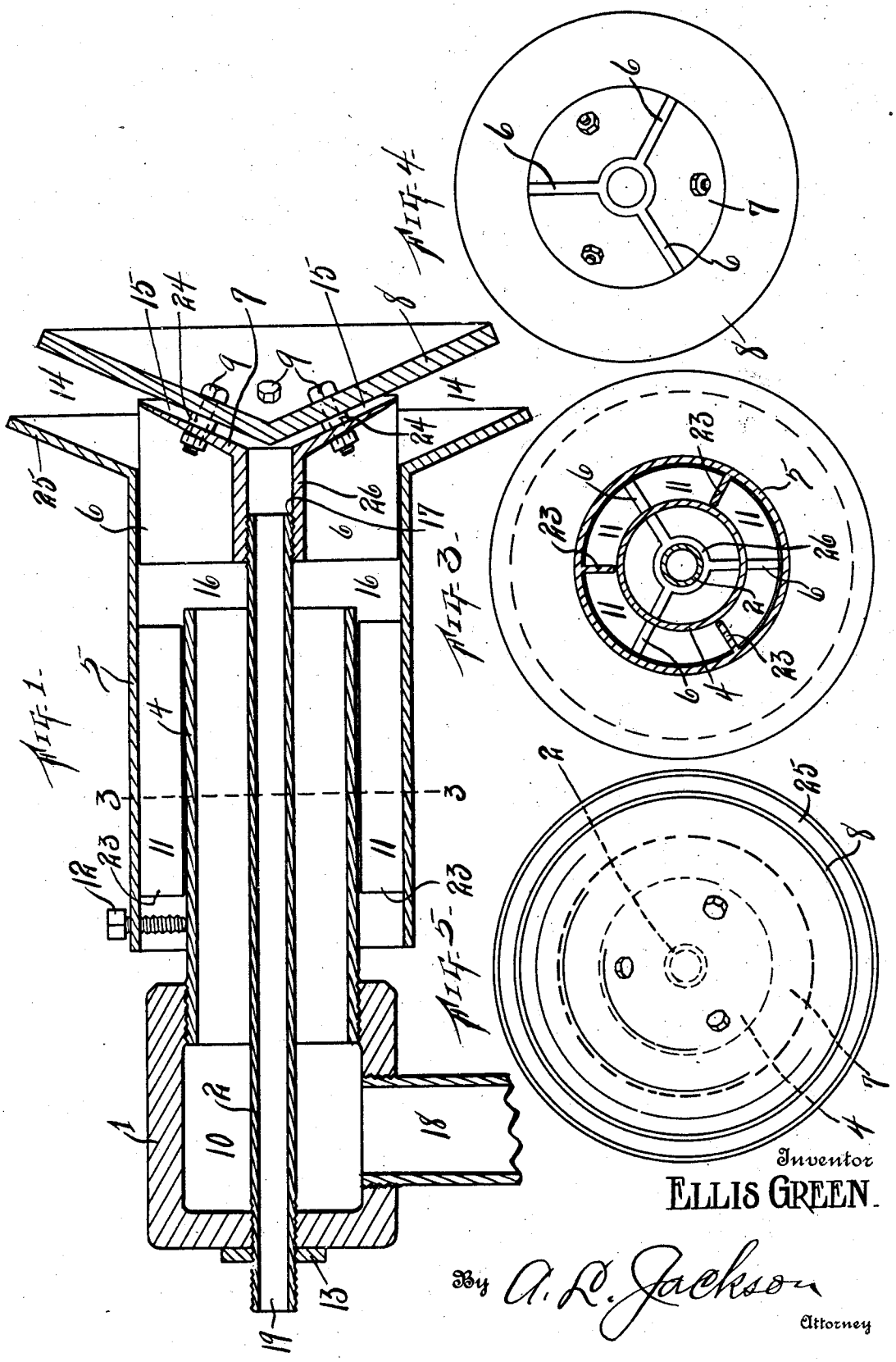
Nov. 17, 1925. 1,561,848

E. GREEN

GAS BURNER

Filed March 23, 1925 2 Sheets-Sheet 1



Inventor
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Filed March 23, 1925 2 Sheets-Sheet 2

