May 12, 1925.

J. S. BENNETT

1,537,736

FIREPLACE HEATING AND DRAFT CONTROL APPARATUS

Filed July 22, 1924

2 Sheets-Sheet 1

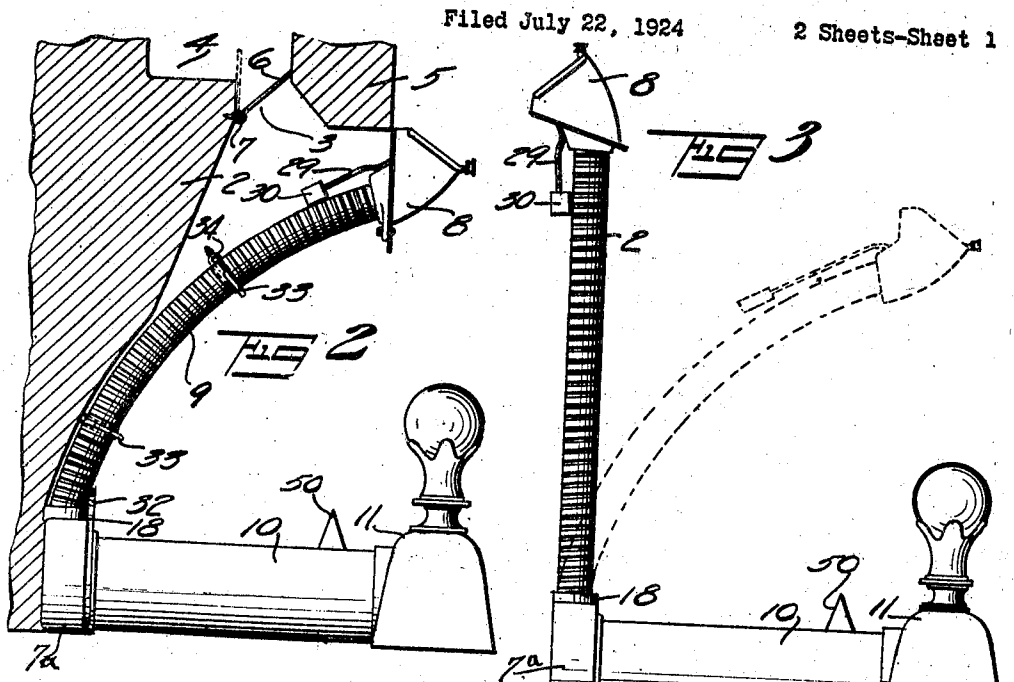


FIG 2

FIG 3

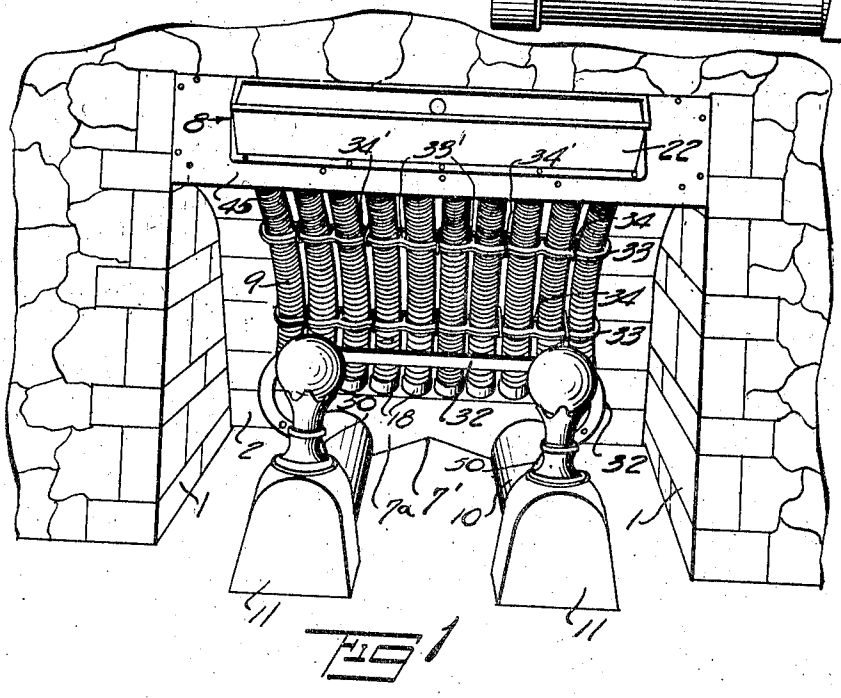


FIG 1

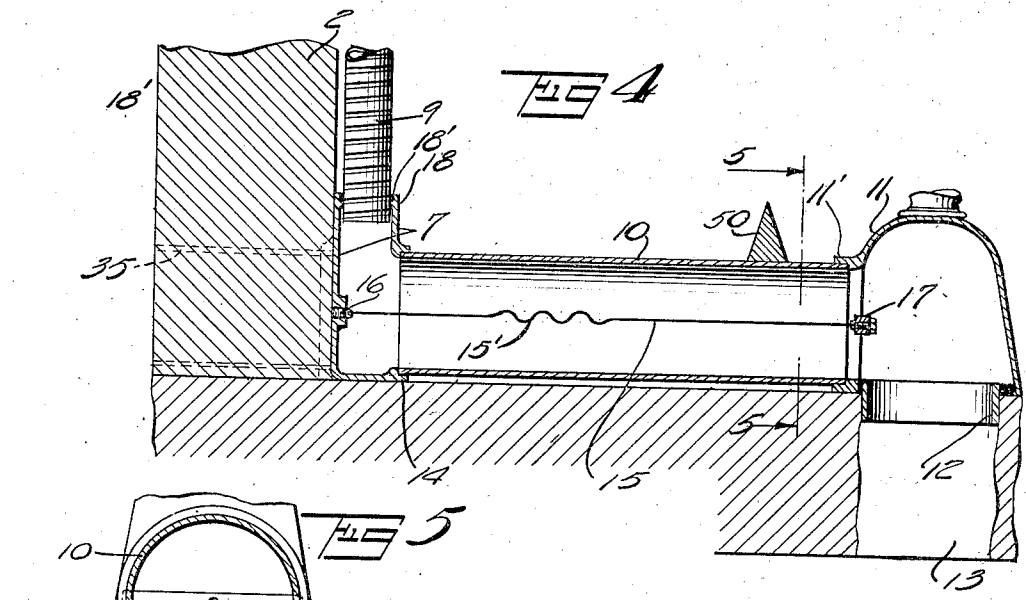
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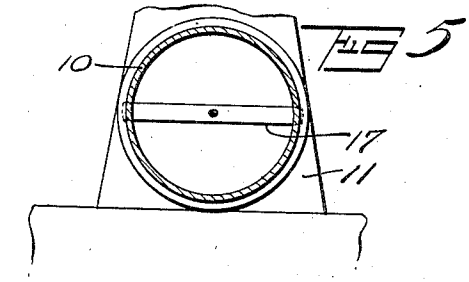
