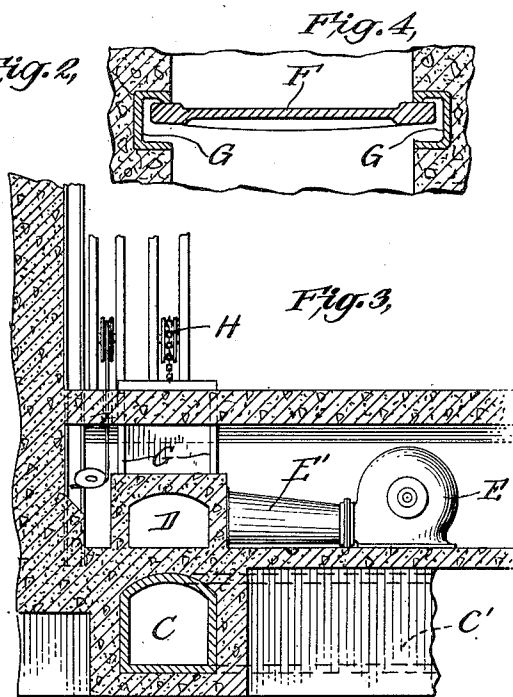
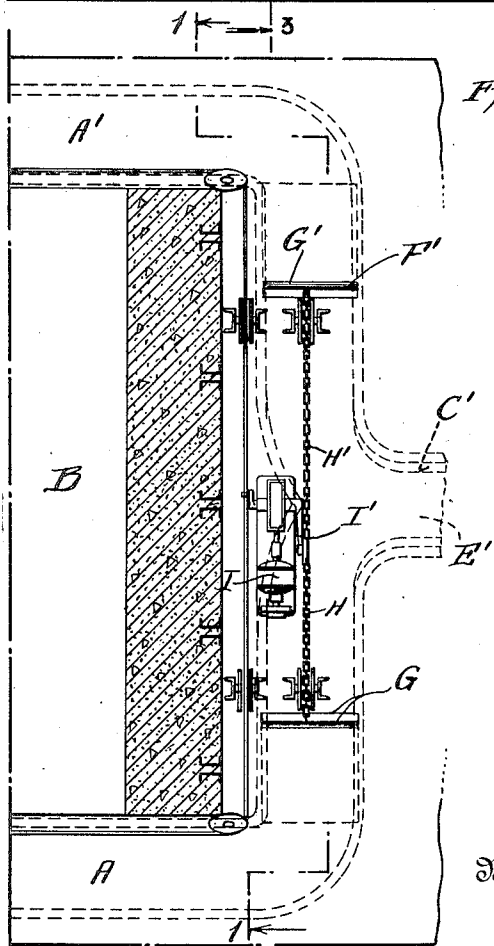
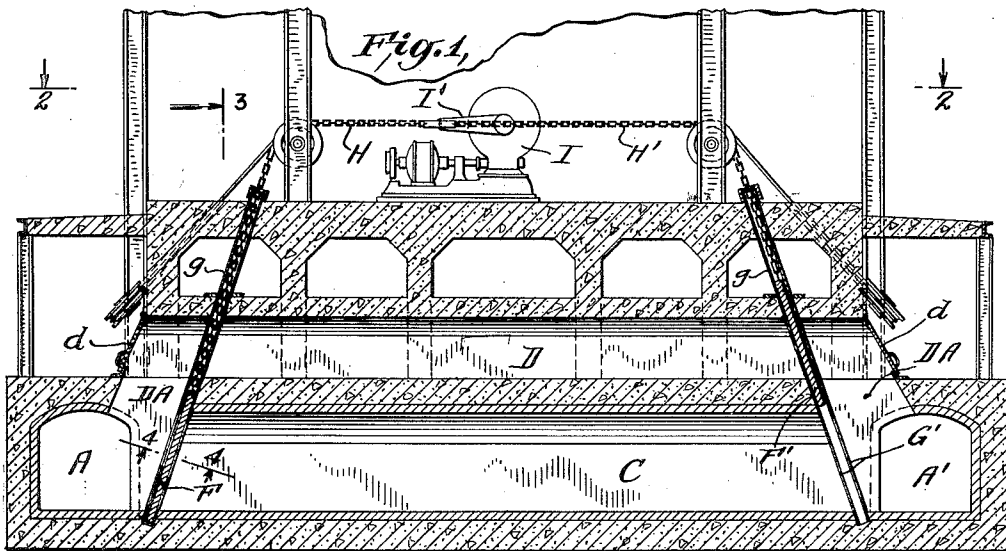


