(No Model.)

S. T. WELLMAN & H. HYATT.

MECHANISM FOR OPERATING VALVES.

No. 442,929. Patented Dec. 16, 1890.

Fig. 1

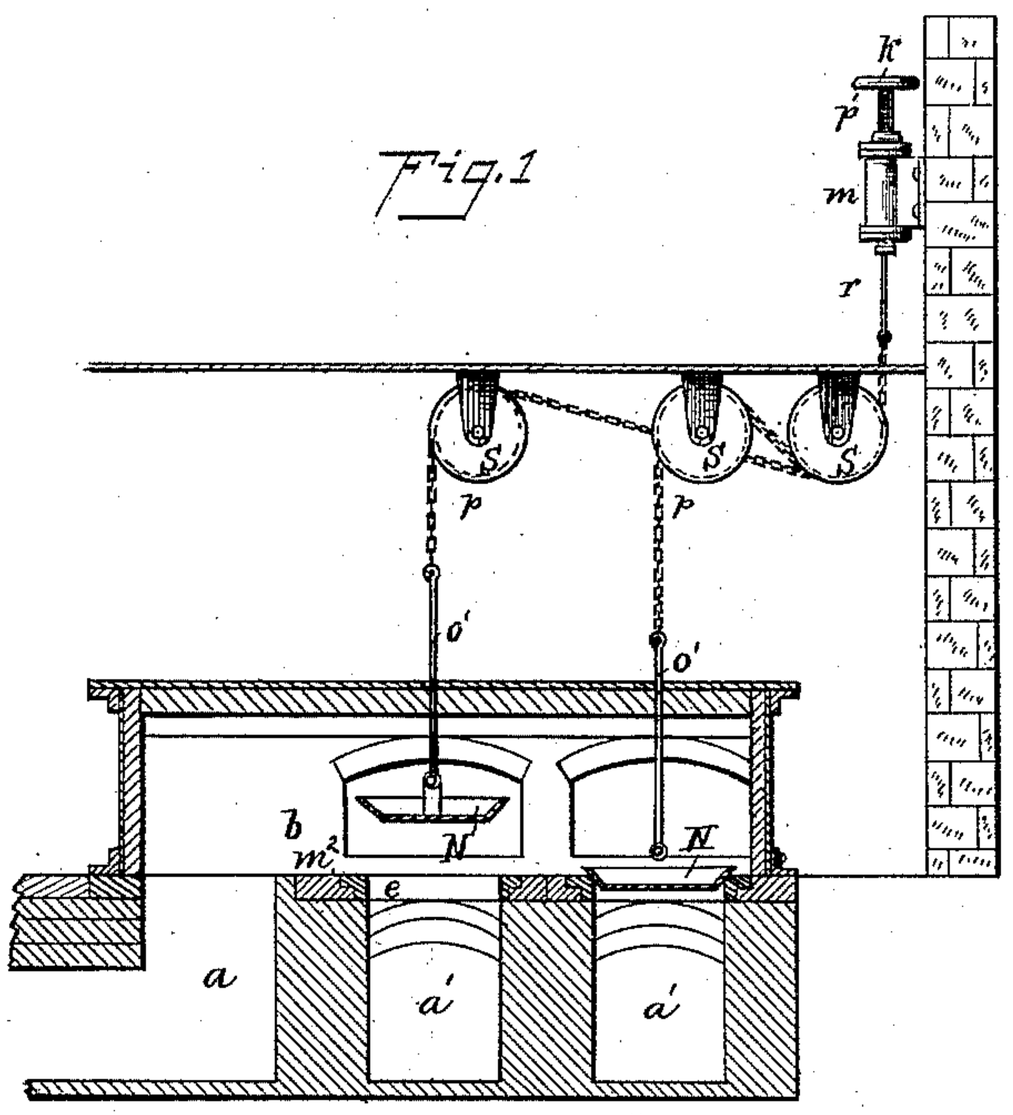


