D. W. SMITH
Stove-Grates.

No. 196,127. Patented Oct. 16, 1877.

Fig. 1.

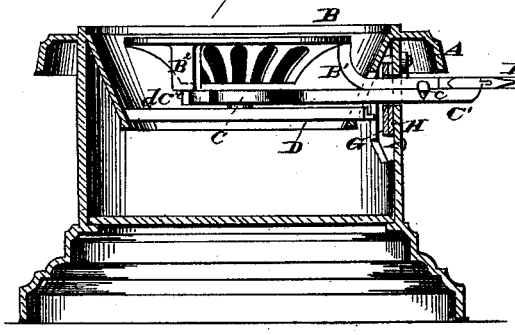


Fig. 2.

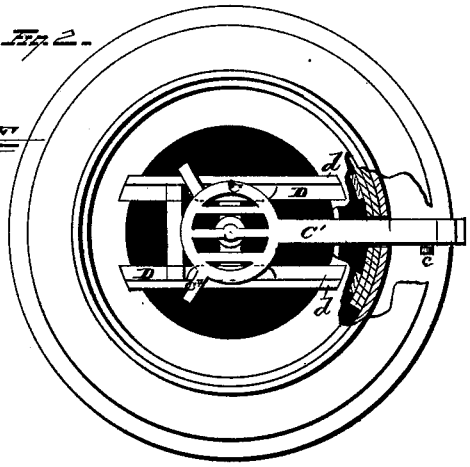


Fig. 3.

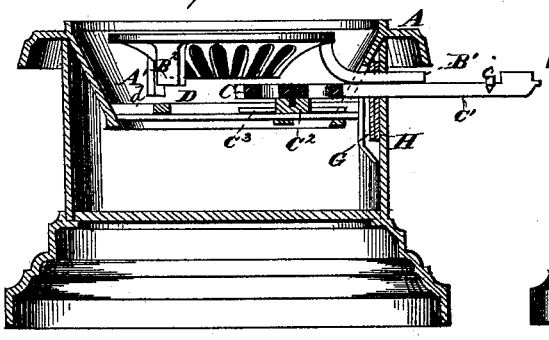


Fig. 4.

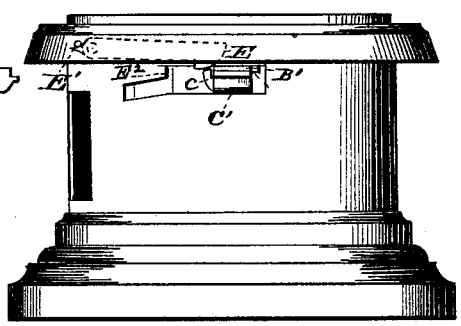


Fig. 5.

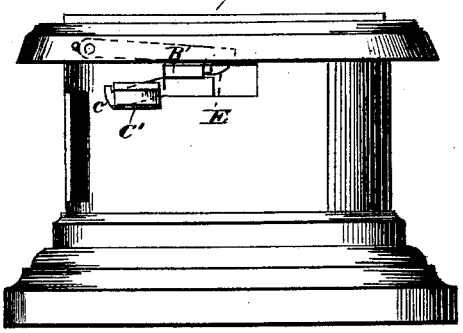
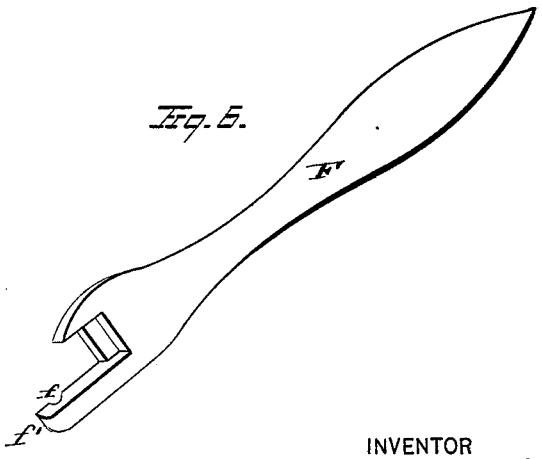


Fig. 6.



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UNITED STATES PATENT OFFICE.

