

No. 610,076.

Patented Aug. 30, 1898.

G. W. McCLURE.  
VALVE FOR REGENERATIVE FURNACES.

(Application filed Jan. 26, 1895.)

(No Model.)

2 Sheets—Sheet 1.

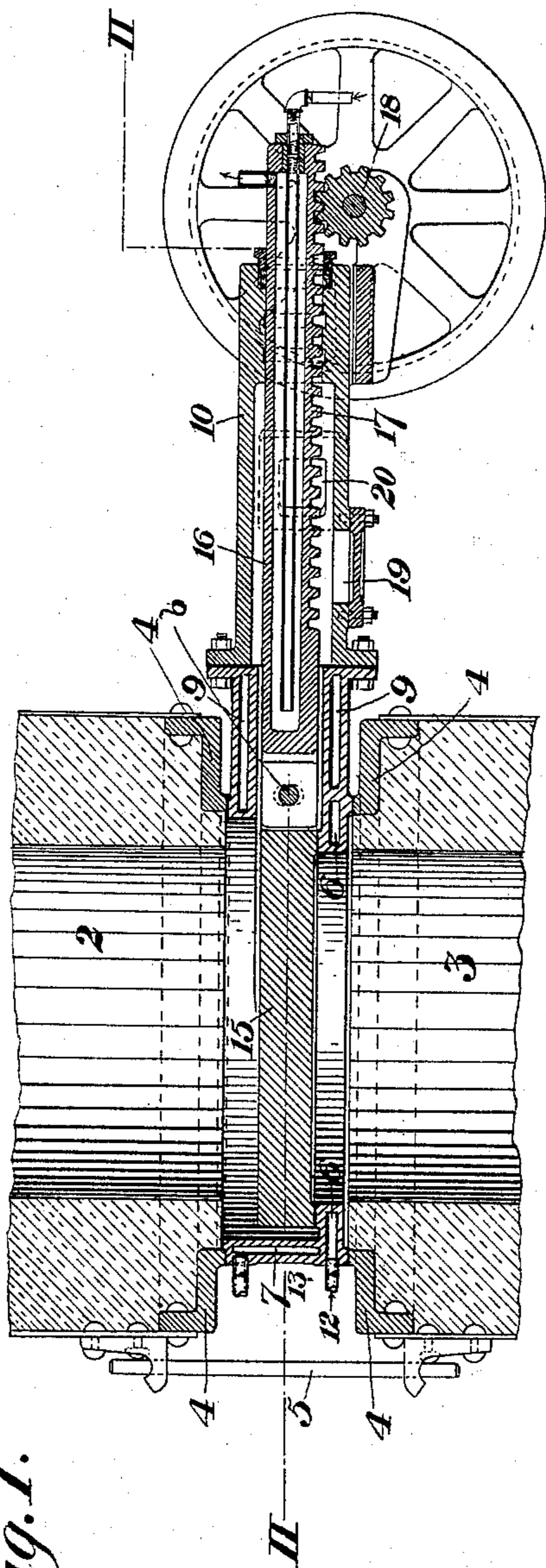


Fig. 1.

