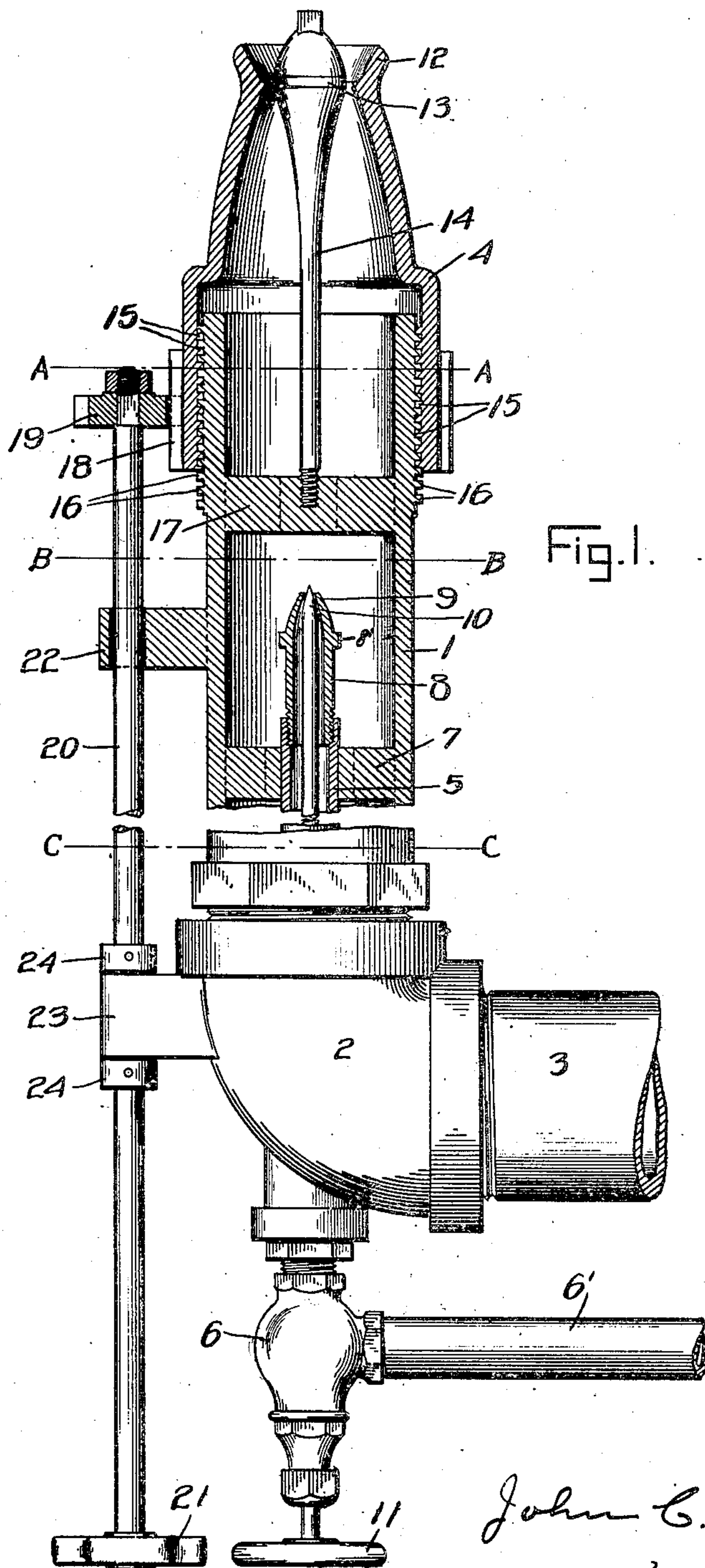


J. C. COLLIGAN.
HYDROCARBON BURNER.
APPLICATION FILED AUG. 16, 1909.

945,695.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.



