June 3, 1930. W. G. CROTHERS 1,761,182

TWYER

Filed May 29, 1928

Fig. 1.

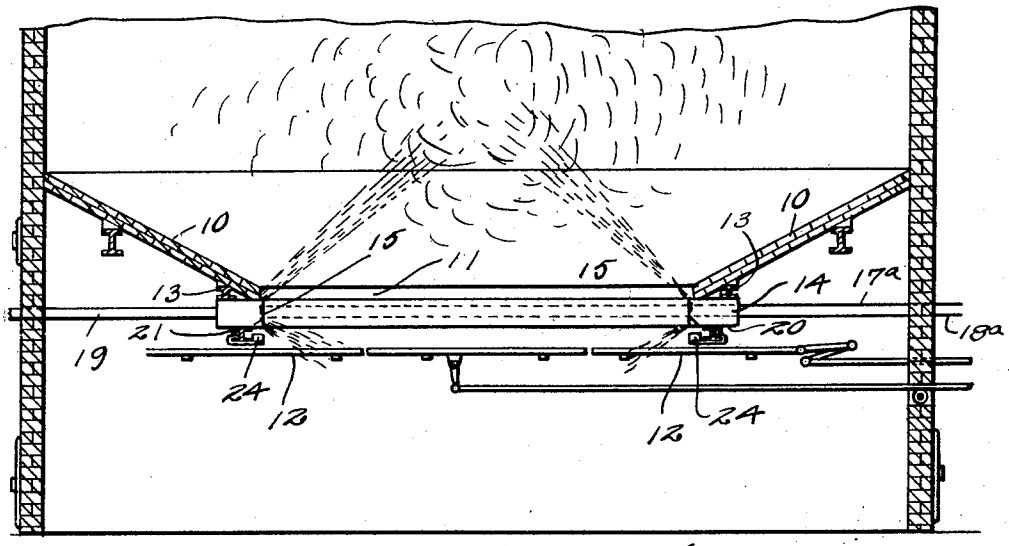
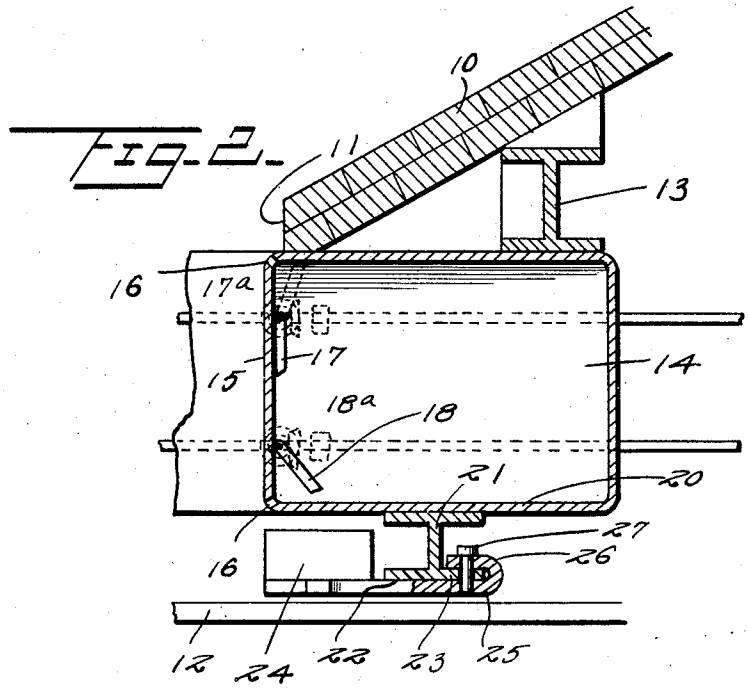


Fig. 2.



Inventor

W. G. Crothers

By Watson E. Coleman

Attorney

Patented June 3, 1930 1,761,182

UNITED STATES PATENT OFFICE

WILLIAM G. CROTHERS, OF OAKFIELD, NEW YORK

TWYER

Application filed May 29, 1928. Serial No. 281,579.

This invention relates to twyers and more particularly to a twyer construction especially adapted for use in furnaces of the type illustrated in my prior application, Serial No. 236,560, filed November 29, 1927, for Furnaces, and in the patent to J. F. O. Stratton, No. 1,505,505, granted August 19, 1924.

An important object of the invention is to provide a twyer for use in furnaces of this type of such character that it will not be destroyed by the slag deposits to which such furnaces are subject.

A further object of the invention is to provide a twyer for use in furnaces employing pulverized fuel which is delivered into the furnace in a blast of such character that the blast from the twyer serves to hold the fuel from the grate until it has been completely consumed.