WITNESSES

*W. B. Corwin*  
*H. M. Corwin*

INVENTOR

*George W. McClure*  
*by W. Baxwell & Sons*  
*his Attorneys.*

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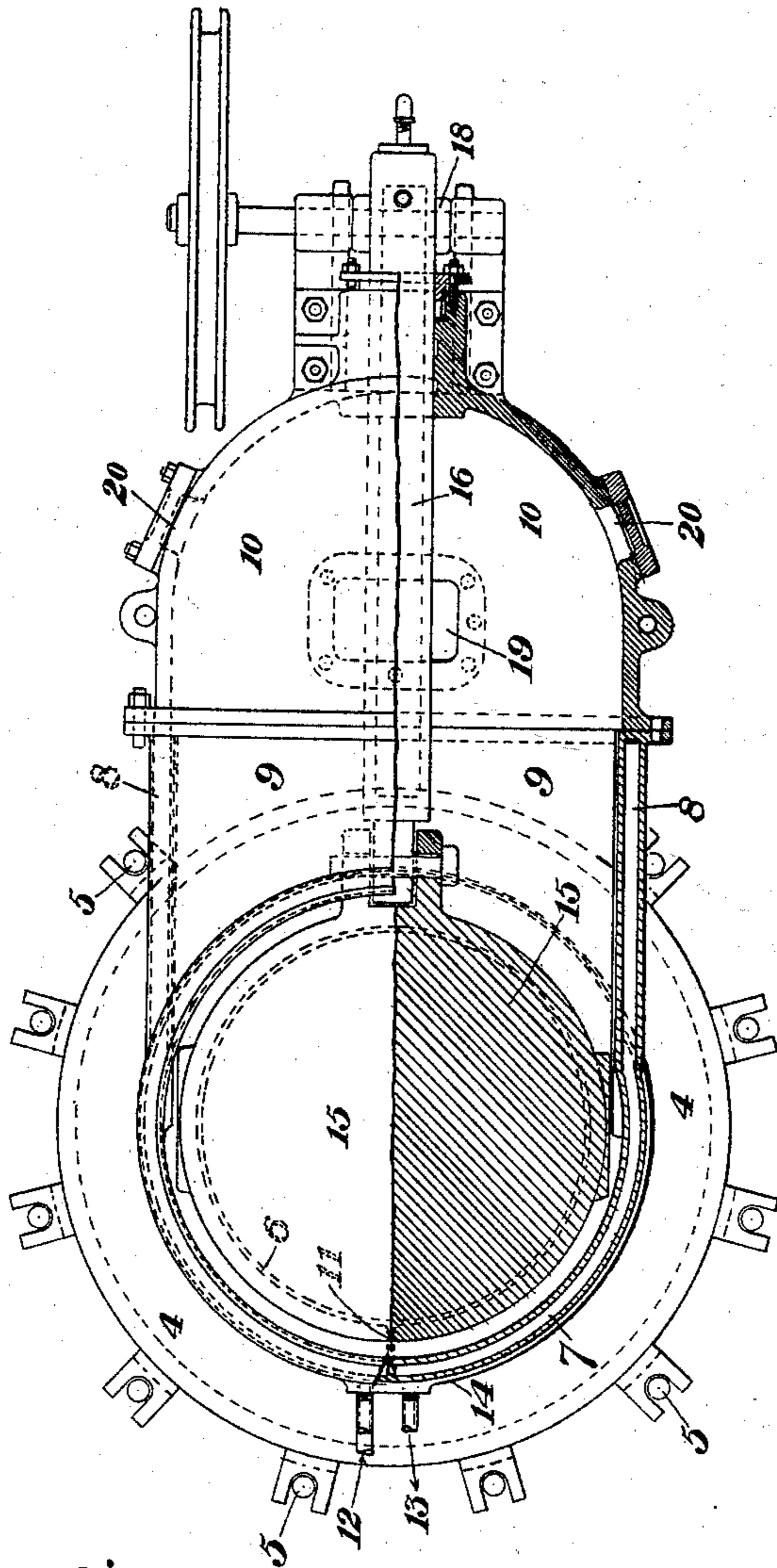


Fig. 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

GEORGE W. McCLURE, OF PITTSBURG, PENNSYLVANIA.

## VALVE FOR REGENERATIVE FURNACES.

SPECIFICATION forming part of Letters Patent No. 610,076, dated August 30, 1898.

Application filed January 26, 1895. Serial No. 536,339. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. McCLURE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Valves for Regenerative Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows in vertical central section a valve for the blast-main of regenerative hot-blast stoves set in position in the blast-main and provided with my improvements. Fig. 2 is a sectional plan view, partly in section, on the line II II of Fig. 1.