DANIEL W. SMITH, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO MYERS, OSBORN & CO., OF SAME PLACE.

IMPROVEMENT IN STOVE-GRATES.

Specification forming part of Letters Patent No. **196,127**, dated October 16, 1877; application filed July 28, 1877.

To all whom it may concern:

Be it known that I, DANIEL W. SMITH, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Stove-Grates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to a new and useful improvement in stove-grates; and consists in forming the grate in two sections, an outer and a central section; the said outer section resting upon arms projecting from the central section, and arranged to be revolved or shaken at the same time with the central portion, but said central portion being so constructed that it may be readily detached from the outer ring and slid out so as to leave an open space in the center of the outer ring, for the purpose of removing clinkers, &c., or discharging the contents of the fire-pot.

In the drawing, Figure 1 is a central section by a vertical plane, containing the handle when in position for shaking the grate, and showing parts in elevation. Fig. 2 is a plan view with the outer ring of the grate removed, and showing a portion of the stove removed, so as to exhibit the sliding rings or shells through which the shaking-arms pass. Fig. 3 is a longitudinal central section, representing the central portion as slid out. Fig. 4 is a front view, showing the arms in position for shaking. Fig. 5 is a front view, showing the arms in position for sliding out the central section of the grate. Fig. 6 is a separate view, in perspective, of the handle whereby the grate is either shaken or the central section drawn out.

Heretofore, where a grate has been provided with an outer ring and with a central sliding section, the ways or guides upon which the central section has been arranged to slide have been attached directly to the outer ring, or else the outer ring has been arranged so as to rotate within a rim or support attached to the adjacent walls of the stove or base section, and the central section made to slide in ways or guides forming a part of the same rim or support.

In my device the outer rim, except at the time when it is desired to slide out the central portion, is supported upon arms that project from the central sliding section of the grate, so that the outer ring may be shaken simultaneously with the central section as a single grate, while the ways or guides upon which the central section is arranged to slide are attached rigidly to the walls of the stove or base section. The construction is such, however, that when it is desired to slide out the central portion of the grate the act of turning the central section into proper position for sliding out will release the outer ring from its bearing upon the projecting arms of the central section, and cause the outer ring at that time to rest upon lugs or supports projecting from the adjacent walls of the stove or base section, thus leaving the central portion free to slide in and out without disturbing the outer ring.

A is the base-section or grate-section of any stove, heater, or furnace. B is the outer ring of the grate; C, the middle or sliding section. B^1 and C^1 are, respectively, the arms projecting from the sections B C, whereby the grate-sections are shaken or the middle section drawn out. D are ways or guides upon which the central section C of the grate may be drawn out or slid out. C^2 is a cross-bar or underneath support for the central section. At its ends are cross-heads of any suitable construction for resting upon the ways constructed to slide freely therein. These cross-heads are shown at C^3. The outer ring B has, at two or more points upon its periphery, downwardly-projecting arms or flanges B^2, which rest upon arms C^4, that project from the central section or sliding section of the grate. The downwardly-projecting arms or flanges B^2 are inclined on their lower edges, for the purpose hereinafter to be explained.

A′ are lugs or supports projecting from the adjacent wall of the stove or base section.

The operation of the device is briefly as follows: The two arms C^1 B^1 being in proper position to shake the grates, it is apparent that the construction will not at that time permit

the central section to slide out; and so long as the central section is not in the position to slide out, the flanges B^2 from the outer ring rest upon the arm C^4, projecting from the central section, so that the outer ring B is supported upon the central sliding section C.

On examination, however, of Figs. 4 and 5, it will be seen that, in order to slide out the central section, the arm C^1 has to be carried farther to the left than it is possible to carry the arm B^1. This further turn of the arm C^1 causes the projecting supports C^4 to release themselves from the downwardly-projecting flanges or rims B^2, and causes the outer ring B to rest upon the supports A′, that project from the sides of the stove or base section.

The arm C^1 having been thus brought to a position central or parallel with the ways or guides D, the central section may be slid out, and the contents of the grate or fire-pot be partially or entirely dropped into the ash-pit, or may be drawn out so far as to remove the clinkers that may have collected upon this central section.