Fig. 2

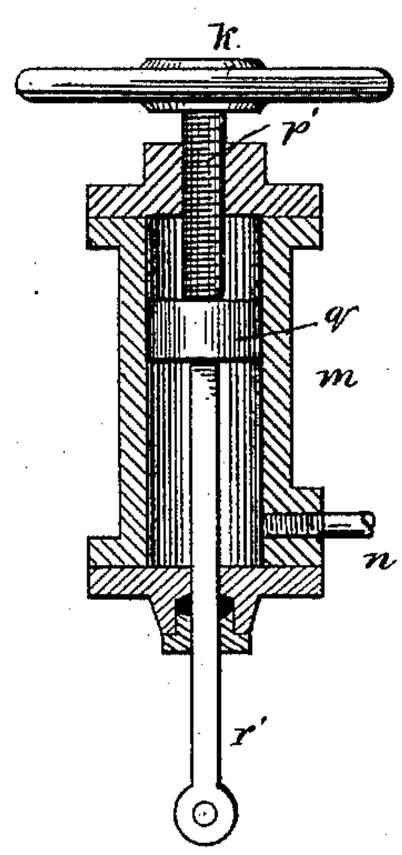


Fig. 3

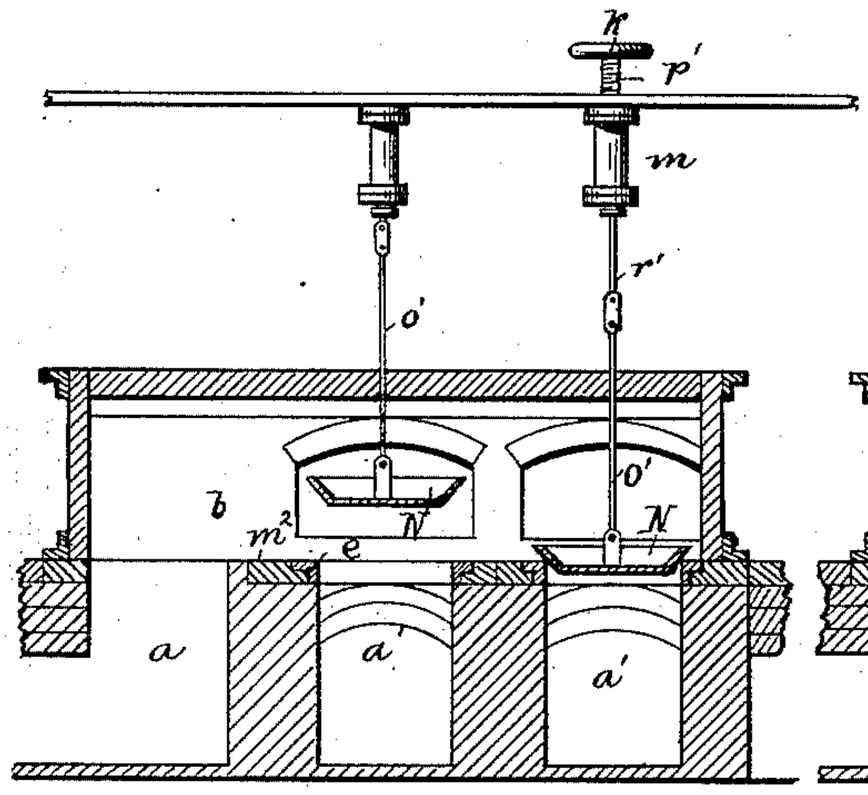
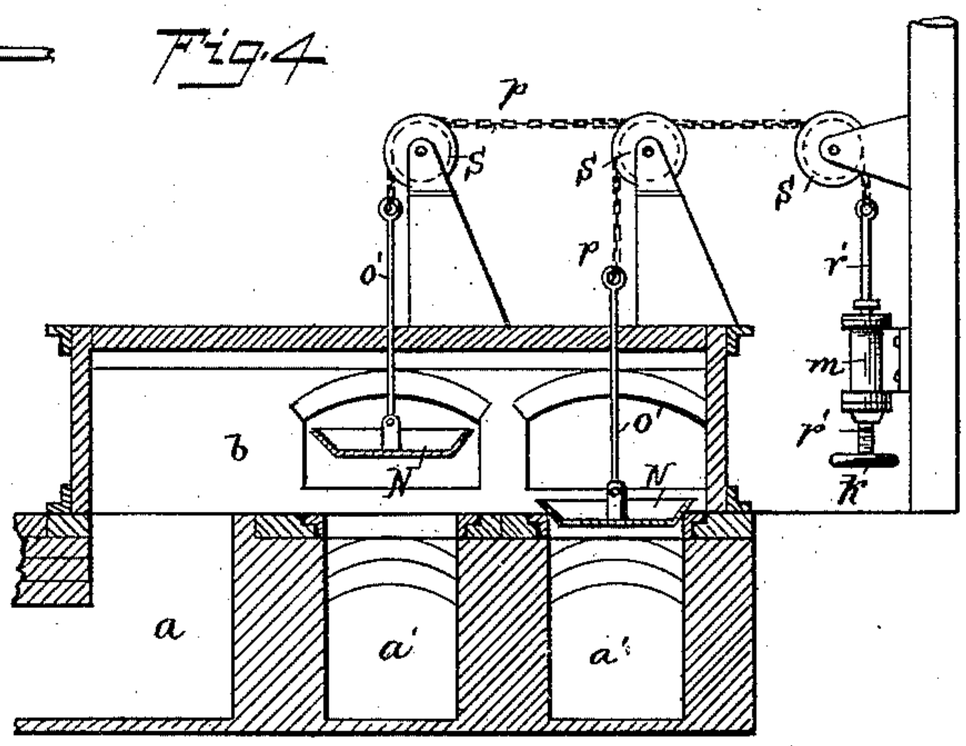