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 REVERSING VALVE FOR REGENERATIVE FURNACES.
 APPLICATION FILED OCT. 4, 1919. RENEWED FEB. 16, 1922.

1,430,172.

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UNITED STATES PATENT OFFICE.

CHARLES V. MCINTIRE, OF EAST ORANGE, NEW JERSEY, ASSIGNOR OF ONE-THIRD TO LOUIS WILPUTTE AND TWO-THIRDS TO ALICE A. WILPUTTE, BOTH OF NEW ROCHELLE, NEW YORK.

REVERSING VALVE FOR REGENERATIVE FURNACES.

Application filed October 4, 1919, Serial No. 328,521. Renewed February 16, 1922. Serial No. 537,124.

To all whom it may concern:

Be it known that I, CHARLES V. MCINTIRE, citizen of the United States, and resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvement in Reversing Valves for Regenerative Furnaces, of which the following is a specification.

My present invention consists in an improved valve or damper system of particular utility in controlling flow through air and gas conduits of relatively large size, and especially devised for controlling the supply of air under pressure to, and escape of products of combustion from, the regenerators of a regenerative coke oven battery.

The general object of the invention is to provide simple and effective apparatus for the purpose specified which will be relatively inexpensive and durable, and easy to manipulate and to maintain in efficient condition. More specifically my invention has for its object an improved construction and arrangement of the air supply and waste product conduits and reversing valves which are ordinarily located at the end of a regenerative coke oven, and which form the means for intermittently and alternately connecting a draft creating device such as a stack and air compressor or other source of air under pressure to distributing conduits running longitudinally of the battery and connected to the various regenerators.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, and the advantages and specific objects attained with its use, reference should be had to the accompanying drawings and descriptive matter in which I have illustrated and described a preferred embodiment of my invention.

Of the drawings:

Fig. 1 is a sectional elevation of a portion of a coke oven battery, the section being taken on the line 1—1 of Fig. 2.

Fig. 2 is a plan partly in section on the line 2—2 of Fig. 1.

Fig. 3 is a partial section on the line 3—3 of Fig. 1; and

Fig. 4 is a partial section on the line 4—4 of Fig. 1.

In the drawings I have illustrated only so much of a coke oven structure proper as is essential to an understanding of my present invention.

In the construction illustrated there is provided at one end of the coke oven battery B a transversely extending off take or waste products conduit C, and a transversely extending air supply conduit E. The conduit C is provided with an outlet C' between its ends which runs to a stack or other draft suction creating device not shown. Air under pressure is supplied to the conduit D between the ends of the latter through a supply connection E' connected to the outlet of a fan or blower E. Reversing valves or dampers F and F' form means for opening and closing communication between the ends of the conduits C and D and distributing conduits running longitudinally of the battery and connected to the regenerators (not shown) thereof. As shown the coke oven battery comprises but two of these distributing channels A and A' located one each side of the battery and each connected alternately to the adjacent ends of the two transverse conduits C and D. When the conduit A at the one side of the battery is in communication with the transverse conduit C, for example, it serves as a means for passing products of combustion from the regenerators at the one side of the battery into the conduit C and thence to the stack, and when the conduit A is connected to the conduit D it serves as a means to distribute compressed air supplied by the fan or blower E to the regenerator to which the conduit A is connected. The conduit A is connected to the cross conduits C and D respectively, during the periods in which the conduit A' is connected to the conduits D and C respectively.