A further object of the invention is to provide a twyer of such construction that the air blast is continually operative as a cooling medium for the twyer, so that its destruction by subjection to intense heat is prevented, whether the dampers controlling the twyer are closed or not.

A still further object of the invention is to provide a twyer construction having internal dampers controlling the flow of air therefrom, so that the air is constantly present in the twyer and serves to cool the same and prevent its destruction by heat.

These and other objects I attain by the construction shown in the accompanying drawing, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a sectional view through a furnace embodying twyers constructed in accordance with my invention;

Figure 2 is an enlarged detail sectional view through one side of the twyer structure, the dampers being illustrated in solid lines in the position which they occupy during normal operation of the furnace.

Referring now more particularly to the drawing, the numeral 10 generally designates a downwardly inclining baffle wall defining a central opening 11 beneath which is arranged a grate 12. The numeral 13 designates a support for the lower end of the baffle wall to which, in accordance with my invention, I secure an elongated hollow body 14, the junction of the inner face 15 of which with the upper and lower walls is formed with a series of notches 16 forming air outlets. This structure is shaped similarly to the opening which is ordinarily rectangular and each side thereof has the opening 16 of its upper and lower edges controlled by independently movable dampers 17 and 18. Air is supplied to the interior of the body 14 by a supply pipe 19 connected with the discharge of a blower (not herein shown).

The bottom wall 20 of the twyer body 14 is spaced above the upper surface of the grate 12 and has secured thereto a support 21 having a flat lower face 22 and an outwardly directed flange 23 at its lower end. Grate elements or what might be termed sifter grates are provided comprising bars 24, the inner ends of which are of a depth substantially equal to the distance between the lower wall 20 of the twyer body and the adjacent face of the grate. These bars have a rearward extension 25, the rear ends of which are reverted to form hooks 26 to engage over the flanges 23. The bills of these hooks and the flanges are perforated for the reception of securing elements 27 which may be simply dropped into place in the openings to prevent dislodgment of the bars. The adjacent faces of the wide portions have lugs which maintain the same in slightly spaced relation and spacing of the extensions is, of course, maintained by the securing elements 27.

It will be obvious that the constant presence of air from the blower in the twyer body will cool the same and prevent destruction by slag which, during the operation of a furnace of this character, passes continually down the baffle 10 and over the face of the twyer. The air blast from the openings at the upper corners of the twyer structure forms a turbulent zone about the level of the opening which tends to maintain powdered fuel in suspension in the air until

it has been completely consumed, while the blast from the lower openings tends to complete the burning of any partially burned particles which may fall from the grate. The blast from the openings 18 will, during the greater portion of the operation of the furnace, be very slight and only sufficient to provide a burning draft without forced draft characteristics.

The grate 12 will not be overheated and there will be no tendency to the accumulation of pressure beneath the grate and within the ash pit. The independent controls 17^a, 18^a of the dampers 17 and 18 may be operated in any suitable manner but will, of course, be made accessible from the exterior of the furnace in which the twyers are disposed.

Since the construction hereinbefore set forth is capable of a certain range of change and modification without materially departing from the spirit of the invention, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

1. A twyer for furnaces of the character described comprising a hollow body having at the upper and lower edges of one wall thereof a series of openings, independent dampers within the twyer body and mounted on the inner wall thereof controlling the discharge of air through each series of said openings, and means for constantly supplying air to the hollow body.

2. In a furnace, a downwardly and centrally inclining baffle defining a central opening with its inner edge, a grate disposed beneath the opening and a twyer disposed between the edges of the baffle and the grate comprising a hollow body having at the upper and lower edges of its inner face series of openings, means for constantly supplying air to the interior of the body and mounted on the inner wall thereof and independent dampers within the body for controlling the discharge of air through each series of said openings.

3. In a furnace, a downwardly and centrally inclining baffle defining a central opening with its inner edge, a grate disposed beneath the opening and a twyer disposed between the edges of the baffle and the grate comprising a hollow body having at the upper and lower edges of its inner face series of openings, means for constantly supplying air to the interior of the body and mounted on the inner wall thereof and independent dampers within the body for controlling the discharge of air through each series of said openings, the openings of the upper edge directing a blast of air inwardly and upwardly, those of the lower edge discharging a blast of air inwardly and across the grate.

4. A twyer comprising a hollow body having series of air outlet openings, the openings of each series being differently directed from those of other series, dampers arranged within said hollow body and positioned on the inner wall thereof for independently controlling each series of openings, and means for constantly supplying air to the hollow body.

In testimony whereof I hereunder affix my signature.

WILLIAM G. CROTHERS.