary the flow of gas from the conduit to the burner-head, or to entirely cut off the flow of gas into such burner-heads. By this means I am enabled to arrange a series of burner-heads on a single gas-conduit for natural gas, whereby any one or all of such burner-heads can be promptly cut off from communication with the gas-conduit without the necessity of employing an ordinary cock or valve for controlling the flow of gas to each burner, as in those burners where independent gas-conduits connect with separate sections of a gas-burner, and each conduit is provided with a cock or valve of ordinary construction to control the flow of gas there-through to the burner.

I am aware that a burner-tip for illuminating-gas has been made to rotate for cutting off the passage of the gas through the burner to the tip; but the prior construction is not practicable for natural gas, and, further, the arrangement of parts is substantially and materially different from that described and shown by me.

An important feature involved in my construction and mode of operation resides in the fact, as before stated; that I can employ a plurality of burner-heads with a single gas-conduit and throw any one or all of such burner-heads into or out of action by simply rotating it in a horizontal plane which is parallel to the horizontal plane of the gas-conduit. This arrangement and principle of operation provides a practicable structure to utilize natural gas for heating purposes, while the apparatus is simple, economical, and not liable to become inoperative.

The main body portion of the gas-conduit, comprising the bottom wall 2 and the side walls 3, is preferably a single casting, and likewise the top wall 4 is preferably a single casting, while the parts of the burner can also be cast, thereby enabling the apparatus to be economically manufactured. The top wall of the casing or conduit is provided with a series of jet-orifices 20, arranged near each one of the rotary burners, so that the gas will at all times burn at these jet-orifices 20 for the purpose of igniting the gas issuing from a burner should it be turned off and subsequently turned on. In practice, if one of the burners be turned to close the supply of gas thereto and subsequently be turned to permit the

flow of gas from the burner, the escaping gas would likely cause an explosion if the gas issuing from the burner were not promptly relighted. The provision of the relighting jet-orifices fulfills the conditions required to instantly ignite the gas issuing from a burner if the latter should be turned off and subsequently turned on. I may also provide the side walls of the conduit or casing with similar relighting jet-orifices 21, but these orifices are preferably placed in the top wall of a casing or conduit, although both constructions may be employed.

Instead of connecting the gas-supply pipe with a screw-neck 6 at one end of the conduit or casing, I may provide the bottom wall of the conduit or casing with a screw-threaded socket 22 for connecting with a gas-supply pipe.

My improved burner or apparatus for utilizing natural gas in heating stoves, ranges, and furnaces is desirable owing to facility afforded for conveniently cleaning it. This is rendered possible by the detachable top wall and by the fact that the burner-heads can be readily removed by simply lifting their stud-journals from the socket-bearings, while the burner-head itself is in sections capable of convenient separation.

Having thus described my invention, what I claim is—

1. An apparatus for burning natural gas, consisting of a gas-conduit having gas-orifices, and a rotary burner-head projecting from the gas-conduit at right angles to the length thereof and having its base-plate provided with gas-orifices to register with those in the gas-conduit, said burner-head rotating in a plane parallel with a horizontal plane through the length of the gas-conduit, substantially as described.

2. An apparatus for burning natural gas, consisting of a gas-conduit having a wall provided with a socket-bearing and gas-orifices, and a rotating burner-head having a base portion provided with gas-orifices and a projecting stud-journal arranged in the socket-bearing of said wall, whereby the gas-orifices in the base of the burner-head are placed into and out of coincidence with the gas-orifices in the wall of the conduit by the rotary movement of the burner-head, substantially as described.

3. An apparatus for burning natural gas, consisting of a conduit having a wall provided with gas-orifices and a rotating burner-head having a stud-journal connection with the said wall and provided with gas-orifices, and a pair of projecting lugs or ears for the reception between them of an implement for axially turning the burner-head, and thereby placing its gas-orifices into and out of coincidence with those in the wall of the conduit, substantially as described.

4. An apparatus for burning natural gas, consisting of a gas-conduit provided with ro-

tating burner-heads and gas-orifices which
are opened and closed by rotating the burner-
head, and relighting jet-orifices extending
through a wall of the casing or conduit for
5 the purpose of relighting the gas issuing
from a burner if the latter be turned off and
subsequently turned on, substantially as de-
scribed.

In testimony whereof I have heretunto set
my hand and affixed my seal in presence of 10
two subscribing witnesses.

CHARLES D. BETTS. [L. s.]

Witnesses:

F. P. COBHAM,
JOHN CLARK.