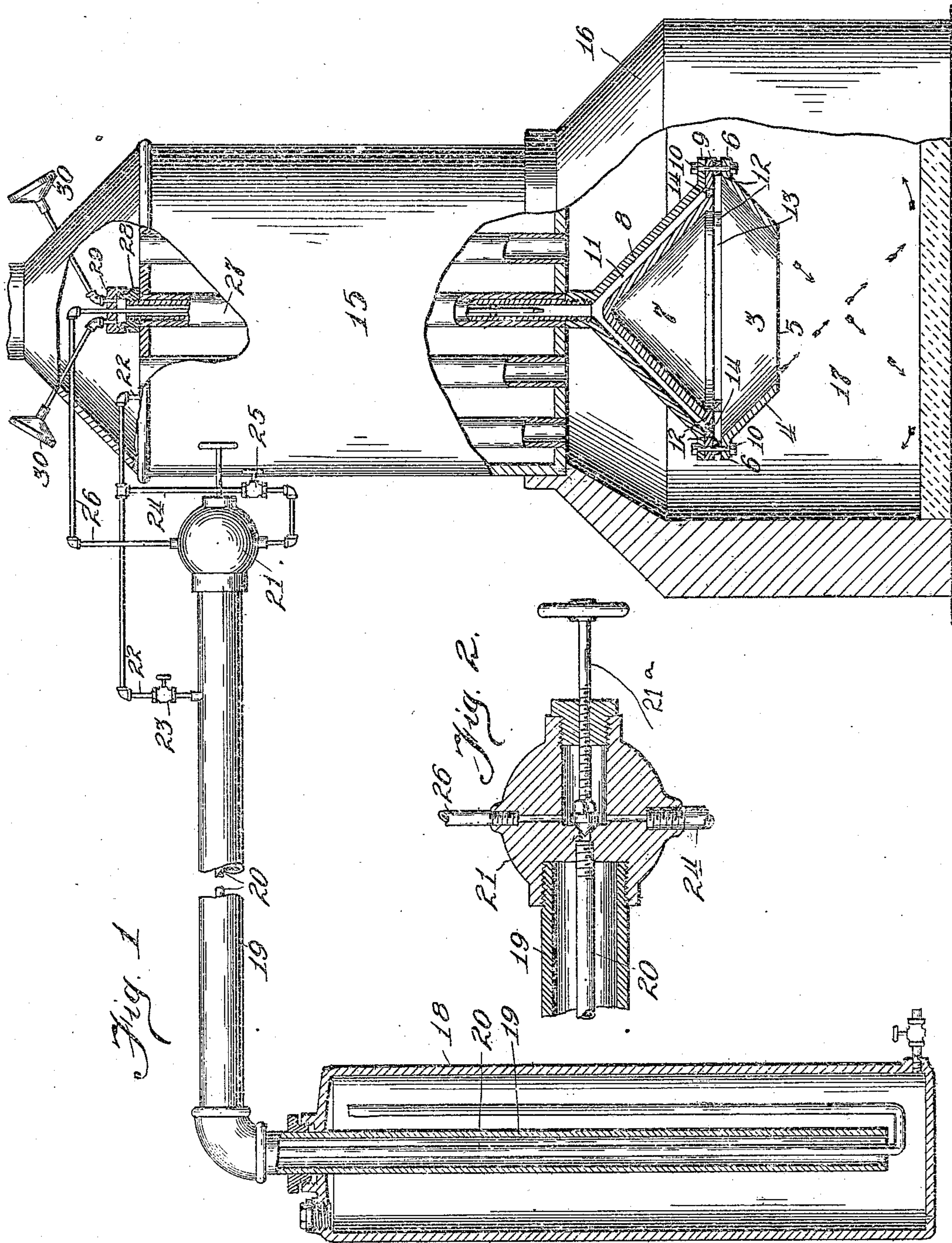


A. T. STILL.
BURNER,
APPLICATION FILED JULY 6, 1908.

956,223.

