

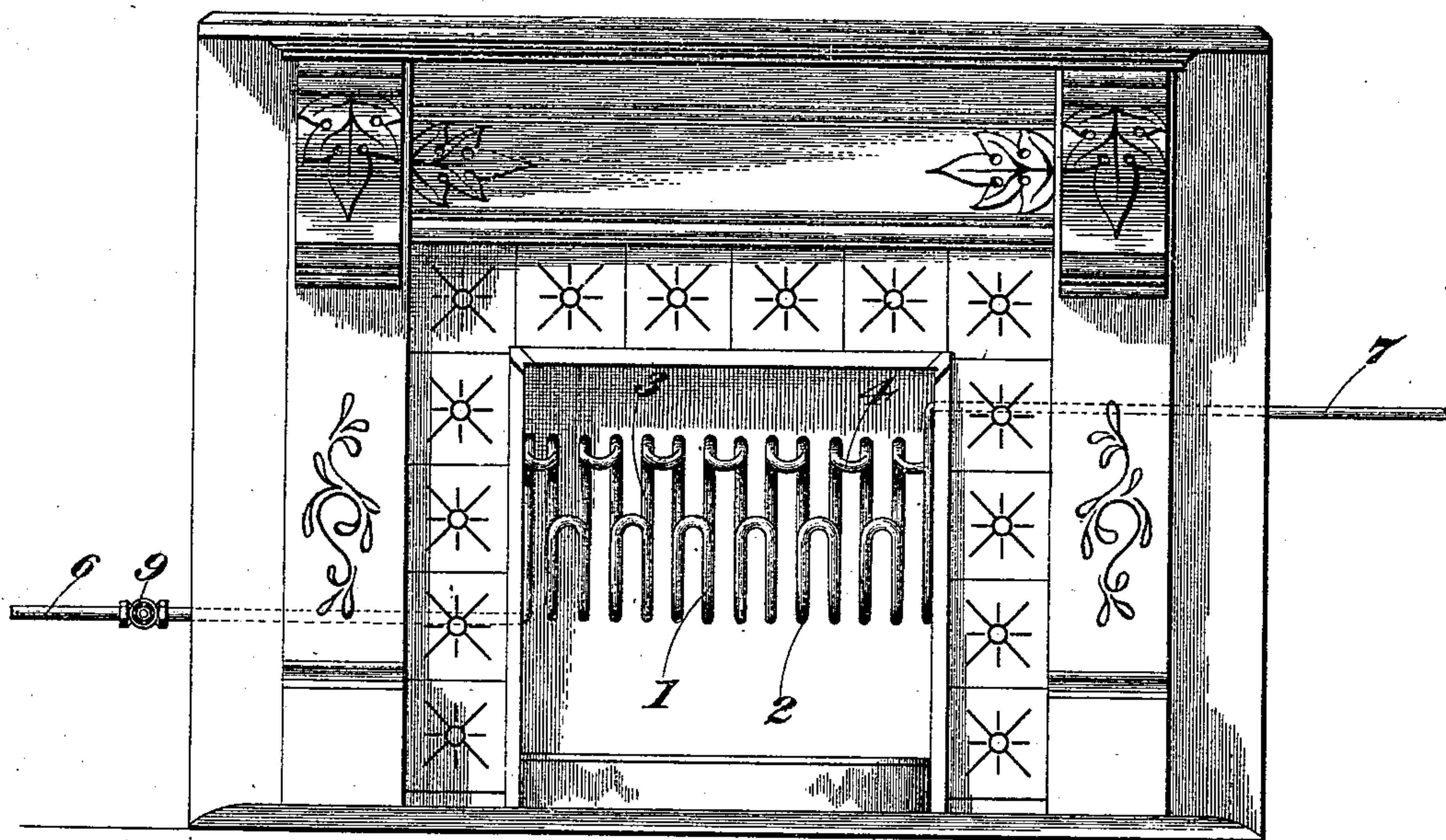
(No Model.)