Witnesses

C. H. Reichert
H. H. Brown

Inventor

John C. Colligan

By

Knight Bros

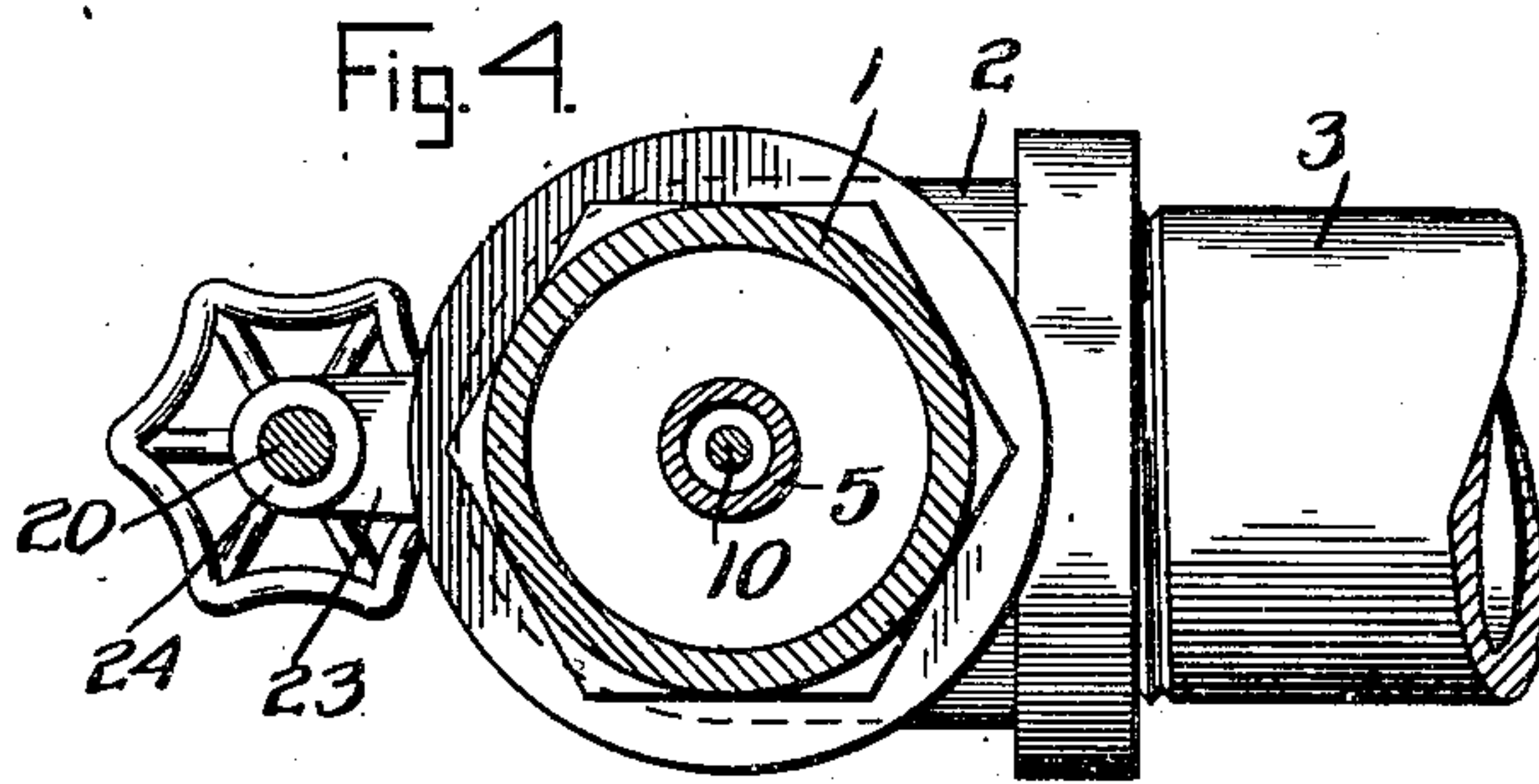
