No. 644,208. Patented Feb. 27, 1900.

D. D. LEWIS.

VALVE MECHANISM.

(Application filed Nov. 7, 1899.)

(No Model.)

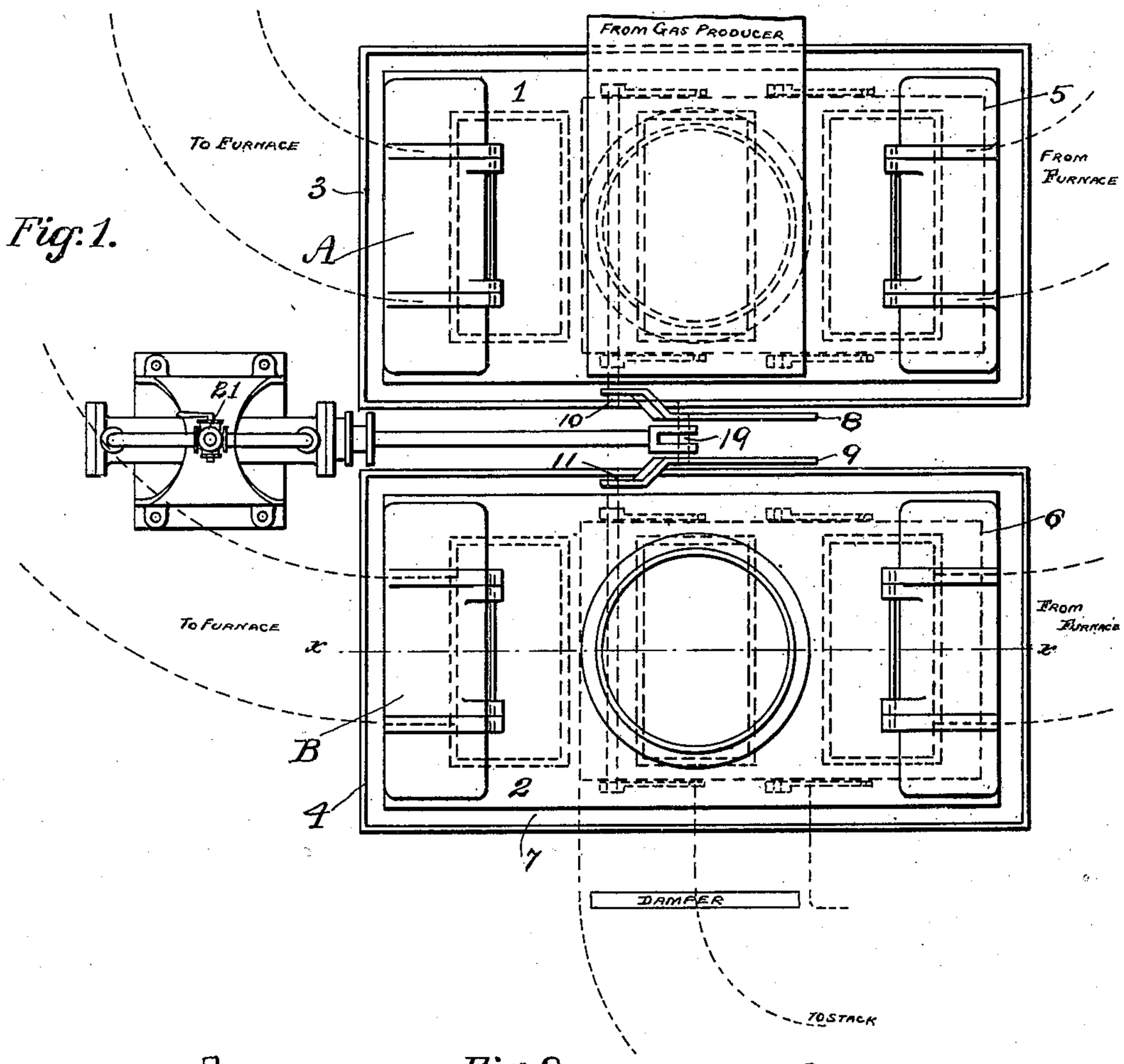

Fig. 1.

