(No Model.)

F. W. GORDON.

Hot Blast Regulator.

No. 239,325. **Patented March 29, 1881.**

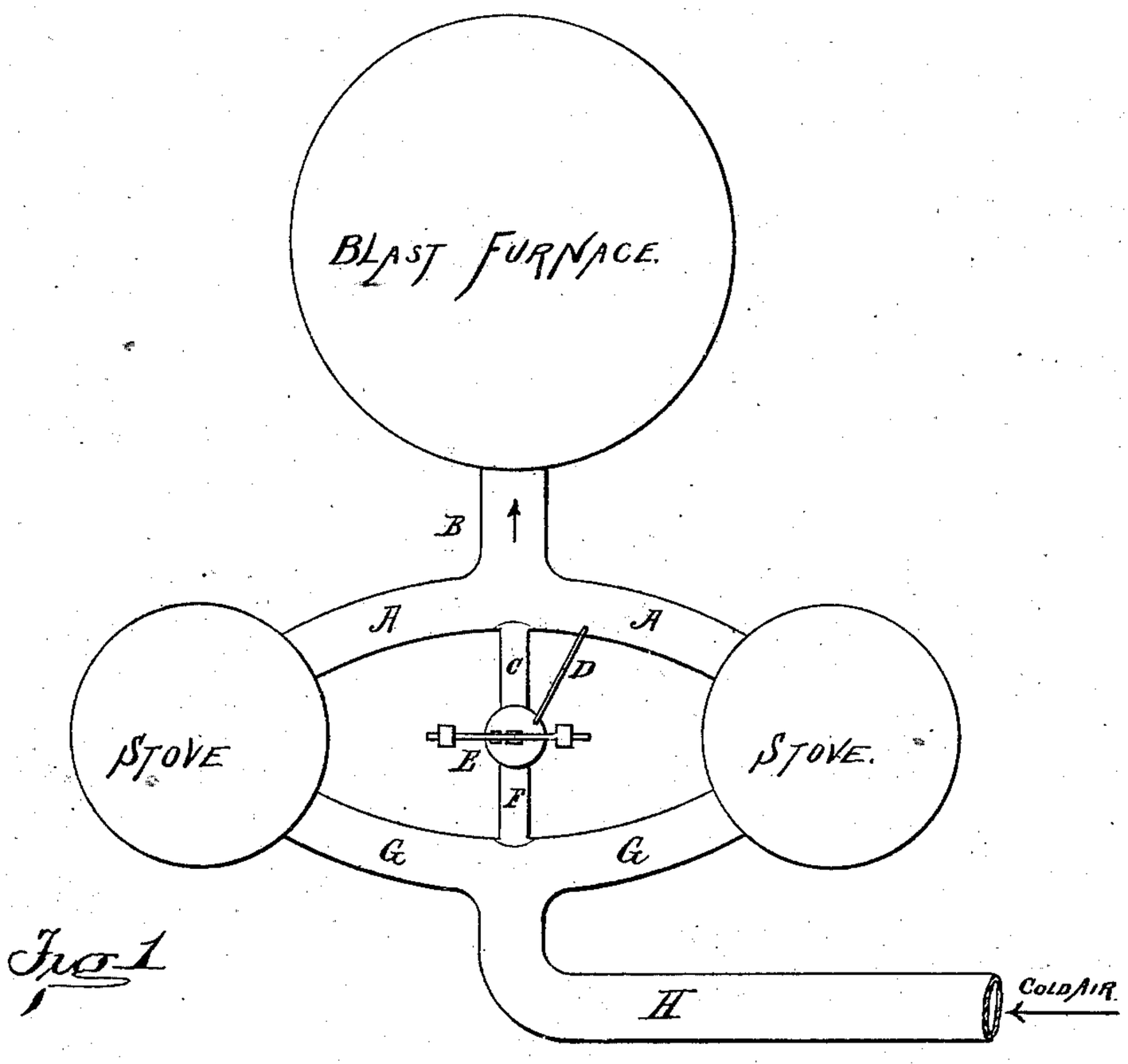

Fig 1

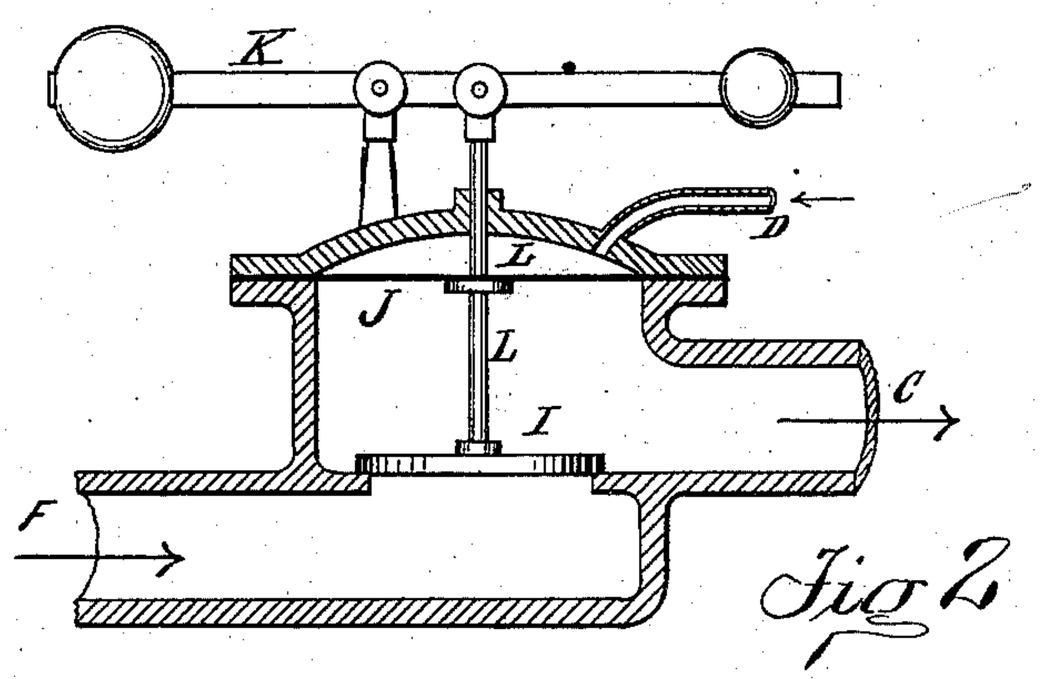

Fig 2

WITNESSES:
Jno R Woods.
Heb. A. Belden.

Frederick W. Gordon INVENTOR
by James W. See.
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UNITED STATES PATENT OFFICE.

FREDERICK W. GORDON, OF PITTSBURG, PENNSYLVANIA.

HOT-BLAST REGULATOR.

SPECIFICATION forming part of Letters Patent No. 239,325, dated March 29, 1881.

Application filed August 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. GORDON, of Pittsburg, Allegheny county, Pennsylvania, have invented certain new and useful Improvements in Hot-Blast Regulators, of which the following is a specification.

My invention relates to means for regulating the temperature of the hot air fed to blast and other furnaces.

In the accompanying drawings, Figure 1 is a plan of a furnace, air-heaters, conduits, and regulating-valve, and Fig. 2 is a vertical longitudinal section of the regulating-valve and its attached conduits.

In Figure 1, cold air forced into pipe H is heated by passage through the stoves and reaches the furnace in a heated state.

F C is a pipe leading from cold-air pipe H to the hot-air pipes A A B. This pipe contains a controlling-valve, E, which may be set to admit more or less cold air to the hot-air pipes. Such an arrangement of parts, the valve E being a common valve to be controlled by hand, is not new. By admitting cold air through the pipe F C the temperature of the air entering the furnace can be, by continual skillful manipulation of the valve E, maintained at any desired point below the maximum capacity of the heating apparatus. I arrange the valve E so as to cause it to act automatically. I find by experiment that an increase of temperature in the stove causes a reduction of pressure in the stove-outlets, and a decrease of temperature causes an increase of pressure.

