No. 815,574. PATENTED MAR. 20, 1906.

J. WILSON.

SMOKE CONSUMER.

APPLICATION FILED JUNE 23, 1905.

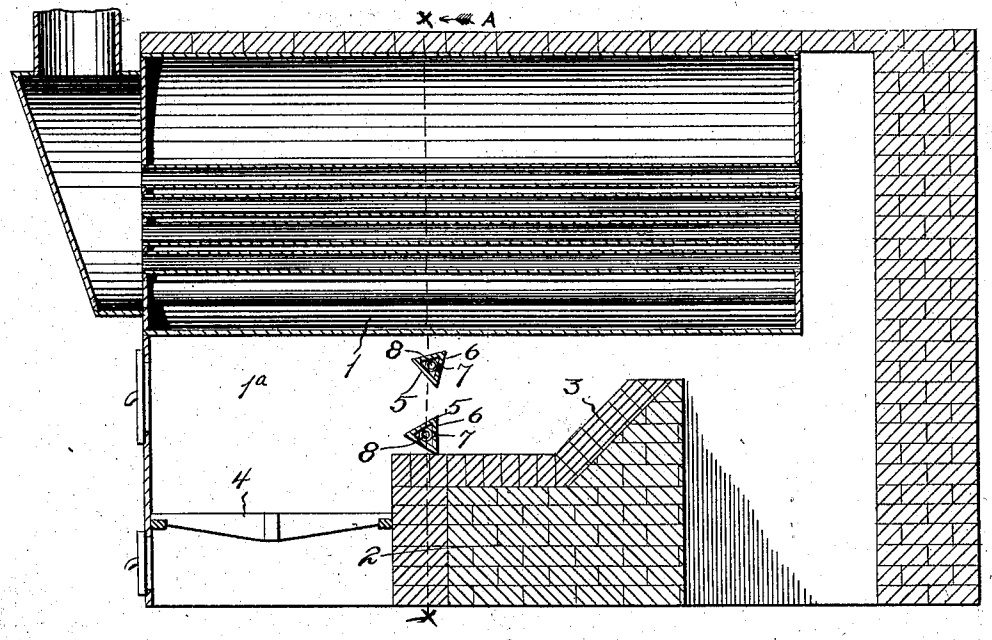

Fig. 1.

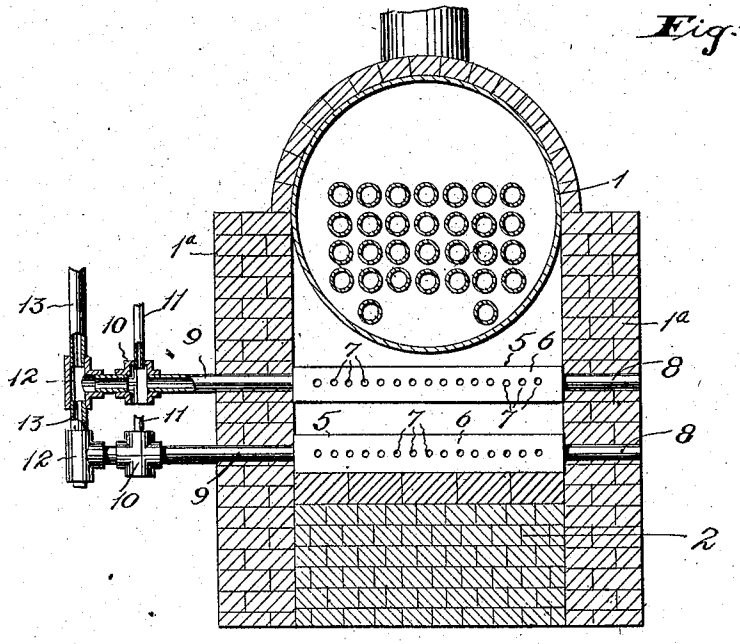

Fig. 2.

WITNESSES:

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JOHN WILSON, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO A. C. RUSSELL, OF SPRINGFIELD, OHIO.

SMOKE-CONSUMER.

No. 815,574. Specification of Letters Patent. Patented March 20, 1906.