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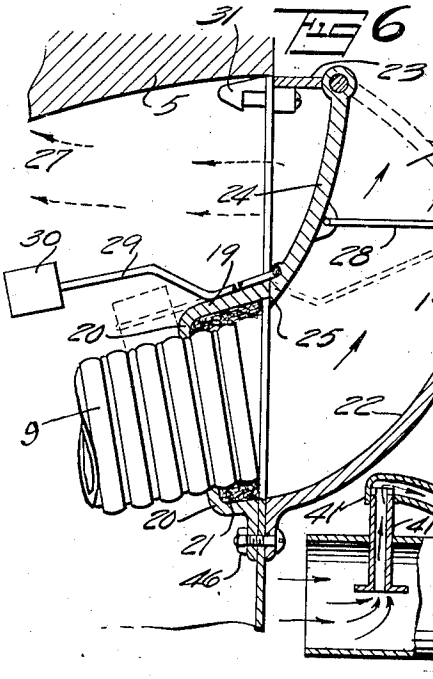
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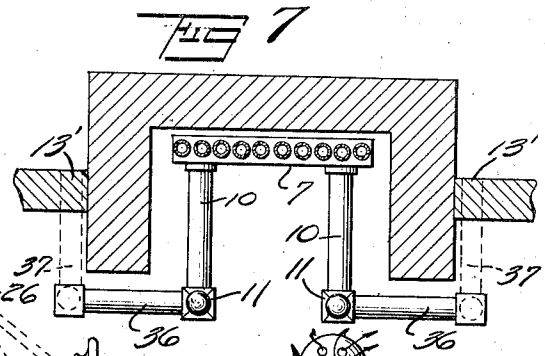
FIREPLACE HEATING AND DRAFT CONTROL APPARATUS

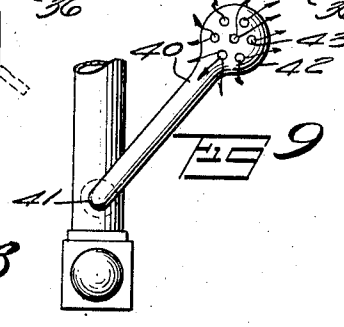
Filed July 22, 1924 2 Sheets-Sheet 2











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Patented May 12, 1925. 1,537,736

UNITED STATES PATENT OFFICE.