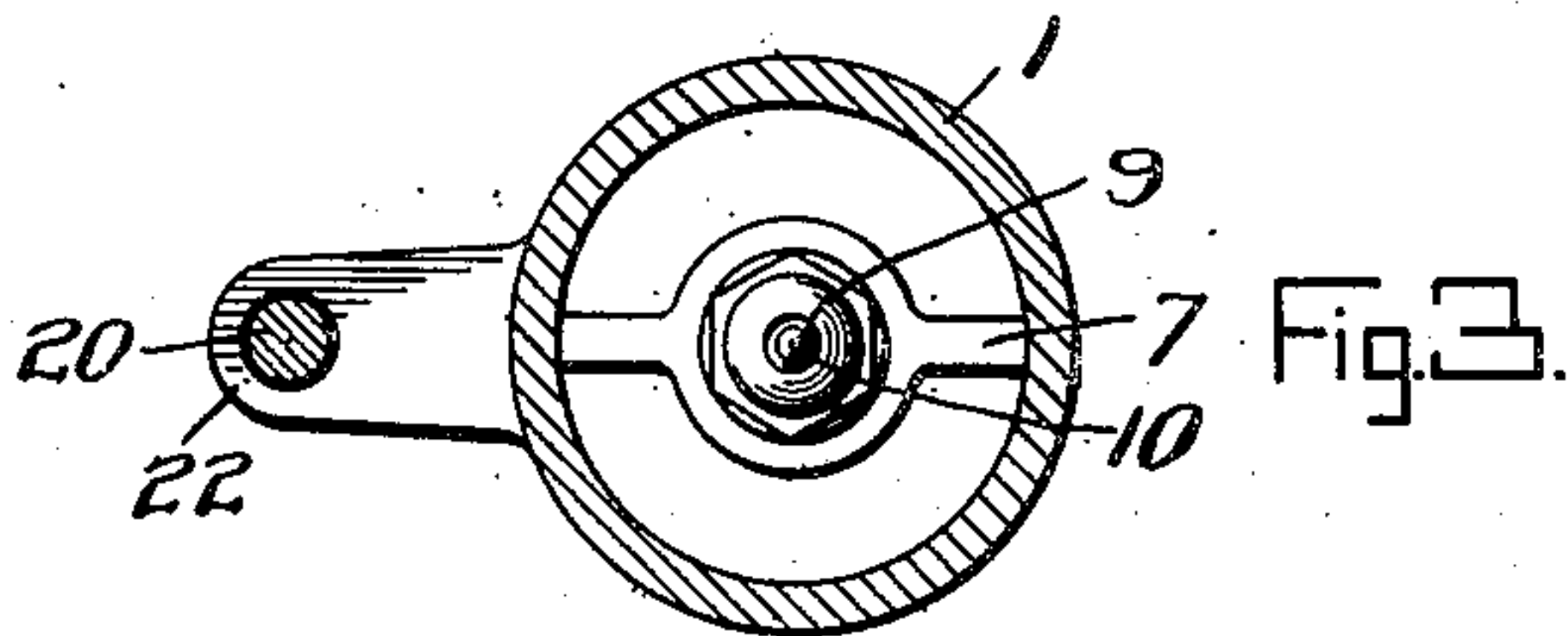
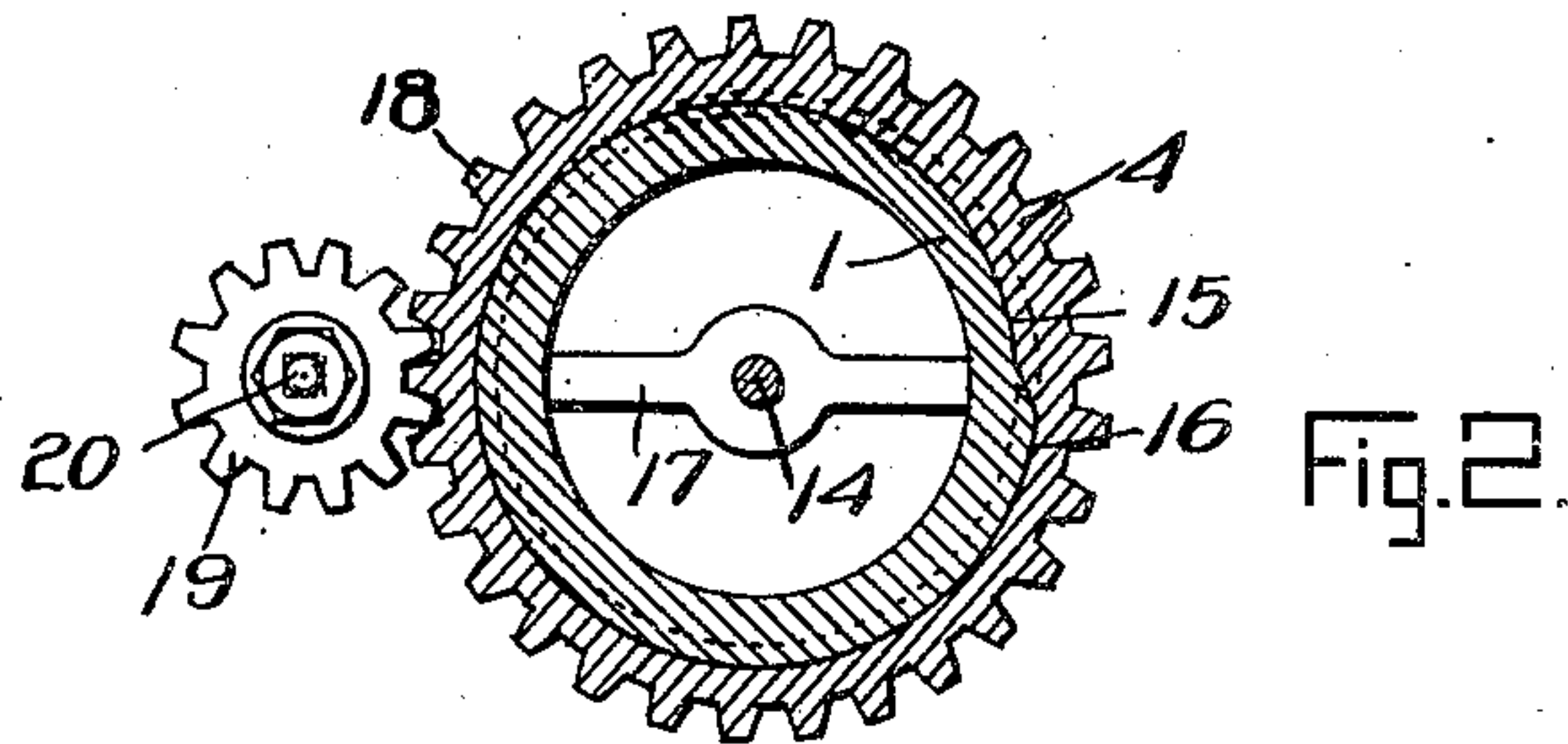
Attorney