E is a latch or any suitable device made to project down and interpose itself, so as to prevent the shaking of the grate, or the displacement of the shaking-arms B^1 C^1, until the handle F shall have been inserted for the purpose.

It is apparent that the latch E interposes itself upon one side of the arm B^1, while the shoulder E^2 prevents it from passing in the other direction.

E^1 is a pin or stud at the opposite end of the latch E, to prevent it from dropping down too far in case the slot in the stove-wall should be so long as to permit the arms to pass far enough to cause the latch to drop down behind them.

The handle F, it will be observed, is provided with a notch, *f*, and lug *f′*, thus combining the arms B^1 and C^1 firmly together while the grate is being shaken. At the same time the simple act of inserting the handle causes the portion *f′* to lift the latch E.

When it is desired to shake the grate, therefore, the handle should be introduced with the notch *f* uppermost.

If, however, it is desired to draw out the central section, the arm C^1 is pushed down to the left-hand end of the slot, and the handle is inserted, so that the notch shall be beneath. The notch will engage with a locking-pin, *e*, and the section may be slid out.

The sliding plates G H serve to close up the opening through which the arms B^1 C^1 project, and are respectively arranged to slide with the arms B^1 C^1, or to slide simultaneously when both arms are employed in shaking the grate.

It will be observed that the sliding or central section C turns about a center-pin that has its bearing in the cross-bar C^2. Therefore the section C is free to turn about the pin, and at the same time free to slide within the ways D, and this forms one of the novel features of my invention.

With respect to this feature, I do not limit myself to such a construction as combines with this turning and sliding grate an outer ring or outer grate-section; but I may employ this turning and sliding grate alone without any outer ring or outer grate-section.

The plane-faced ways D are each provided with a guide-flange, *d*, formed on their respective longitudinal outer sides, and extending a sufficient distance above the bearing-surfaces of the ways to prevent the end cross-pieces C^3 from lateral displacement.

These ways have their end extremities supported in opposite sides of the inner stove-wall or base-section, at points thereon such as will allow the lower grate-section C, with its radial arms C^4, to have free movement both upon the ways and about its central supporting-pivot.

What I claim is—

1. In a stove or heater, the combination of an outer ring, B, supported upon a central section, C, said central section arranged in the manner described, to be disengaged from the said outer ring, and when disengaged to be slid in or out, and to throw the bearing of the outer ring upon the adjacent walls of the stove or base section, substantially as described.

2. The combination of the outer ring B, provided with the bearing B^2, the sliding section C, provided with the arms C^4, and the stationary independent ways D, substantially as and for the purposes described.

3. The combination of the ring B, with supports B^2, the sliding section C, with supporting-arms C^4, and the stationary supports A, for sustaining the grate as the central section is being slid out, substantially as and for the purposes described.

4. The combination of the outer ring B, with its arm B^1, and the sliding section C, with its arm C^1, the two arranged in the manner described, to be shaken simultaneously by a handle, F, substantially as and for the purposes described.

5. The combination, with the abutting shoulder made in the recessed wall of the stove, of the latch secured above the said shoulder, and adapted, in the manner described, to engage with and automatically lock the lever-arm of the outer grate-section against horizontal movement, substantially as described.

6. The central section C, with its arm C^4, in combination with the outer ring B and ways D, the construction being essentially as described, so that when the central section is in position to be slid out it shall be disengaged from the outer ring, and slide independently in the ways D, substantially as and for the purposes described.

7. The combination, with the lower grate-section having radially-projecting arms and the supporting cross-bar, of the sliding ways built well out from the inner stove-wall or base-section, and adapted, as described, to allow of the free movement of the said grate-section, substantially as set forth.

8. The combination, with the lower grate-section having the radial arms, and supported upon the central bar, provided with end cross-pieces, of the ways built well out from the inner stove-wall or base-section, and formed with guide-flanges on their respective longitudinal outer sides, the ways being adapted, as described, to give direct sliding bearing to the said end cross-pieces, substantially as set forth.

9. The combination of the lever-arms of the two grate-sections with the independent handle, adapted, in the manner described, to engage with the said arms, and automatically release the lever-arm of the upper grate-section from the latch which locks it against horizontal movement, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL W. SMITH.

Witnesses:
F. TOUMEY,
W. E. DONNELLY.