JOSEPH S. BENNETT, OF HAMMONDSPORT, NEW YORK.

FIREPLACE HEATING AND DRAFT-CONTROL APPARATUS.

Application filed July 22, 1924. Serial No. 727,416.

To all whom it may concern:

Be it known that I, JOSEPH S. BENNETT, a citizen of the United States, residing at and whose post-office address is Hammondsport, New York, have invented a new Fireplace Heating and Draft-Control Apparatus, of which the following is a specification.

This invention relates to fireplace and room heaters and draft control.

The object of the invention generally is a novel fireplace and room heating apparatus which is capable of heating and regulating the temperature of a fireplace room more effectively than has heretofore been possible, and particularly heating devices and apparatus whereby chimney draft control and efficient heating and temperature regulation are effected in a manner to avoid annoying drafts through the room. A further object is an apparatus of this character which is readily adaptable to different shapes, dimensions and sizes of fireplaces and which may be assembled and installed in such fireplaces regardless of their shape and dimensions with marked ease and facility. A still further object is an apparatus of this character which is of simple construction and comparatively inexpensive to build and install.

For a better understanding of the invention, reference may be had to the accompanying drawings forming a part of this application wherein:

Fig. 1 is a front view of a fireplace in which my novel heating and draft control apparatus is installed;

Fig. 2 is a section through the chimney fireplace and a side elevation of the apparatus;

Fig. 3 is a side elevation of such apparatus indicating the method of installation;

Fig. 4 is a section through an element of the apparatus illustrating the method of construction and assembly thereof;

Fig. 5 is a section along the line 5—5 of Fig. 4;

Fig. 6 is a section through a portion of the apparatus indicating the method of assembly and the operation of the draft control;

Fig. 7 is a horizontal section illustrating more or less diagrammatically a slightly different air collecting arrangement, and

Figs. 8 and 9 are views of a draft starting device which may be used to advantage with my novel apparatus.

Referring to the drawings where similar reference numerals designate similar parts throughout, I have indicated a fireplace having the side walls 1, the back wall 2, the chimney throat 3, the off-set chimney 4 and the upper wall 5 of the fireplace. There is also indicated a damper 6 which is hinged at 7 to the back wall 2 of the fireplace for controlling the chimney throat 3. My novel apparatus comprises an elongated collecting header 7^a which rests upon the hearth and bears against the back wall 2 of the fireplace and a distributing header 8 disposed at the top of the fireplace and carried by the upper wall 5 of the fireplace, together with a multiplicity of flexible heating and distributing tubes 9 attached at their lower ends with the header 7^a and at their upper ends with the header 8. The header 7^a is provided with a pair of openings on one side adjacent the ends thereof for the reception of the communicating and air conveying pipes 10. The latter at their free ends communicate with the hollow pedestals 11, the latter being open at their lower ends and adapted to readily fit over the air intakes 12 disposed in the top of the atmospheric air openings 13, it being understood that the openings 13 lead directly to the atmospheric air. Each of the pedestals 11 is provided with a connecting sleeve 11′ into which the ends of the air conveying pipes 10 lead, as indicated in Fig. 4, and similarly the collecting header 7^a is provided with a receiving sleeve 14 for the reception of the other ends of the conveying pipes 10. The parts consisting of the collecting header 7^a, the conveying pipes 10 and the hollow pedestal 11 may be secured together in any suitable manner, but preferably in the manner indicated in Figs. 4 and 5 wherein retaining rods 15 pass longitudinally through the pipes 10 and are attached at their left ends by means of a screw-threaded connection 16 with bosses formed in the rear wall of the header 7^a. The front end of the retaining rod 15 passes through and is attached to a cross-wise member or bar 17, the latter being of sufficient length to bridge the openings in the hollow pedestals 11 into which the pipes 10 lead and engaging the sides of such openings so as to form a firm, positive retaining means holding the pedestals 11, the header 7^a and conveying pipes 10 together. The rod has a few short bends as for example 15′ to take care of uneven contraction and expansion between pipe 10 and the rod 15. The collecting header 7^a is

