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HEATING ATTACHMENT FOR OPEN GRATES.
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971,063.

Patented Sept. 27, 1910.

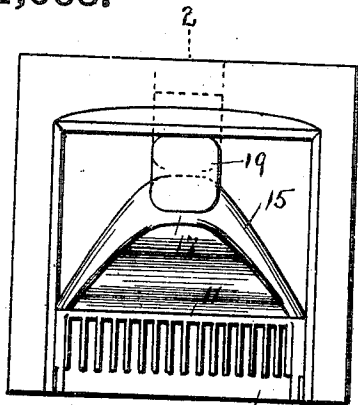


Fig. 1

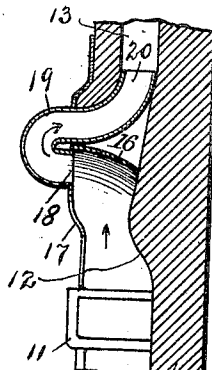


Fig. 2

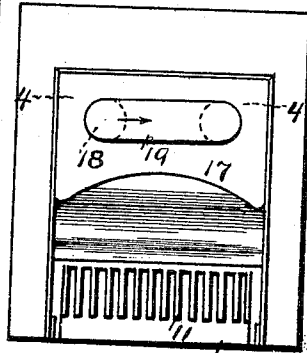


Fig. 3

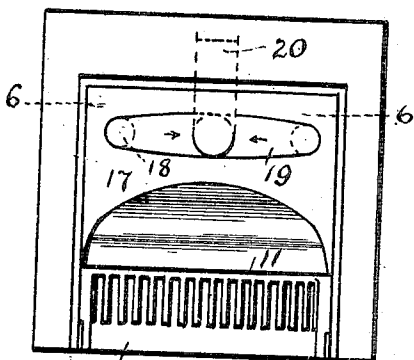


Fig. 5

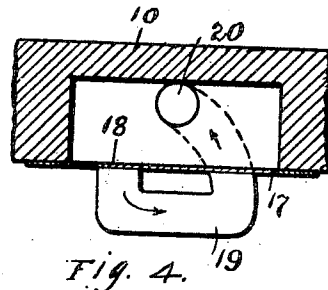


Fig. 4

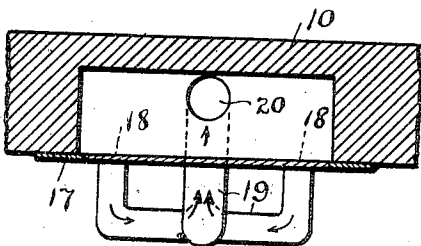


Fig. 6

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HEATING ATTACHMENT FOR OPEN GRATES.

971,063.

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To all whom it may concern:

Be it known that I, CHARNOK H. McCALL, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Heating Attachments for Open Grates, of which the following is a specification.

My invention relates to improvements in heating attachments for open grates, and has particular relation to devices for carrying the products of combustion out of the normal path of movement thereof, in such manner as to provide a heating element within the room heated solely by the products of combustion after the latter have passed to a point where their normal action as a heating agent has been completed.

Among the objects of my invention are the following: (1) To provide an attachment of this character which may be removably secured in the ordinary type of open grate. (2) To provide an attachment of this character which permits of the usual heat radiation from the open grate, and which will, after the products of combustion have served their usual functions in this respect, carry them in a sinuous course into the chimney, the sinuous passage-way projecting inwardly into the room beyond the normal plane of the grate, to form an additional heating element. (3) To provide an attachment of this character which will serve as a means for augmenting the circulation of heated air within the room.

Other and further objects of the invention are to provide a device of this character, which is neat and attractive in appearance, which is simple and efficient in operation, durable in construction, and which can be manufactured and installed at a minimum cost.

To these and other ends, the nature of which will be readily understood as the invention is hereinafter disclosed, said invention consists in the improved construction and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views,—Figure 1 is a front elevation of an open-grate fireplace showing my improved attachment in position therein. Fig. 2 is a vertical section

thereof, taken on the line 2—2 of Fig. 1. Fig. 3 is a front elevation of a modified form of attachment, including a different type of sinuous passage-way. Fig. 4 is a view taken on the line 4—4 of Fig. 3. Fig. 5 is a front elevation of a still further modified form of attachment, and Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5.

Heating attachments for open grates, as heretofore generally provided, are arranged in such manner, that all of the space above the grate basket is inclosed to form a sinuous flue for the products of combustion, or the fireplace must be of peculiar construction, the latter generally being in the form of flue walls, which lead outwardly to the front plane of the fire place. In the former type of attachment, the effect is produced entirely by the passage of the products of combustion through the sinuous passage-way, the latter, of necessity, being of a sufficient size to provide for carrying off all of such products, in order that no liability of the escape of gases into the room may be provided, as well as providing for a sufficient draft through the passage-way. In the second form of attachments, the fireplace can be used only in connection with such apparatus or attachment; the removal of the attachment destroys the flue arrangement required in making use of the open grate.