W. H. PAGE.  
GRATE.

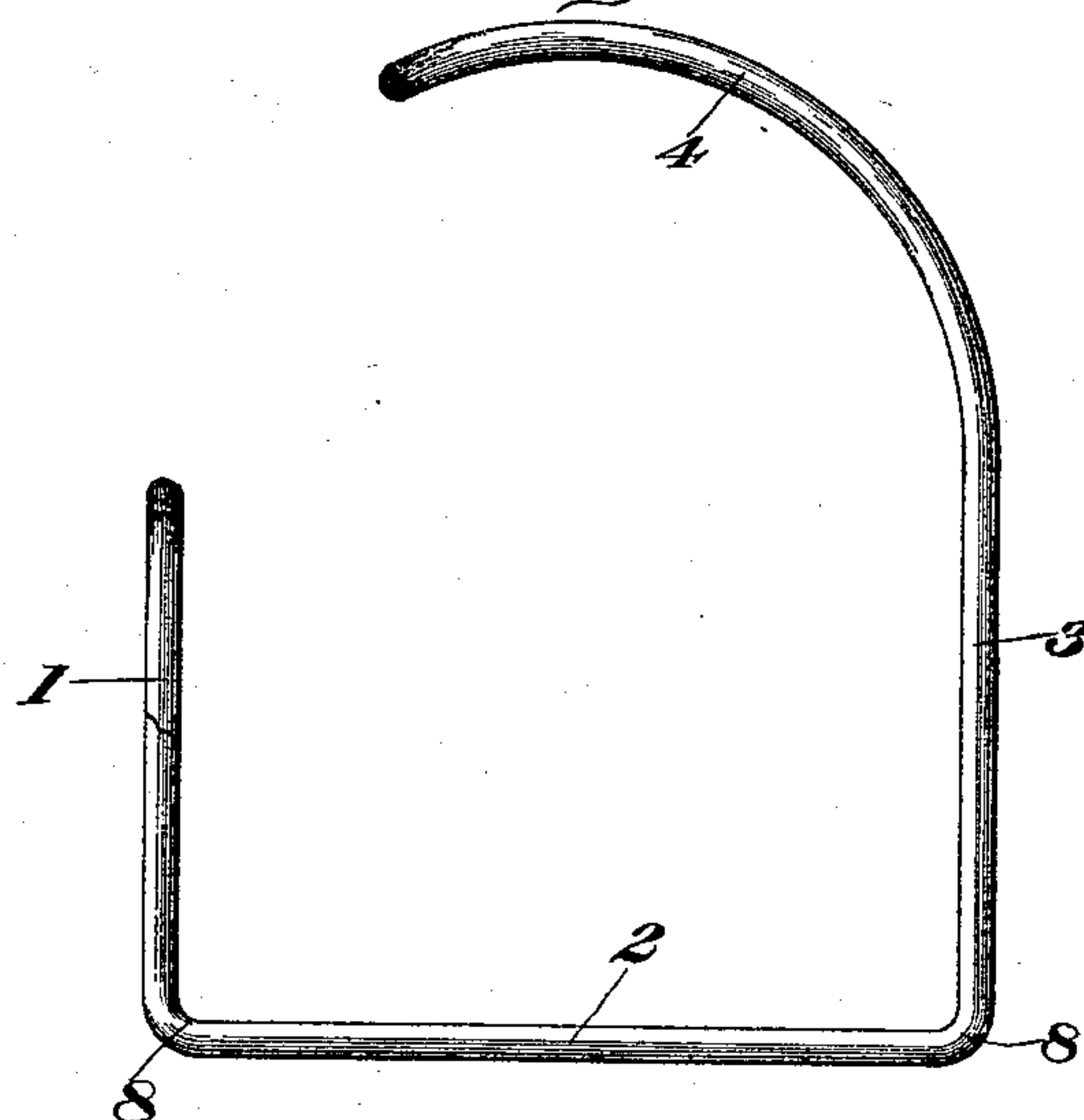
No. 547,802.

Patented Oct. 15, 1895.

*Fig. I.*



*Fig. II.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. PAGE, OF BASIC CITY, VIRGINIA.