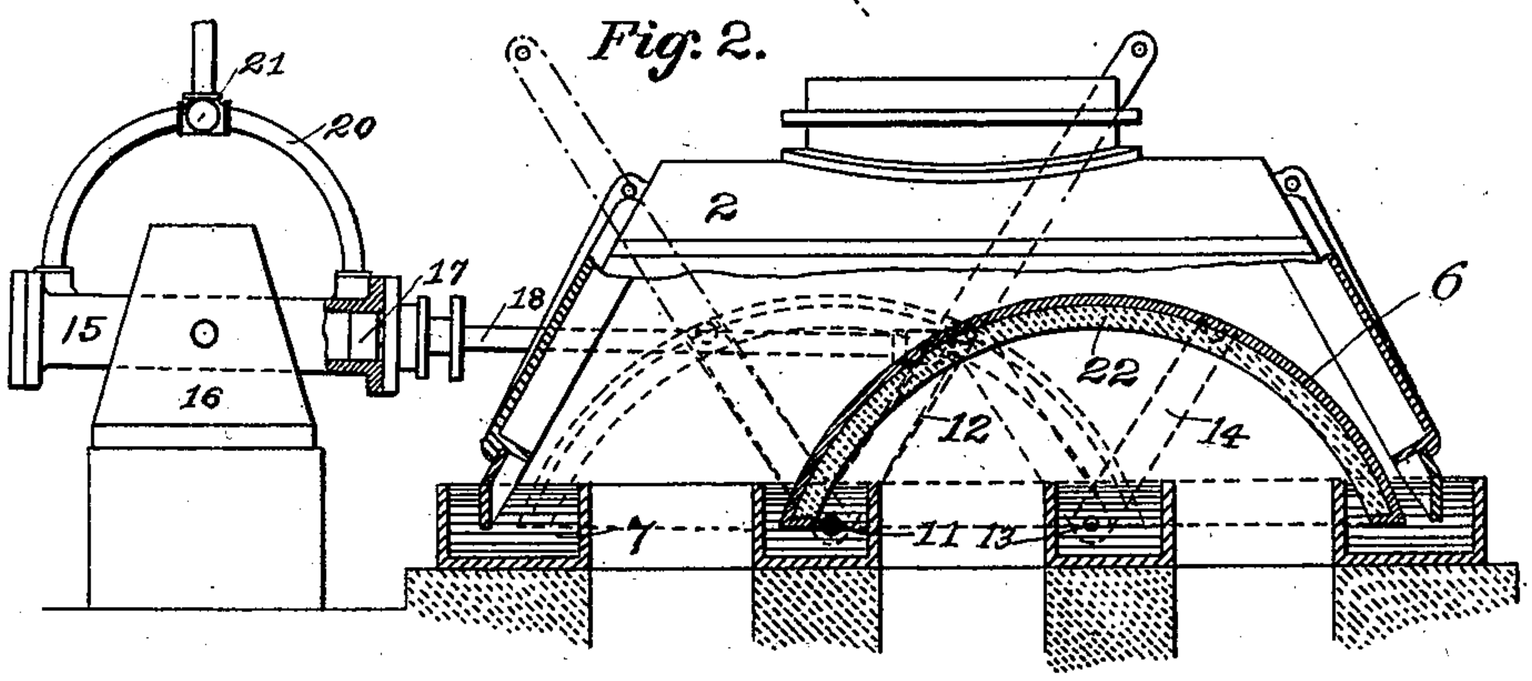

Fig. 2.

WITNESSES:

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DAVID D. LEWIS, OF LORAIN, OHIO.

VALVE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 644,208, dated February 27, 1900.

Application filed November 7, 1899. Serial No. 736,165. (No model.)

To all whom it may concern:

Be it known that I, DAVID D. LEWIS, of Lorain, in the county of Lorain and State of Ohio, have invented a new and useful Improvement in Valve Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to valve-operating mechanism, and more particularly to means for operating reverse-valves of the general class described in the patent to Samuel Forter, No. 577,019, of February 16, 1897, and used in connection with heating-furnaces for directing the currents of air and gas alternately to the right and left. It is usual to employ two of these valves side by side, one for alternately directing currents of gas and the other for correspondingly directing currents of air, and heretofore it has been necessary to operate the same manually and separately. The movable parts of these valves, or the valves proper, are of very considerable weight and the operation of reversing them has been a laborious one, so much so, in fact, that it has been found a very common thing in practice for the operator assigned to this duty to shirk the work and not reverse the valves at the proper intervals. Inasmuch as reversal at regular intervals is essential to keeping the furnaces in proper condition, it has been the object of my invention to provide means for facilitating the operation of these valves to such an extent as to make the labor practically nothing, and thereby deprive the attendant of the above-noted inducement to shirk his duty.