Patented Apr. 26, 1910.



Witnesses.
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UNITED STATES PATENT OFFICE.

ANDREW T. STILL, OF KIRKSVILLE, MISSOURI.

BURNER.

956,223.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ANDREW T. STILL, a citizen of the United States, residing at Kirksville, in the county of Adair and State of Missouri, have invented certain new and useful Improvements in Burners, of which the following is a specification.

My invention relates to a burner, and particularly to a type of burner in which means is employed to cause fuel in combustion to move in converging paths which intercept each other, and the primary object of my invention is the provision of devices by the use of which to utilize a greater percentage of the heat units in a fuel substance.

With the above and other objects in view, my invention consists in the discovery disclosed herein and in the mechanism to practice the invention, and in the novel features and in the novel combination and arrangement of parts hereinafter more specifically described, and all particularly pointed out in the claims hereunto appended.

I attain these objects by the mechanism illustrated in the accompanying drawings which are made a part of this specification, and in which—

Figure 1 is an elevation, partly in central vertical section, and partly broken away. Fig. 2 is a section through the mixing head.

A preferred embodiment of my invention is described as follows:

For the purpose of obtaining a greater proportion of the molecular energy from a liquid or gaseous hydrocarbon, I have constructed what is termed a deflecting element 3 comprising a circular tapering portion 4 with the forward end 5 open, and a rear flange 6 to secure the element to the burner. The deflector may be of any suitable or desired contour lines. Preferably it consists of a hollow frustum of a cone open at both ends and disposed in advance of the burner and is adapted to cause burning gases to move in converging paths which intercept each other at a point in advance of the deflector. The furnace member 7 and the dome member 8 of the burner each has an external annular flange 9 through which are inserted bolts 10 to hold the members together and to secure the deflecting element in position. The space 11 between the members is an expansion chamber. The short

lengths of pipe 12 serve to maintain the flange 6 and the flange 9 a predetermined distance apart to provide fluid passages 13. The annular series of jet apertures 14 afford fluid fuel outlets from the burner. The upright tubular boiler 15 rests upon the foundation 16 which incloses the firebox 17 in which the burner is disposed. The tank 18 holds a liquid hydrocarbon which is adapted to carburet steam which is passed from the boiler through pipe 22 into and through pipe 19 into the tank 18, and through pipe 20 to the spraying or mixing head 21, and thence through pipe 26 to the burner space 11 and through the jet apertures 14.

Air is mixed with the carbureted steam by the employment of the principle of the Bunsen burner through the air pipes 30. The force with which the carbureted vapor passes out of the lower end of the pipe 26 creates a partial vacuum in the tube 27 and causes an inrushing of air through the pipes 30.

In operating when the fluid fuel under pressure arrives at the apex of the furnace member it will then be in the presence of intense heat and will be expanded and will pass through the burner with force. Immediately upon its exit through the jet apertures combustion will take place and the direction of the lines of energy will be changed by the angle of the adjacent surface of the deflecting element and the lines of energy will cross at a point in advance of the deflecting element. The passage 13 will permit a circulation therethrough.

It will readily appear that my invention has a wide range of application, and is not limited to any one class of burners, but may be applied to any burner with which it is desired to increase the heat from a given amount of fuel by causing the flame or lines of combustion to move in converging paths which intercept each other.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters-Patent, is,

1. In a burner, a deflecting element comprising a hollow frustum of a cone open at both ends and disposed in advance of the burner and adapted to cause burning gases to move in converging paths which inter-

cept each other at a point in advance of the deflecting element.

2. The combination with a burner and means to supply fuel under pressure there-
5 to, of a deflector comprising a hollow frustum of a cone open at both ends and disposed in advance of the burner and adapted to cause burning gases to move in converg-

ing paths which intercept each other in advance of the deflector.

In testimony whereof, I affix my signature
in the presence of two witnesses.

ANDREW T. STILL.

Witnesses:

J. A. QUINTAL,

WARREN HAMILTON.