provided on its upper surface with a multiplicity of openings corresponding to the number of flexible and adjustable heating pipes 9 desired, an upstanding collar or sleeve 18 being provided for each of these heating pipes 9 and having an internal flange 18′ for engaging the flexible pipes 9 when inserted therein. Suitable non-burnable sealing materials may be introduced within the collar 18 and above the internal flanges 18′ for the purpose of forming a substantially airtight connection between the flexible heating pipes 9 and the hollow collecting header 7ª. The flexible tubes 9 are observed to fit closely adjacent and follow the rear contour of the fireplace for some distance upwardly and then to cross the path of the products of combustion which ascend from the hearth through the throat 3 of the chimney. At their upper ends these pipes 9 enter the distributing header 8, the latter being provided on its inner side with a multiplicity of openings corresponding to the number of heating tubes 9 to be employed. These openings are provided with inwardly turned edges 20 for the reception of the upper ends of the flexible heating tubes 9 and a suitable non-combustible sealing material 21 may be introduced if desired around the exterior of the ends of the pipes 9 and within the inwardly turned edges 20 of the header 8. The header 8 in the particular embodiment shown comprises two separate and distinct parts 19 and 19′, and these parts are carried by the front plate 45 bridging the top of the fireplace opening. The part 19 is of trough like form and is provided with a downwardly extending flange on its lower side for attachment to the interior of the carrying plate 45, as for example by the bolt 46. The latter passes through a similar flange of the part 19′ which abuts against the outer surface of the plate 45. The part 19′ of the header 8 is provided with a main lower wall 22 which may be curved in any manner desired and projects upwardly into the room to deflect the heated air coming through the pipes 9 in an upward direction. To the upper wall 23 of the part 19′ is pivotally secured a damper control lid 24, the latter being adapted to engage at its lower end either the upper edge of the wall 22 as indicated in dotted lines, or the edge 25 of the upper wall of part 19 as indicated in full lines. In the full line position the heated air coming through the flexible pipes 9 is caused to enter the room as indicated by the arrows 26, whereas in the dotted position the room opening is closed and the heated air is permitted to flow directly through the chimney throat as indicated by the arrows 27. It is understood that the plate 45 is provided with an opening in its top substantially the length and depth of the header 8. A suitable hand control or actuating device 28 may be pivotally attached to the lid 24 as indicated for actuating the same to either of the positions indicated or in any intermediate position. To the lid 24 is also pivotally attached on the back side thereof a bent arm 29 with a weight 30 on the outer end thereof, this tending to retain the lid 24 in either of the actuated positions and particularly the position wherein the opening to the room is closed as indicated in dotted lines,—the weighted and bent arm in that manner counteracting the effect of gravity upon the lid 24. The upper part of header 8 may be fastened in any suitable manner, as for example by means of the fastening devices 31. The pedestals 11 are indicated as dome shaped so as to have a comparatively extensive base or opening for ready assembly over the air intake connection 12 and for handling the large volume of air needed, and at the same time have a gradually decreasing size in an upward direction to avoid construction of the fireplace and simulate andiron standards. The header 7ª is provided with a V-shaped under surface 7′ to enable the ends of the header 7ª to rest firmly upon the hearth regardless of any unevenness therein and to permit the easy removal of ashes, and not interfere with usual ash dumps, etc. At 32 I have indicated a guard rail to prevent fire wood and other fuel from engaging and injuring the comparatively light and flexible conveying pipes 9, this guard rail 32 having its ends curved and bent downwardly as indicated and securely attached in any suitable manner to the header 7ª. The pedestals 11, the header 7ª and the pipes 10 also serve as andirons upon which the fire wood or other fuel may be placed for a fire.

I have indicated in Fig. 3 generally the method of assembly and installation. Preferably the whole apparatus is assembled as a unit, as indicated in Fig. 3, before installation the elements thereof having been selected and cut or formed to conform to the approximate measurements of the fireplace. Such measurements, however, may be only approximate and need not be exact, because of the construction and assembly of the apparatus including the flexible adjustable pipes 9. For example with the apparatus assembled as indicated in Fig. 3 in full lines, it may be slid into the fireplace and the parts thereof adjusted to the contour of the fireplace in the manner indicated in Fig. 2; the heating pipes 9 being flexible and adjustable may be readily bent, shaped and adjusted not only to conform to the contour of the fireplace back, but also to adjust them with reference to each other so as to secure the proper ventilating spaces therebetween for the upward passage of products of combustion. In the particular embodiment illustrated, I have shown two spacer members 33 which are arranged cross-wise of