In the drawings, 2 3 represent the masonry of the blast-main of a hot-blast stove, the sections of which are divided and are faced with metal rings 4 4, between which the valve-seat is interposed.

5 5 are links by which the sections of the main may be tied together. The valve-seat casting, preferably made of phosphor-bronze or other suitable metal, comprises a horizontal annular portion 6, which forms the valve-seat proper and is a complete annulus, and a vertical portion or casing 7, which extends along and above the portion 6, around a portion of the circumference of the latter, and has parallel tangentially-projecting legs 8, connected above and below by horizontal webs 9, constituting, with the legs 8, a casing within which the valve may move. The upper edge of the vertical water-cooled portion 7 extends above the level of the top of the valve and abuts against the base of the section of the valve-chamber or flue above it, and the valve-seat projects inwardly beyond said portion 7 to afford a ledge on which the valve slides freely. An outwardly-extending prolongation of the casing is constituted by a box or cap 10, having at the end a hole through which the rack on the valve-stem projects.

The annular portion 6 is made hollow and is divided by a partition 11. An inlet water-pipe 12 enters the same on one side of the partition, and an outlet-pipe 13 is on the other side. Similarly the vertical portion 7 and the parts 8 and 9 are made hollow, communicating with one another, and in the por-

tion 7 is a partition 14, on opposite sides of which are an inlet-pipe and an outlet-pipe. Through these pipes constant cooling-streams of water are maintained through all the parts of the casting, and by the use of the partitions the water-cooling of the valve-seat and casing is effected in the most thorough manner.

15 is the valve, which slides horizontally within the casting on the seat portion 6. It has a water-cooled stem 16, which is pivoted to the valve at *b* and extends through the hole in the cap 10 and is provided with rack-teeth 17, meshing with a pinion 18, by rotation of which the valve is moved on its seat. The cap 10 is provided on its upper or lower face with a manhole 19, which permits the stem to be uncoupled easily from the valve, and with lateral manholes 20 to enable the cap to be cleaned.

By the arrangement of the water-cooled passages in the valve-seat casting the valve-seat casting and the valve are preserved much more effectively than in any prior construction known to me, and the construction which I have described affords numerous advantages which will be appreciated by those skilled in the art.

The form and construction of the parts may be varied within the scope of my invention, since

What I claim is—

1. The combination, with a furnace-flue, of a water-cooled valve-seat set therein; a sliding valve; and a casing interposed between the seat and the flue above, having vertical water-cooled portions extending above the level of the top of the sliding valve upon which the upper flue is adapted to rest, and water-cooled webs extending horizontally above and below the valve between which the valve may slide; the valve-seat having a hollow water-cooled ledge projecting inwardly beyond the casing, upon which the valve slides; the chambers of the casing and of the valve-seat being distinct from each other and each being provided with an independent water inlet and outlet arranged to cause a circulation of water therethrough.

2. The combination, with a furnace-flue, of a sliding valve; an annular water-cooled valve-seat set therein; and a casing inter-

posed between said seat and the flue above  
having vertical water-cooled portions extend-  
ing above the level of the top of the sliding  
valve and partially around the circumfer-  
5 ence of the valve-seat, and having tangen-  
tially-projecting vertical water-cooled legs  
connected at top and bottom by horizontal  
water-cooled webs, between which the valve  
may slide; the valve-seat having a hollow  
10 water-cooled ledge projecting inwardly be-  
yond the casing; the upper flue being sup-  
ported partially by the vertical portions and

partially by the legs and webs of the casing;  
the chambers of the valve-seat and of the  
casing being distinct from each other and 15  
each being provided with an independent  
water inlet and outlet arranged to cause a  
circulation of water therethrough.

In testimony whereof I have hereunto set  
my hand.

GEORGE W. McCLURE.

Witnesses:

H. M. CORWIN,

THOMAS W. BAKEWELL.