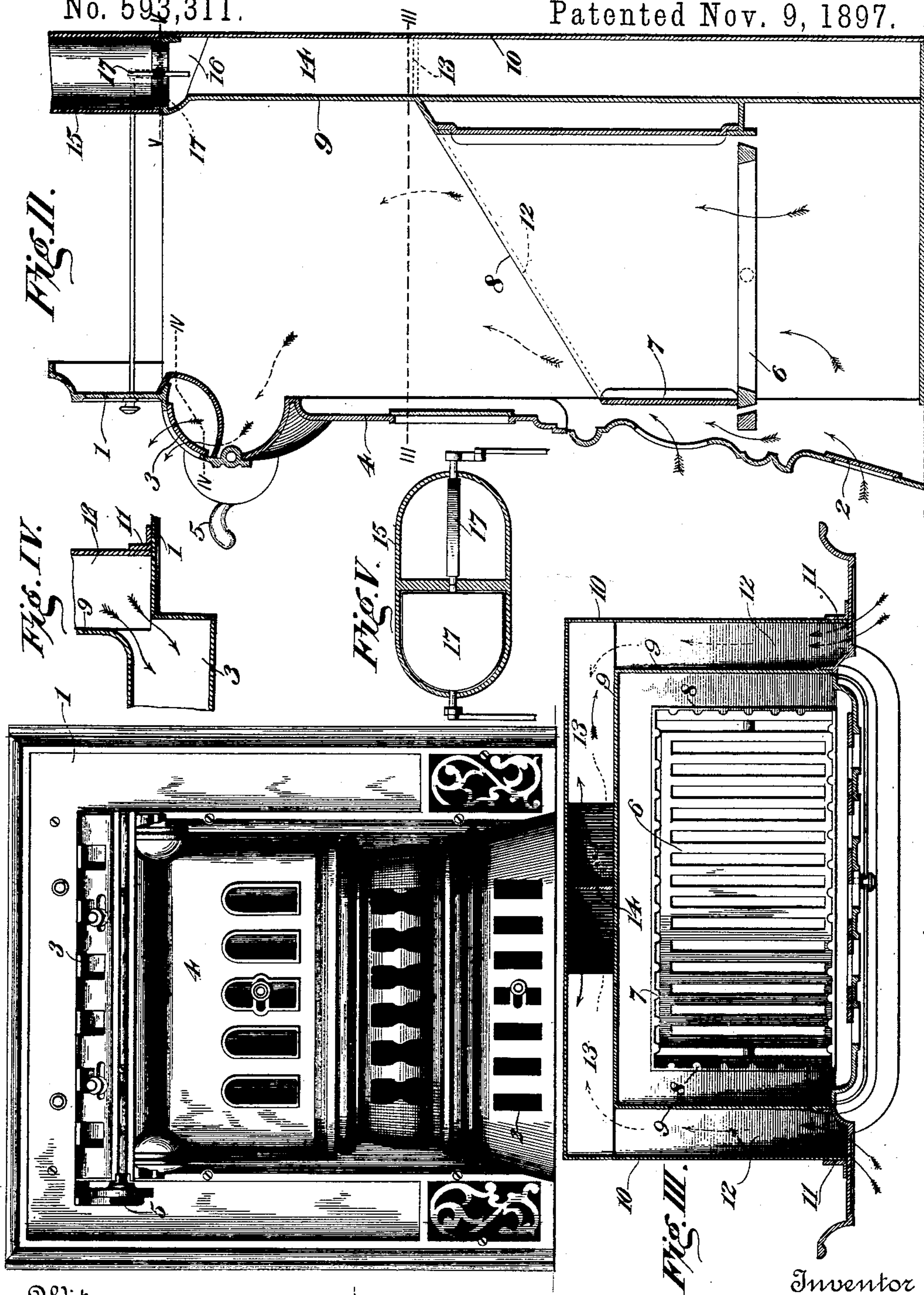


(No Model.)

W. P. SAVAGE.
HEATING GRATE.

No. 593,311.

Patented Nov. 9, 1897.



Witnesses.

M. Fowler
S. M. McKee

Fig. I.

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UNITED STATES PATENT OFFICE.

WILLIAM P. SAVAGE, OF GERMANTOWN, MARYLAND.

HEATING-GRATE.

SPECIFICATION forming part of Letters Patent No. 593,311, dated November 9, 1897.

Application filed November 11, 1896. Serial No. 611,711. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. SAVAGE, of Germantown, in the county of Montgomery, State of Maryland, have invented new and useful Improvements in Heating-Grates, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce improvements in grates for increasing their heating capacity by means of the circulation of pure heated air in a chamber contiguous to the fire-pot of the grate. The circulation of air may be accomplished within the room in which the grate is located or it may be utilized for heating other rooms, as preferred.