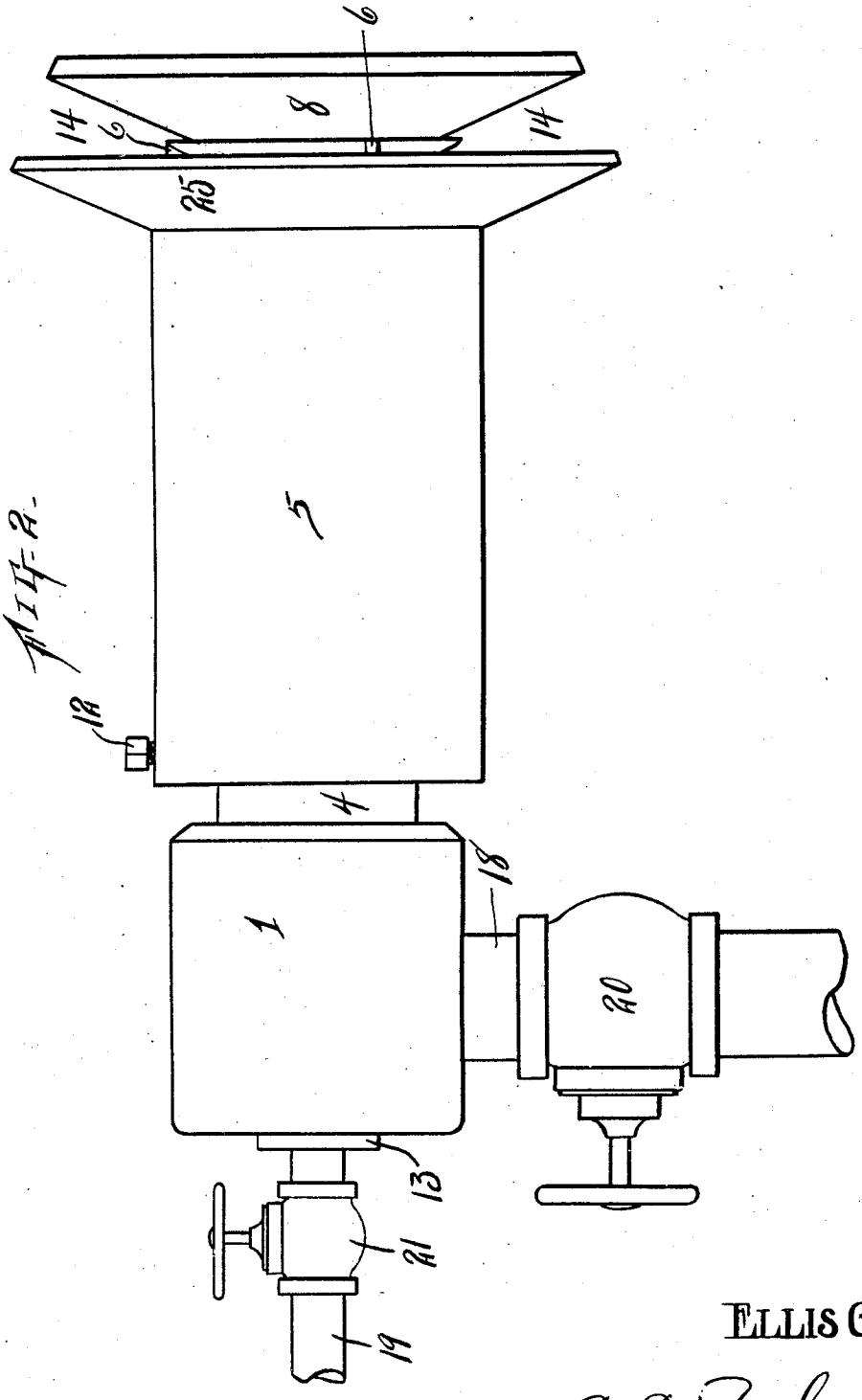


FIG. 2.

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Patented Nov. 17, 1925. 1,561,848

UNITED STATES PATENT OFFICE.

ELLIS GREEN, OF MINERAL WELLS, TEXAS, ASSIGNOR TO FRED W. NUERWELL, OF TULSA, OKLAHOMA.

GAS BURNER.

Application filed March 23, 1925. Serial No. 17,567.

To all whom it may concern:

Be it known that I, ELLIS GREEN, a citizen of the United States, residing at Mineral Wells, in the county of Palo Pinto and State of Texas, have invented certain new and useful Improvements in Gas Burners, of which the following is a specification.

My invention relates to gas burners and more particularly to gas burners which utilize fuel gas and both steam and air for aiding combustion and for distributing the heat to the walls of the furnace and about the boiler and for increasing the calorific power, using the steam to perform two functions, to wit, furnishing more oxygen for aiding combustion and for distributing the heat, and to provide a burner with attachments and adjustments for properly distributing the heat and to eliminate the waste of heat in the central part of the furnace and by which the steam is not mixed with the gas until after the gas and air have been mixed. Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Fig. 1 is a side view of the burner.

Fig. 2 is a longitudinal section of the same.