In some instances, as in the construction shown, the conduits C and D are both conveniently formed of masonry, though these conduits, and particularly the conduit D, may well be made of metal. The conduit D is located directly above the conduit C which, as shown, lies between approximately the same levels as the passages A and A'. A port DA which is shown as formed partly in the roof of the passage A and partly in the roof of the conduit C connects the passage A to the adjacent end of the conduit D. A similar port DA' connects the opposite end of the conduit D to the passage A'.

Communication between the passages A and A', the outlet C' from the conduit C and the inlet D' to the conduit D is controlled by a valve or damper F in the form of a plate-like body normally made of cast iron which is slidably mounted in a guideway G slightly inclined to the vertical and located between the inlet D' and outlet C' on the one hand and the port DA and passage A on the other hand. As shown, the guideway G is located directly adjacent the port DA and extends across the conduits C and D. Communication between the opposite ends of the conduits C and D and the conduit is controlled by a valve F' similar to the valve F and working in a guideway G' similar to the guideway G. The valves F and F' are connected by chains or cables H and H' respectively to the usual reversing mechanism I.

The ports are so constructed that in one condition of operation, as shown, the valve F is lowered and closes communication between the passage A and conduit C, while leaving the passage A and conduit D in open communication, while at the same time the valve F' is raised and closes communication between the conduit D and passage A', while leaving communication open between conduit C and passage A'. On a half revolution of the crank arm I' of the reversing mechanism the valve F is raised to open communication between conduit C and passage A and close communication between passage A and conduit D; while the valve F' is then lowered closing communication between conduit C and passage A' and leaving open communication between conduit D and passage A'.

The guideways G and G' may each be formed, as shown best in Fig. 4, of a pair of channel bar members embedded in the masonry at the opposite sides of the conduits C and D.

The portion of the valve member proper entering each channel is of a thickness less than the distance between the ribs of the channel bar and is gravity held against one rib only which thus forms the side of the seat for the valve. The contracting sur-

faces of the valve body and its guideway may advantageously be machined. Metallic boxes g are shown as receiving the upper ends of the valves when in their elevated positions. These boxes are closed at their upper ends except for the necessary passages for the valve chains or cables (H and H') and thereby prevent leakage out of the conduit D along the valve guideways.

The construction shown is characterized by its extreme simplicity and by its certainty of operation. The valves F and F' each of which weigh a ton or so, are held by gravity against their seats in either position with sufficient force to give tight joints, while at the same time the frictional resistance to the movement of the heavy valves is not excessive.

When necessary for inspection, cleaning or repairs, access may be had to the valves and valve guideways by opening the doors d provided for the purpose at the opposite ends of the conduit D.

While in accordance with the provisions of the statutes I have illustrated and described the best embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of apparatus disclosed without departing from the spirit of my invention as set forth in the appended claims, and that under some conditions certain features of my invention may be used to advantage without a corresponding use of other features.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a regenerative coke oven having distributing channels extending longitudinally of the oven battery and connected to the regenerators thereof, the improved means for supplying air under pressure, and for withdrawing products of combustion from said distributing channels which comprise a pair of conduits extending transversely of the oven structure and arranged one above the other, a pair of reversing valves spaced apart longitudinally of said conduits and each movable from one position in which it closes one of said conduits to a second position in which it closes the other of said conduits, means for supplying air under pressure to one of said conduits between said valves, and a products of combustion outlet opening from the other conduit between said valves.

2. In a regenerative furnace the combination with a pair of passages serving alternately as supply and exhaust passages of two conduits arranged one above the other and each connected at one end to one of the said passages and at the other end to

the other of said passages and connected
between their ends one to an outlet and the
other to an inlet, of a pair of inclined valves
slidingly mounted to traverse said conduits
5 adjacent the ends thereof, each valve being
adapted when in an upper position to close
one of said two conduits and in its lower
position to close the other of said two con-
duits but to close only one of the two con-
10 duits at the same time and a reversing

mechanism for raising and lowering one of
said valves and simultaneously lowering
and raising the other of said valves.

Signed at New York, in the county of
New York and State of New York, this 15
third day of October A. D. 1919.

CHARLES V. MCINTIRE.

Witness:

WILLIAM A. SHIELDS.