With this object in view my invention consists in the combination, with valve mechanism of the described character, of an engine or motor operatively connected with the two valves and arranged to be operated simultaneously by the simple manipulation of a valve.

The invention also consists in the novel combination, construction, and arrangement of parts, all as hereinafter described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view showing the application of my invention to a pair of valves, and Fig. 2 a vertical section on the line X X of Fig. 1.

A designates a gas-valve, and B are air-valves, both of the general character above described.

The numerals 1 and 2 indicate, respectively, the casings of the two valves, resting on the bed-plates 3 and 4, through which extend the ports leading to the various passages in which the flow of gas and air is to be controlled, as indicated in the drawings.

5 and 6 are the two valves, consisting each of an arched hood or shell of sufficient length to cover two of said ports.

7 designates the usual water seals in which the valves are seated.

8 and 9 are operating-levers secured at their lower ends to the shafts 10 and 11, which turn in bearings in the bed-plates 3 and 4. 12 are arms secured to said shafts and engaging pins on the valves.

13 are counter-shafts, and 14 are arms secured to the said shafts and also engaging pins on the valves.

The arrangement as thus far described does not differ materially from that shown in the patent above mentioned, except that the parts are duplicated for the two valves.

15 is a cylinder which is mounted on trunnion-bearings in a suitable stand 16, adjacent to the valves A and B, in line with the opening between them. Working in said cylinder is a piston 17, to which is connected a rod 18, which extends into the space between the two valves and is connected to the two levers 8 and 9 by means of a cross bolt or pin 19.

20 is a branched supply-pipe connected to ports at opposite ends of the cylinder 15 and leading from a suitable source of pressure, either hydraulic, pneumatic, or steam.

21 is a three-way valve which controls the admission of pressure to the cylinder.

The operation will be readily understood. Supposing the valves to be in the position shown in dotted lines in Fig. 1, in which the furnace-ingoing currents of air and gas are both directed to the right-hand passages and hydraulic or other pressure to be admitted to the right-hand end of the cylinder 15, the resultant movement of the piston 17 will throw both levers 8 and 9 over to the position indi-

cated in dotted lines in Fig. 2, and thereby simultaneously shift both valves over to the position shown in dotted lines in Fig. 2 to reverse the circulation and direct the furnace-ingoing currents of air and gas to the left. A reverse turn of the valve 21 again moves both valves over to the right. All that is required of the attendant, therefore, is to operate the valve 21 at the required intervals. I am also enabled to provide the valve hoods or shells with a refractory lining, (indicated at 22,) which could not be done heretofore without increasing the weight to such an extent as to make the manual operation impracticable. Such a lining is very desirable, owing to the high temperature to which the valves are subjected by the return-currents from the furnaces.

I do not desire to limit myself to the exact construction and arrangement of parts which I have herein shown and described, as many changes may be made therein without departing from the spirit and scope of my invention as set forth in the following claims.

Having thus described my invention, what I claim, and desire to protect by Letters Patent, is—

1. The combination with a pair of laterally-shiftable reversing-valves arranged side by side, of oscillating shifting levers operatively connected one to each valve and arranged side by side in the space between them, a power-cylinder, a piston in said cylinder connected to both the said levers, and means for controlling the operation of said cylinder.

2. The combination with two valve-casings arranged side by side, and having each three ports opening therein, and a laterally-shiftable hood-valve in each casing arranged to cover two of said ports in each of its seated positions, of operating-levers connected to the said valves, arranged side by side in the space between the valves, a power-cylinder, and a piston in said cylinder operatively connected to both of the said levers, substantially as described.

3. The combination with the laterally-shiftable air and gas reversing-valves located side by side, of operating-levers for said valves arranged in the space between the same, an oscillating power-cylinder supported in line with the said space, a piston therein, having its rod connected to both the said levers, a pressure-supply pipe communicating with both ends of said cylinder, and a valve in said pipe for controlling the admission of pressure to the cylinder.

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

DAVID D. LEWIS.

Witnesses:

A. H. GRISWOLD,

D. O. MCHUGH.