Fig. 2 shows the form of valve I use at E in Fig. 1. I is the valve, having its stem attached to diaphragm J and to lever K. Above the diaphragm is a chamber, in which the heated air brought from pipe A through pipe D acts with a practically static force, as there is practically no flow or motion of the air. Pipe F C, which contains the valve, is a conduit containing moving air.

Weights upon the lever K may be adjusted so as to hold valve I slightly open. An increase of heat in a stove reduces the pressure in the pipe A, and consequently in the chamber above the diaphragm. The valve will then open wider and admit cold air past it. A reduction of temperature and increase of pressure in pipe A tends to close the valve.

A piston may take the place of the diaphragm J, and any other form of weight-adjustment may take the place of the lever and weights shown. A spring will answer as the weight-adjusting element. The diaphragm is simply a pressure-surface subjected on one side to the pressure of moving air, when the valve is in any degree open, and on the other side to the pressure of air from the hot-air pipe. The pipe F C is really a direct pipe between cold-air pipe and hot-air pipe.

I claim as my invention—

In hot-blast regulators, the combination, with an air-heater having an admission-conduit and a discharge-conduit, a connecting-conduit between said admission and discharge conduits, and a valve in said connecting-conduit, of a means for adjusting the weight upon said valve, a pressure-surface opposed to the opening of said valve, and an independent conduit connecting said pressure-surface with said discharge-conduit, substantially as set forth.

FRED. W. GORDON.

Witnesses:

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