## GRATE.

SPECIFICATION forming part of Letters Patent No. 547,802, dated October 15, 1895.

Application filed November 23, 1894. Serial No. 529,732. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM H. PAGE, of Basic City, Augusta county, Virginia, have invented certain new and useful Improvements in Grates, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce an improved tubular grate constructed so as to be used without special adaptation in any ordinary fireplace and to utilize by the aid of its tubes the heat of the fire within it to heat and set in motion a heating medium—as, for example, air or water contained within the tubes.

In the accompanying drawings, Figure I is a front view of a preferred form of my grate set in a fireplace. Fig. II is an end view thereof with the fireplace detached.

Referring to the figures on the drawings, 1 indicates the front part of my grate, 2 the bottom part, 3 the back part, and 4 the hood, with which, preferably, my grate is provided, and which consists of a continuation of the back part above and preferably across the upper part of the grate.

My grate is constructed of a continuous metallic tube, the branches thereof having no communication with one another, except endwise, and the entire grate being provided with a single inlet-pipe 6 and a single outlet-pipe 7.

The front, bottom, back, and hood of the grate, which constitute its different elements, may be united by suitable bends 8. By the term “a continuous tube” I do not mean that the parts may not be made of separate pieces and joined together, but only that the grate, when united, is provided with a continuous tubular passage extending through it from one side to the other. Therefore the bends 8 may be, in fact, coupling-pieces uniting the front, bottom, and back bars together. The inlet-pipe and the discharge-pipe are located both at the front of the grate, so that the back part is unobstructed. By this arrangement the grate is adapted to be set in place in any ordinary fireplace, precisely as if it were a grate of ordinary construction made of solid bars. The inlet-pipe preferably communicates with a source of pure-air supply and is preferably provided with a

valve 9. Inasmuch as the valve 9 would be differently constructed if water were employed in the grate, instead of hot air, it is merely diagrammatically indicated in the drawings, and I here specify that its construction may be of any usual and ordinary pattern adapted for the purpose. The discharge-pipe may communicate with any suitable steam or hot-air circulating system, which is not illustrated, inasmuch as it forms no feature of my present invention and may be of any ordinary and well-known construction.

In practice the grate is sustained in the fireplace either by hooks or legs like any other grate, and the fire is built in the bottom thereof. As soon as the tubular bars of the grate become heated, a current of the heating medium (whether it is steam or air) is set up within the passages of the bars and is discharged through the discharge-pipe 7. If air is employed as the heating medium, a constant supply is drawn through the inlet-pipe 6.

The design in making the grate of a single continuous tube has for its foundation the fact that the air drawn in through the inlet-pipe being gradually heated as it passes through the grate, and its temperature being raised in each successive tube, it becomes at last highly rarefied and is discharged with great velocity from the discharge-pipe 6. In this respect my grate differs from tubular grates having separate intercommunicating tubes, inasmuch as the employment of such separate tubes produces conflicting and counteracting currents which hinder and impair, rather than promote, the efficient operation of the grate.

What I claim is—

1. A grate consisting of a continuous tube constituting a series of bars, each of said bars communicating at one extremity with the bar preceding and at its other extremity with the bar next succeeding, said bars being bent to form the front, bottom, back and hood of the grate whereby the circulating medium is provided a continuous passage from one side of the fireplace to the other, substantially as specified.

2. A grate consisting of a single continuous tube forming the front, bottom, back and hood of the grate, the front and back bars

being vertically disposed, and the inlet and outlet pipes being located at the opposite ends of the front of the grate and in different planes, substantially as specified.

- 5 3. A grate consisting of a single continuous tube, the front, bottom, back and hood bars arranged as continuations of each other in the same vertical plane, the adjacent parallel bars being connected by bends located  
10 alternately at the top of the front bars and at the forward extremity of the hood bars, the

inlet pipe communicating with the grate at the bottom of the front thereof, and the outlet pipe communicating with the front of the grate at a point above the hood, substantially 15 as specified.

In testimony of all which I have hereunto subscribed my name.

WILLIAM H. PAGE.

Witnesses:

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