Inasmuch as it is often times desired to provide but a limited amount of heat radiation, the necessity for the use of such attachment renders the attachment often times objectionable; nor does it permit of controlling the heating effect of the grate. The present invention aims to obtain all of the advantages provided by both types of attachments referred to, and at the same time avoid the disadvantages, such avoidance, in turn, providing additional advantages, these results being obtained by providing an attachment positioned with respect to the grate basket in such manner as to provide for heat radiation in the usual manner, and after the products have passed upward and have served a purpose in such heat radiation, causing them to enter a sinuous passage way of restricted area in cross section, such passage-way leading directly into the chimney and having an intermediate portion of its length projecting inwardly into the room above the plane of the normal heat radiation, the result being that the auxiliary device will tend to heat the air at a point

above the plane of normal heat radiation and thereby cause the currents of air immediately in front of the grate basket to rise upwardly more rapidly and restrict the liability of the air immediately in front of the grate basket passing into the chimney as in the ordinary form of open grates. These results are obtained by the use of any one of a number of different types of attachments, several of which are illustrated in the drawings; each type, however, possesses substantially the same characteristics.

Referring now more particularly to the drawings and to Figs. 1 and 2, 10 designates a fireplace of usual construction, having the grate basket 11 the latter being positioned below the forwardly extending projecting portion of the rear wall of the flue, the latter being designated as 12 and leading to the chimney 13, the structure being such as to permit of the use of the fireplace as an ordinary open grate when desired.

The attachment forming the subject matter of my present invention consists of a hood 15 in the form of two lip members 16 and 17, curved in opposite directions in the direction of width, the lip 16 forming an abutment or obstruction in the normal flue path, and extending from the rear wall of the flue forwardly to the front plane of the fireplace, while the lip 17 has its lower end spaced above the top of the grate basket and projecting forwardly and upwardly to a point on the same vertical plane with the front portion of the hood or abutment 16. These two lips or elements may be joined together in any suitable manner, or may be made of a single piece of material, but the front face thereof is provided with one or more openings 18 formed to receive the inlet end of a sinuous passageway formed by piping 19, the outlet end of which, as indicated at 20 in Fig. 2, is located entirely within the chimney 13.

The hood portion of the attachment may, as heretofore indicated, be of any preferred type, the drawings illustrating three different forms, each of which, however, provides for an open space above the top plane of the grate basket, the hood being supported in any desired manner, being removably secured in position. When in position, the hood presents a substantial bar to the passage of the products of combustion in their usual channel, and requires them to pass through a sinuous passage-way, due to the abutment 16. A sinuous passage-way may also be formed in different types, as indicated in the drawings, Figs. 1 and 2 illustrating a passage-way having its direction of length extending entirely in a vertical direction, while the disclosure in the remaining figures illustrates a construction in which the passage-way also extends in a horizontal direction, the inlet end, however, in

each case being within the front of the hood, while the outlet end is located within the chimney. By this construction, it will be readily understood that not only is the normal heat radiation permitted, but in addition, the loss of heat which normally accrues when the open grate of ordinary construction is used, is greatly decreased by reason of its passage with the products of combustion through the sinuous passage-way after the products have served for the initial heat radiation. Furthermore, the placing of the sinuous passage-way at a point above the plane of normal radiation, causes a circulation of air upwardly in front of the fireplace, through the currents of which the heat of the grate fire is permitted to radiate in an obvious manner; the circulation thus provided tending to heat more rapidly and equally, as well as tending to cause the cold air along the floor to be drawn toward the grate fire, this result being obtained without affecting the normal drafts provided by the chimney.

As the sinuous passage-way in question is substantially supported by the hood portion, it will be readily understood that the entire device may be readily placed in position or removed from the fireplace without difficulty, and as the structure is composed of but few parts, it is simple and efficient in operation and construction, durable, and can be manufactured at a low cost.

As heretofore pointed out, it will be readily understood that by the use of this attachment, the grate may be operated either in its ordinary capacity, or with increased capacity for heating purposes by placing the attachment in position, the structure being such that, if desired, the attachment may be removed after the room has been heated to a required degree and dependence placed on simply the heat radiated by the grate alone. In other words, the attachment may be used simply for the purpose of augmenting the normal heating capacity of the grate fire by taking up the products of combustion at a time when they are approaching their normal exit into the chimney and deflecting their paths into a sinuous passage-way so as to obtain further heat radiation therefrom, the passage-way being of restricting cross-section area. If desired the walls of the sinuous passage-way may be formed fluted or corrugated, the corrugations or flutings having their direction of length extending either longitudinally or laterally.

While I have shown and described several methods and constructions by means of which the desired results may be obtained, I desire it to be understood that I do not limit myself to the precise structure and arrangement of the parts shown, reserving to myself the right to any and all such

changes therein as may fall within the spirit and scope of the invention as expressed in the following claim.

Having thus described my invention, what I claim as new is:—

The combination with an open grate fire-place and chimney, of an attachment removably mounted within the fireplace for changing the direction of movement of the products of combustion, said attachment comprising a hood mounted to intercept the normal path of the products, said hood being arranged entirely within the fire place opening and positioned to provide a permanently open space above the top plane of

the grate basket, and an element carried wholly by the hood and providing a sinuous passage-way for such products, said element extending from said hood inwardly beyond the normal front plane of the fire-place and below the upper edge thereof and having a return bend portion passing back through the fire place opening and thence upwardly into the chimney flue.

In testimony whereof I affix my signature in presence of two witnesses.

CHARNOCK H. McCALL.

Witnesses:

W. J. NALLEY,

W. B. MATTHEWS.