Fig. 4



WITNESSES

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MECHANISM FOR OPERATING VALVES.

SPECIFICATION forming part of Letters Patent No. 442,929, dated December 16, 1890.

Application filed April 21, 1890. Serial No. 348,802. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL T. WELLMAN and HARRY HYATT, citizens of the United States, and residents of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Regenerative Furnaces, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which we have contemplated applying that principle so as to distinguish it from other inventions.

Our invention relates to improvements in regenerative heating-furnaces, and more particularly to devices for regulating the admission of air and gas into the same; and it has for its object to provide improved means for controlling and operating the closing and regulating valves by fluid-pressure and for adjusting the movement of the valves. These objects are attained in the devices illustrated in the accompanying drawings, which form a part of this specification, in which the same reference-letters indicate the same parts, and in which—

Figure 1 represents a section of as much of the flues of a furnace and the valves thereto as will illustrate one form of connecting said valves to our regulating device; Fig. 2, a vertical section of the valve-controlling cylinder, and Figs. 3 and 4 sectional views illustrating other forms of connection between the valves and the regulating device.

In the drawings, the letters *a* indicate one set of flues which lead into the gas and air chambers *b* of the furnace, and *a'* another set of flues opening into said chambers and controlled by the valves N.

The gas and air closing and regulating valves N are of the puppet or mushroom pattern and fit upon removable seats *e* in the top frames m^2 of the flues. Said valves N have rods or stems *o'*, which slide in bearings in the tops of the valve-boxes and are suitably connected to the ends of piston-rods *r'*, the pistons *q* of which slide in cylinders *m*, rigidly secured at any suitable and desired point or points. Said cylinders have screws *p'*, provided with hand-wheels *k* and threaded into the heads of the cylinders for the purpose of limiting the strokes of the pistons and inlet-pipes *n* at the opposite ends for the operating liquid medium.

The cylinders may be rigidly secured at one place and have cords or chains *p* attached to the ends of the piston-rods, carried around suitable guide-pulleys *s*, and attached to the ends of the valve rods or stems, as illustrated in Figs. 1 and 4, and in such cases the cylinders may be either grouped side by side at a central place, or they may be located upon a vertical support near the valves.

In Fig. 3 of the drawings the cylinders are shown supported beneath a floor above the valve-box and the valve-stems are shown directly connected to the piston-rods.

It is obvious that the degree of opening of the valve may be controlled by the length of the stroke of the piston in the cylinder, which again is controlled by the degree to which the screw is screwed into the cylinder. The amount of gas passing through the valves may thus be regulated by the hand-wheels and screws and the flow may be shut off or opened by means of the cylinders by withdrawing or admitting the fluid-actuating medium from or to the cylinders.

The foregoing description and accompanying drawings set forth in detail mechanism embodying our invention. Change may be made therein, provided the principles of construction respectively recited in the following claims are retained and employed.

We therefore particularly point out and distinctly claim as our invention—

1. The combination of a closing or regulating valve, a piston controlled by fluid-pressure and connected to said valve, and an adjustable stop working in the cylinder and arranged to limit the throw of the piston and thus regulate the movement of the valve, substantially as set forth.

2. The combination of a pair of air and gas regulating valves, a piston moved in its cylinder by fluid-pressure and operatively connected to said valves, and an adjustable stop working in the cylinder and arranged to limit the throw of the piston, and thus regulate the movements of the connected valves, substantially as set forth.

3. The puppet-valve arranged to close one of the gas or air openings of the furnace, in

combination with a piston actuated by fluid-pressure and connected to the valve, and an adjustable screw-stop working in the cylinder and arranged to be manipulated by hand to limit the throw of the piston, and thus regulate the movement of the valve, substantially as set forth.

In testimony that we claim the foregoing to be our invention we have hereunto set our hands this 19th day of April, A. D. 1890.

SAMUEL T. WELLMAN.
HARRY HYATT.

Witnesses:
J. B. FAY,
E. E. PATE.