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2 SHEETS—SHEET 2.



Witnesses

C. K. Reichenbach

H. H. Byrne

Inventor

John C. Colligan

By

Knight & Co.

Attorney

UNITED STATES PATENT OFFICE.

JOHN C. COLLIGAN, OF CORSICANA, TEXAS.

HYDROCARBON-BURNER.

945,695.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed August 16, 1909. Serial No. 513,134.

To all whom it may concern:

Be it known that I, JOHN C. COLLIGAN, a citizen of the United States, residing at Corsicana, in the county of Navarro and State of Texas, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

The present invention relates to hydrocarbon burners and has for its purpose to provide an improved device of that character wherein the flame may be regulated so as to variably distribute its area, and to permit of this adjustment of the burner while the same is in use.

A further purpose of the invention is to provide a burner of the character in question wherein the vapor and the fuel are thoroughly commingled within the burner and at a point removed an appreciable distance from the nozzle outlet.

The burner is so designed and constructed that either a high or low pressure of steam or air may be used as the means for atomizing, mixing or spraying the oil as it enters the furnace and which by reason of the peculiar means for regulation above stated makes the burner particularly applicable for use in cement kilns, wherein cylinders of the horizontal, rotating type are employed, and to which end the present invention is particularly adapted.

With the above purposes in view, the invention is described, and the manner of operation explained, in the following extended description, and the points of novelty thereof set forth in the appended claims.

In the accompanying drawing wherein is shown the burner in its preferred structure, Figure 1 is a view partly in longitudinal section and side elevation. Fig. 2 is a transverse sectional view of Fig. 1, taken on the line A—A, Fig. 3 is a similar view taken on the line B—B, and Fig. 4 is a view taken along the line C—C.

Referring to the several figures in detail and with like reference characters indicating corresponding parts in the different figures shown, 1 designates a cylinder or pipe which is fixed and which through an elbow coupling 2 connects with a pipe 3 that leads from the source of the supply of the atomizing medium. At its upper end, the pipe 1 is provided with an adjustable nozzle 4 whose design and manner of adjustment will be hereinafter explained.

Within the pipe 1 and extending about

one half the distance of its length is a tube 5 which enters at the elbow 2 and which in turn is connected by an angle valve 6 with a pipe 6' that leads from the source of fuel supply. The fuel supply pipe 5 is rigidly and centrally held within the tubular casing or cylinder 1 by means of a cross bar or spider 7 which is formed integrally with the inner wall of said cylinder. At its upper end the tube 5 is provided with a jet or nozzle 8 which is screw threaded thereon. The outlet opening of the jet is disposed intermediate the chamber provided by the cylinder 1 and the nozzle 4 and is thus removed an appreciable distance from the outlet of said nozzle 4, whereby the fuel and the atomizing fluid may be thoroughly commingled before passing out of said chamber. Said nozzle is formed with a nut 8' whereby the member may be secured to or removed from position. The upper end of the jet 8 has a restricted passageway 9 therethrough, which when cooperating with the tapered end 10 of a valve constitutes the means for spraying the fuel in a manner that will be obvious. The valve rod 10 extends throughout the length of the supply tube 5 and through the coupling 6, and at its opposite end is fitted with the hand turning wheel 11, whereby adjustment thereof may be effected.

