(No Model.)

W. A. GOODYEAR.

HEAT AND FIRE RESISTING VALVE.

No. 292,745. Patented Jan. 29, 1884.

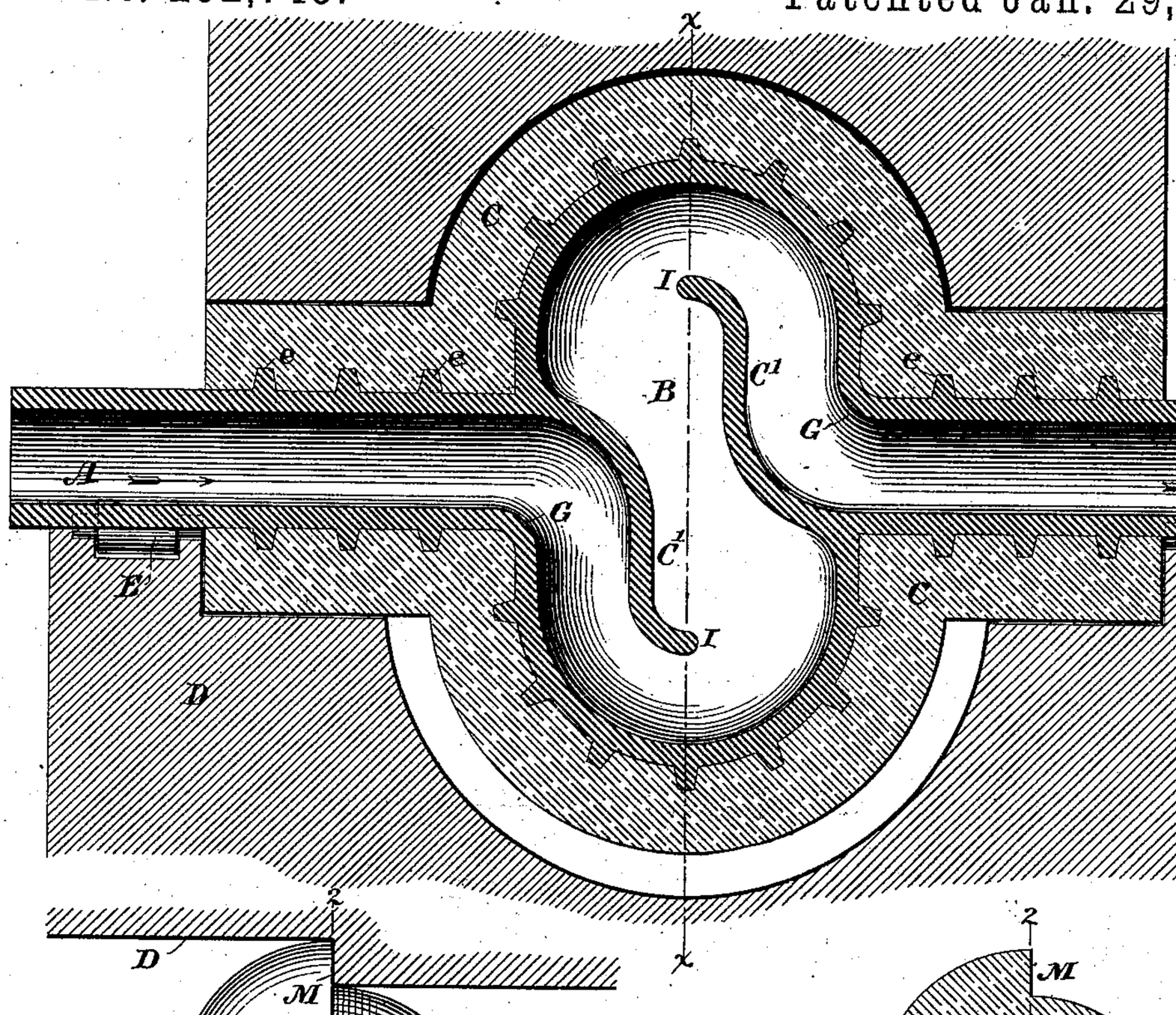

Fig. 2,

Fig. 1,

Fig. 3.

WITNESSES

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WATSON A. GOODYEAR, OF NEW HAVEN, CONNECTICUT.

HEAT AND FIRE RESISTING VALVE.

SPECIFICATION forming part of Letters Patent No. 292,745, dated January 29, 1884.

Application filed August 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, WATSON A. GOODYEAR, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Heat and Fire Resisting Valve for Hot-Air and Gas Flues or Conduit-Pipes, of which the following is a specification.

My invention consists of an improved form of valve for regulating and controlling the passage of currents of air or gas through flues or conduit-pipes at very high temperatures and velocities; and the object of my invention is to produce a valve which will not be melted in the flue or conduit-pipe by the high temperature of the mediums passing through the same. I accomplish this object by constructing the valve in the manner and of the materials hereinafter described, and as illustrated by the accompanying drawings, and by causing a constant stream of water to pass through the same.