In the accompanying drawings, Figure I is a front elevation of my grate. Fig. II is a longitudinal vertical section of the same. Fig. III is a section on the line III III of Fig. II. Fig. IV is a section on the line IV IV of Fig. II, and Fig. V is a section on the line V V of Fig. II.

Referring to the figures on the drawings, 1 indicates the front of my grate, which may be made of any suitable material, shape, size, and dimensions and of any desirable ornamentation. Within the front I provide a lower damper 2 and an upper damper 3, the former being adapted to permit ingress of air to the heating-chamber and the latter to cause egress of the same into the room when required.

I prefer to provide my grate with a swinging front 4, adjustable by means of a lever 5. The last-named parts are of any suitable and ordinary construction and do not require special explanation.

Within the grate I provide the usual or suitable grate-bars 6, which support the fire-pot 7, having opposite oblique sides or ends 8.

Around the fire-pot I provide a three-sided air-tight wall 9, which, being united by close joints to the base of the grate or hearth and in like manner to the walls of the smoke-flue with which the grate communicates, constitutes an impenetrable wall confining within the grate proper all the products of combustion, but, being made of metal—as, for example, iron—permits the radiation through it of the heat from the fire within the grate.

Around the outside of the wall 9 I provide

an outer wall 10, which, joining the front, as indicated at 11, forms around the exterior of the wall 9 a closed chamber. The wall 10 is united by close joints to the base of the grate or hearth upon which it rests and is closed around its upper end either by a bent extension of the wall or by the masonry within which the grate in practice is set. With the addition of such top and bottom closing walls as may be convenient the walls 9 and 10 form the air heating and circulating chamber. Within this chamber, upon opposite sides of the fire-pot, I provide an oblique transverse partition-wall 12, which extends around to the back of the grate, as indicated at 13. The partitions 12 are preferably located in the same plane with the inclined ends 8 of the fire-pot, thereby defining within the air-heating chamber upper and lower divisions, the latter contiguous to the fire-pot being properly the heating portion of the chamber.

14 indicates a vertical partition which extends from the bottom of the air-heating chamber preferably almost to its top. It divides the air heating and circulating chamber and communicates with a heating-flue 15. At its upper end the partition 14 terminates a sufficient distance below the heating-flue 15 to provide an aperture 16, that affords communication between the heating-chambers. The heating-flue 15 is preferably controlled by independent dampers 17, by means whereof and of the aperture 16 the heat from the heating-chamber may be caused to pass up separate passages in the flue 15 or into either of such separate passages exclusively.

The ends of the partition 13 terminate a sufficient distance beyond the opposite sides of the partition 14 to allow free communication between the upper and lower parts of the respective heating-chambers and with the flue 15, as required.

In operation, fire being made in the grate, the dampers 17 being closed and the dampers 2 and 3 being open, the air within the lower part of each heating-chamber defined by the oblique partitions 12, is discharged toward the opposite sides of the partitions 14 and thence passing into the upper chambers finds egress through the dampers 3. The employment of oblique partitions 12 and of a vertical partition 14 facilitates the circulation of the

heated air and prevents retardation through the production of conflicting currents. If the dampers 3 be closed and both of the dampers 17 open, the hot air will find egress into both passages of the flue 15. If one of the dampers 17 is closed and the other open, the heat from the entire grate will pass into that passage of the flue 15 whose damper is open.

From the foregoing description it will be perceived that my invention not only promotes the circulation of air in the heating-grate proper, but also provides for the utilization of all the heat in any room which the grate is designed to heat exterior to the one in which it is located, or may have its distribution through all of the rooms with which the grate is in communication.

What I claim is—

1. In a grate, the combination with front, rear and side walls, of dampers in the front of the grate, a heating-chamber on the rear and sides communicating with the dampers, transverse partitions subdividing the heating-chamber, and a vertical partition separating each of the two subdivided chambers, substantially as set forth.

2. In a grate, the combination with front, rear and side walls, of a heating-chamber around the rear and sides of the same, a ver-

tical partition in the rear, dividing the chamber, and transverse partitions dividing the sides of the chambers, and partially dividing the rear of each of the chambers, respectively, substantially as set forth.

3. In a grate, the combination with front, side and rear walls, of a heating-chamber surrounding the side and rear walls, a vertical partition separating the chamber, and oblique transverse partitions dividing the sides of each chamber and extending toward, but not touching the vertical partition, respectively, substantially as set forth.

4. In a grate, the combination with front, side and rear walls, and a vertically and horizontally subdivided heating-chamber, of a divided flue communicating with the heating-chamber above the vertical partition that divides it, independent dampers for each passage of the flue, and a passage across the top of the vertical partition, substantially as and for the purpose specified.

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

WILLIAM P. SAVAGE.

Witnesses:

JOSEPH L. ATKINS,
S. G. HOPKINS.