The nozzle 4 of the burner is of substantially conical design and at its upper end terminates in an outwardly disposed or flaring flange 12, which cooperating with the head 13 of the bar 14 effects the variable spraying of the flame as the fuel is ejected. The lower portion of the nozzle 4 has internal screw threads 15 that engage with complementary threads 16 on the cylinder 1 whereby to be adjustably secured thereon. The rod 14 has its lower end fixed within a cross bar or spider 17 that is formed integrally with the cylinder 1 whereby said bar forms the fixed member for the relative adjustment thereto of the nozzle 4 as will be clearly seen by reference to Fig. 1.

The means for effecting the adjustment of the nozzle comprises a hand turning gear, the several parts whereof are integrally formed sprocket teeth 18 on the lower outer side of said nozzle and with which sprocket teeth a relatively small pinion 19 is engaged. The pinion 19 is fixedly carried upon the upper end of a vertically disposed rod 20 whose lower end is fitted with a hand turning wheel 21. The gear operating rod 20

is journaled within castings 22 and 23 that project from the cylinder 1 and coupling respectively; and said rod is held in operative position by means of a pair of collars 24 that
5 are pinned thereon and disposed to either side of the bearing member 23.

From the foregoing description it will be seen that the fuel entering through the supply pipe 6' will be caused to issue from the
10 jet 9 by the injector action of the atomizing fluid coming through the pipe 3 and through the medium of the latter will be sprayed against the cross bar or spider 17 where both fluids will be commingled and in this
15 condition will pass through the restricted passageway provided by the nozzle at which point it issues in the form of a flame whose area or volume may be regulated at will through the hand turning gear 21 in a manner that will be obvious. The out flow of the oil may itself be regulated by the hand wheel 11 as explained. Thus through the means of the regulating hand wheels 11 and 12 the burner is absolutely under the control of the operator at all times and may be
25 so controlled while the burner is in full operation.

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

1. In a hydrocarbon-burner, a cylinder having an inlet for an atomizing fluid, a nozzle thereon having a restricted passageway, a vertically disposed bar fixedly
35 mounted within the cylinder and having a headed end lying within the passageway of said nozzle, said nozzle being adjustable relative to said bar, a fuel supply pipe terminating within said cylinder and having a
40 restricted outlet opening, a valve for regulating said opening, and means for adjusting the nozzle.

2. In a hydrocarbon-burner, a cylinder having a nozzle mounted thereon, and an
45 inlet for an atomizing fluid, a vertically disposed bar fixed within said cylinder and

having a headed end lying within the outlet opening of said nozzle, said nozzle being adjustable relative to the headed end of said bar whereby to vary the extent of opening
50 therethrough, a fuel supply pipe terminating within said cylinder, a cross bar formed integrally with said cylinder and adapted to secure said supply pipe centrally within the cylinder, said supply pipe having a jet, a
55 valve cooperating with said jet whereby to regulate the out flow of the fuel, teeth formed upon the nozzle, a pinion engaging with said teeth, and a hand turning rod for turning said pinion whereby to adjust said
60 nozzle.

3. In a hydrocarbon-burner, a cylinder having an inlet for an atomizing fluid and formed with screw threads at one end, an adjustable nozzle having engagement with
65 said screw threaded end, said nozzle having a restricted outlet opening and an outwardly flaring flange adjacent thereto, a cross bar formed integrally with the cylinder, a vertical bar lying within the nozzle and having
70 its inner end secured to said cross bar, said vertical bar having a headed end lying within and adapted to cooperate with the outlet of said nozzle, an oil supply pipe within said cylinder having a jet terminating
75 adjacent said cross bar and adapted to spray the fuel thereon, a regulating rod within said pipe having a pointed end extending through the jet opening and a hand turning wheel at its opposite end, teeth
80 formed upon the lower outer sides of said nozzle, a pinion engaging therewith, and a hand turning rod connected with said pinion and adapted to turn the same whereby to rotate the nozzle and effect its adjustment. 85

The foregoing specification signed at Corsicana Texas this 11th day of August, 1909.

JOHN C. COLLIGAN.

In presence of two witnesses:

A. WEIDMANN,
D. CORDER.