In the drawings, Figure 1 is a side elevation of the valve, showing part of the wall of the flue in section. Fig. 2 is a vertical longitudinal section of the valve through the axis, and Fig. 3 a vertical cross-section on the line X X of Fig. 2.

Similar letters refer to similar parts throughout the several views.

The valve is composed of a central shell or hollow core, B, (see Fig. 2,) of cast or wrought iron or other metal of suitable thickness. Its shape will be seen by reference to Figs. 2 and 3. It is a hollow disk of the same shape as that part of the flue or conduit-pipe in which the valve is to be placed. At either side it is drawn out into hollow tubes, the extremities of which serve as bearings, upon which the valve revolves. These tubes also serve to convey a stream of water through the interior of the valve, as indicated by the arrows. The sides of the disk, both exterior and interior, are parallel, as seen in Fig. 3. The size of the vertical longitudinal section of the disk shown in Fig. 2 will vary according to the size of the flue or conduit-pipe and the thickness of the valve-coating, which latter will be an inch, (more or less,) according to the temperature which the valve is designed to resist. For lower temperatures the coating will be thinner and the valve-shell larger than when high temperatures are to be resisted. At the points G G, Fig. 2, the interior edges are rounded off substantially as shown, for the purpose of diminishing the resistance to the current of water, and the outer surface is made to correspond.

In the interior of the disk-shaped part of the valve-shell are placed diaphragms C′ C′, Fig. 2, which curve to correspond with the adjacent interior surfaces of the shell, as shown in the figure. These diaphragms are supported from the surfaces of the interior of the shell which are opposite the surfaces G G, and they terminate in the cylindrically rounded-off surfaces I I after passing the vertical axis of the shell X X. My object in placing these diaphragms in the shell is to force the stream of water to traverse the entire inner surface of the shell with as nearly a constant volume and velocity as possible; and I do this by giving the diaphragm the direction and shape heretofore described, and substantially as shown in Fig. 2, which I find to be such as will make the cross-section and volume of the stream in all respects most nearly constant.

I cast or forge on the outer surface of the shell, according to the manner in which the same is constructed, projections *e*, one-fourth or more of an inch in height, as desired, arranged substantially as shown in Figs. 2 and 3, at convenient distances apart in each direction, and their object is to form a rough surface, to facilitate the better adhesion of the valve-coating.

The valve-shell is incased with a coating of fire-clay or other fire and heat resisting material, C C, the thickness of which will vary with the size of the valve-shell, the size of the flue or conduit-pipe, and the temperature to be resisted, as heretofore described. To secure tight fitting, the covering on one face may be carried out, so as to overlap that on the other, substantially as shown at M and N in Figs. 1 and 3, and so as to fit into opposing and overlapping shoulders or seats formed in the conduit-pipe or flue-walls on either side of the valve-axis.

The extreme ends of the valve-shell extending beyond the walls D are formed into tubes,

as heretofore described, and serve as bearings upon which the valve turns. They are supported by friction-rollers E, Figs. 1 and 2, of any desired length and diameter, of any desired metal, resting upon bearings of any desired form, size, and metal placed in or attached to the main walls D of the flue or conduit-pipe. The object of these friction-rollers is to facilitate the turning of the valve and obviate the difficulties arising from the expansion of an ordinary bearing under the high temperature to which it is necessarily exposed.

By means of a hose-pipe or other apparatus attached to either extremity of the hollow axis a continuous stream of water is forced through the valve at a velocity sufficient to enable it to traverse the interior of the valve-shell without becoming too much heated.

In the drawings the stream enters at A and is discharged at A′, and its direction is represented by the arrows.

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

1. The hereinbefore-described fire and heat resisting valve, consisting of a cast or wrought iron or other metal shell, coated with fire-clay or other fire and heat resisting material, constructed to rotate upon a hollow axis through which a continuous stream of water may be forced, substantially as hereinbefore shown and described.

2. In a fire and heat resisting valve, a hollow valve-shell, the shape and size of which are determined by the shape and size of the flue or conduit-pipe in which the valve is to be placed, and constructed to rotate upon a hollow axis through which a stream of water may be forced, substantially as herein shown and described, for the purposes specified.

3. A heat or fire resisting valve consisting of a hollow valve-shell constructed to rotate upon its axis, with a coating of fire-clay.

4. In a heat or fire resisting valve, the combination, with the hollow valve-shell, of a diaphragm of metal forming a part of the same, substantially as herein shown and described, and for the purposes specified.

5. In a heat and fire resisting valve, the combination, with the hollow rotating valve-shell, of the projections *e*, forming a part of the same, and the coating of fire-clay, substantially as described.

6. In a heat and fire resisting valve consisting of a cast or wrought iron or other metal shell coated with fire-clay or other fire and heat resisting material constructed to rotate upon an axis, the combination, with the valve, of friction-rollers, substantially as shown and described, and for the purposes specified.

In testimony whereof I have hereunto subscribed my name this 23d day of August, A. D. 1883.

WATSON A. GOODYEAR.

Witnesses:
WALTER POND,
HENRY G. NEWTON.