Fig. 3 is a transverse section, taken on the line 3—3 of Fig. 2.

Fig. 4 is a view of the inner end of the air and gas mixing devices.

Fig. 5 is a face view of the outer end or discharge end of the burner.

Similar characters of reference are used to indicate the same parts throughout the several views.

The burner is provided with a body or holder 1 and a steam feed pipe is screwed through the outer end of the body 1 and secured by a lock-nut 13. Means are provided for spreading the steam as it is discharged. A nipple 26 is threaded and screwed on the pipe 2 at 17 and this nipple has an annular flange 7 inclined to form a funnel-shape. A spreader 8, funnel-shaped in form, is bolted to the flange 7 by bolts 9 and washers 24 are placed on the bolts 9 between the flange 7 and the spreader 8 to restrict and spread the steam as it is discharged. The steam should be discharged with more or less force for driving the mixed air and gas to all parts about the walls of the fire box and about the boiler. A gas pipe or director 4 is concentrically mounted about the steam pipe 2 and screwed into the body 1 and is supported by the body 1. A pipe 5 for directing and mixing air with the gas is concentrically mounted about the pipe 4 and is provided with inwardly projecting webs or wings 23 for spacing the pipe 5 from the pipe 4. The air pipe 5 forms a mixing chamber 16 for mixing the gas and air. The gas is fed into the burner with some force and creates a suction about the pipe 4 for drawing in the air in the direction of the arrow heads. The pipe 5 is slidably mounted on the pipe 4 and is held at any required adjustment by a set screw 12. The pipe 5 is provided with a radial flange 25 which may be positioned more or less close to the flange 7 for decreasing or increasing the space 14 between the flange or spreader 18 and the flange 25. The space 15 between the flange 7 and the spreader 8 may be adjusted for a desired mixing and spreading of the steam which is to be mixed with the air and gas in the space 14. This space forms a mixing chamber for the gas, air, and steam and the space is to be restricted to cause a proper spreading of the mixed air, gas and steam. The amount of gas to be admitted may be regulated by a cock 20 and the amount of steam to be admitted is regulated by a cock 21. The pipe 5 is spaced from the steam pipe 2 and held concentrically therewith by webs or wings 6 which are cast integral with the nipple 26. Using the construction set forth, the mixture of gas, air, and steam is directed with sufficient force at an angle of about 30 degrees towards the sides, bottom, and crown sheet of the boiler, causing a complete wall or sheet of flame covering the interior of the fire box and no target is necessary for breaking the gas or fuel, as there is practically no fuel directed towards the center of the fire box.

This burner may be used with high pressure gas in boilers without the use of steam by adjusting the pipe 5 until the passage 14 has been closed even with passage 15. causing the gas to be sprayed out with a force. In this adjustment, nothing moves

except the pipe 5 with wings 23 and screw 12, the wings 23 sliding on pipe 4 and pipe 5 sliding on webs 6.

By the use of steam, the heat is intensified even with low pressure gas. This burner differs from other steam force or pressure gas burners because it distributes the fire evenly all over the heating surface of the boiler and eliminates the use of targets entirely.

Various changes in the sizes, proportions, construction and arrangement of the several parts may be made without departing from my invention.

What I claim, is,—

1. A burner comprising a body and a steam pipe stationary therewith, means for spreading steam consisting of a nipple screwed on said pipe and provided with a funnel-shaped flange and a spreader conforming to the contour of said flange spaced therefrom and bolted thereto, a gas directing pipe rigid with said body and concentrically arranged about said steam pipe and terminating with an open end, an air directing pipe open at both ends and concentrically arranged about said gas directing pipe and projecting beyond the gas pipe, forming a mixing chamber for air and gas and provided with a funnel-shaped flange for co-operating with said spreader and slidably mounted on said gas pipe and provided with wings spacing the air pipe from the gas pipe.

2. A burner comprising a body and a steam pipe rigid therewith, means for spreading the steam consisting of a nipple screwed on said pipe and provided with a funnel-shaped flange and a spreader conforming in contour with the contour of said flange and bolted thereto and spaced therefrom, spacing wings formed on said nipple, a gas directing pipe rigid with said body and concentrically arranged about said steam pipe and terminating with an open end, an air directing pipe slidable on said wings and concentrically arranged relative to said gas directing pipe and provided with inwardly projecting wings slidable on said gas pipe and open at both ends and provided with a funnel-shaped flange for co-operating with said spreader, and means for holding said air-directing pipe at different points of adjustment on said gas pipe, said air-directing pipe forming a mixing chamber about said steam pipe.

In testimony whereof, I set my hand, March, 1925.

ELLIS GREEN.