Application filed June 23, 1905. Serial No. 266,588.

To all whom it may concern:

Be it known that I, JOHN WILSON, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a specification.

This invention relates to a new and useful improvement in smoke-consumers, and more particularly to a smoke-consumer for boiler-furnaces.

The object of the invention is to provide a simple device disposed adjacent to the bridge-wall and arranged to eject a suitable gas on the said wall, which when combusted will burn, and thus consume the smoke.

Another feature resides in the shape and arrangement of the device or devices whereby the same will not in any way interfere with the draft or operation of the furnace.

Finally, the object of the invention is to provide a device of the character described that will be strong, durable, and efficient and simple and comparatively inexpensive to construct.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a longitudinal vertical sectional view of a boiler-furnace, showing my improved device applied thereto; and Fig. 2 is a transverse vertical sectional view taken on the line *x x* of Fig. 1 looking in the direction of the arrow A and showing a portion of the mixing and supply apparatus in vertical section.

In the drawings the numeral 1 designates an ordinary horizontal fire-tube boiler, beneath which is arranged the usual bridge-wall 2, inclined hot plate 3, and fire-grate 4, extending forwardly from the abutment midway the height of the same in the usual manner. Between the under side of the boiler 1 and the upper front portion of the bridge-wall 2 I arrange ejectors 5, having a substantially triangular shape in cross-section and extending from side to side of the furnace, as indicated in Fig. 2. These ejectors, of which I preferably employ two, are arranged with their sharp edges projecting forwardly and their rear flat faces 6 being disposed at slight angles to each other and facing the hot plate 3. Transversely of the central portion of the faces 6 a number of perforations 7 are provided. The ejectors 5 are suitably supported at each end by pipes 8 and 9, extending through the side walls 1^a of the furnace, the pipes 8 being suitably plugged up and merely acting as supports, while the pipes 9 are extended beyond the side wall and are each connected to a suitable mixing-coupling 10, open at its bottom for the admission of air and having a suitable oil-supply pipe 11 extending from its upper side. The couplings 10 are connected to suitable T-joints 12, arranged in a steam-supply pipe 13.

In utilizing my invention steam is suitably introduced into the steam-supply pipe 13 and oil into the oil-supply pipes 11. The oil-supply pipes 11 are quite small and are suitably arranged to slowly feed oil by drops into the mixing-couplings 10. Steam passing from the supply-pipe 13, through the T-joints 12, into the coupling 10 mixes with the oil and draws in air through the openings in the bottom of the couplings. The mixture thus formed is drawn by the steam through the pipes 9 into the ejectors 5, where the extreme heat from the furnace vaporizes the mixture, the latter forming a gas which is ejected through the perforations 7, together with the steam. Owing to the disposition of the ejectors, steam and gas will be directed on the inclined hot plate 3 and the gas thus combusted, which combustion, together with the steam, acts to burn the smoke and completely consume the same.

By arranging the ejectors 5 with their sharp edges projecting forwardly no obstruction is offered to the free passage of the products or the draft, and by suitably separating the ejectors, as illustrated, a free passage about the same is had. I also claim that by the use of my device a great saving in fuel and a more intense heat is attained, as the products are entirely consumed and the draft accelerated.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a smoke-consumer, the combination with a boiler-furnace, the fire-box thereof and a bridge-wall provided with an inclined hot plate, of one or more devices disposed between the fire-box and the bridge-wall and

arranged at an angle to the bridge-wall for ejecting steam and gas thereon, and means for supplying steam, oil and air to the said device.

2. In a smoke-consumer, the combination with a boiler-furnace having a bridge-wall provided with an inclined hot plate, of an angular ejector having a flat face disposed at an angle to the bridge-wall and adapted to eject steam and gas thereon, and means for supplying steam and gas to the ejector comprising steam-supply means, a mixing-coupling having an air-opening and connected with the steam-supply means, means for delivering oil to the coupling, and means for conveying the products introduced into the coupling to the ejector.

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

JOHN WILSON.

Witnesses:
ROGER V. SMITH,
D. D. KISSELL.