the tubes 9 and have projections 33′ projecting between the tubes to properly space them. They may be anchored in position in any suitable manner, as for example by retaining rods 34 resting against the rear of the pipes 9,—flexible wires 34′ or other suitable connecting means connecting the spacers 33 with these retaining rods. The flexible pipes 9 are preferably corrugated to increase their heating surface and these corrugations assist in maintaining the spacing devices in the adjusted position. The spacing devices 33′ may be of any desired widths and sizes to obtain the desired spacing for each individual chimney and fireplace and the flexible and adjustable character of the heating pipes 9 and simple constructional features of the apparatus contribute to the ready assembly and installation by the ordinary workman, no expert mechanicians being necessary. The pedestals 11 and the headers 7^a and 8 may be cast in integral pieces and the flexible pipes 9 and the conveying pipes 10 may be obtained in standard form and cut to the desired lengths so that the whole apparatus may be economically constructed and assembled. The standard spirally wound flexible piping of commerce when properly selected as to flexibility and lightness in weight may be utilized as the laterally flexible tubes 9, and in this case the spirals form the corrugations above referred to. The tubes may be of any suitable metallic character to resist burning and impairment due to heat but it is observed that the atmospheric air which is passing through them at all times tends to keep them comparatively cool and operating at non-destructible temperatures. The pipes 10 and header 7^a are of heavy heat-resisting metal, and the air also tends to keep them cool.

Instead of having the direct connection to the atmosphere through the pipes 10 and the pedestals 11, the collecting header 7^a may be reversd with their openings communicating with the openings 35 which may be provided in the back wall 2 of the fireplace, as indicated in Fig. 4.

In Fig. 7 I have indicated a modification in which instead of having the air intake openings 13 leading vertically downwardly from the pedestals 11, corresponding openings 13′ are provided through the walls on the opposite sides of the fireplace. In this case the pedestals 11 must be provided with additional side openings for connecting with the pipes 36 and 37 connected through an elbow and leading to the openings 13′.

In Figs. 8 and 9 I have illustrated a draft concentrating device for assisting in initiating the chimney draft and starting fires. This device consists of an adjustable air intake pipe 40 which is in communication with the pipe 10 which leads to the atmosphere. It is connected with the pipe 10 through an adjustable joint 41 and vertically slidable connection 41′ and at its free end is provided with an inverted cup-shaped member 42 with perforated openings 43 leading upwardly therethrough. Normally the end 42 of the member 40 rests upon the hearth and is covered up with ashes. When it is desired to initiate the draft with the starting of the fire, it is only necessary to lift the member 40 up to clear the ashes from the perforations 43 and hold it directly below or adjacent to the starting fire. This will set up a direct draft from the atmosphere immediately in the neighborhood of the starting fire which will tend to accelerate the burning and the full draft. After the fire is started, the member 40 may be again dropped down upon the hearth and the end 42 covered with ashes to stop the draft through this connection. The open bottom of part 42 assures clearance of ashes etc. at all times.

In the particular embodiment of Figs. 1–6, the pipes 10 are illustrated as extending straight out, but in certain cases it may be desirable to bend them or attach elbows at their outer ends so as to have the pedestals 11 farther apart than the length of header 7^a. This is especially desirable in certain wider fireplaces, and with such bent or elbow connected pipes 10 it may be desirable to incorporate some centering means for the tie rod 15, such for example as projections which engage the rods and are cast or otherwise formed inside the elbows at the bend (45° for example) to hold the rods in the pipe centers.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A fireplace heater comprising an air collecting header disposed on the hearth and having a direct communication with the atmosphere, a distributing header communicating with the room and disposed at the top of the fireplace and a plurality of metallic air heating tubes leading upwardly from the air collecting header to the distributing header for effectively heating the atmospheric air during its passage therethrough to the distributing header, said tubes being flexible and individually adjustable in situ to conform to the particular requirements of the fireplace and to regulate the spaces therebetween for the passage of the products of combustion.

2. A fireplace heater and draft control comprising a collecting header disposed on the hearth and having direct communication with the atmosphere, a distributing header adapted to communicate with either the room or directly with the chimney throat and disposed at the top of the fireplace, and a plurality of flexible and readily adjustable

air heating pipes leading upwardly from the air collecting header to the distributing header.

3. A fireplace heater of the character set forth in claim 1 wherein the flexible air heating tubes are spaced from each other and retained in their spaced position by spacers.

4. A fireplace heater of the character set forth in claim 1 in which the flexible air heating tubes are of corrugated form and have spacers fixed to the corrugations thereof for spacing and retaining the tubes in spaced position.

5. A fireplace heater and draft control apparatus comprising an air collecting header disposed on the hearth and having a direct communication with the atmosphere, a distributing header at the top of the fireplace, a plurality of flexible and readily adjustable air heating tubes leading upwardly from the air collecting header to the distributing header and a damper control within the distributing header for directing the heated air either to the room or directly to the products of combustion chamber immediately above the tubes or both simultaneously.

6. A fireplace and room heater comprising a hollow pedestal leading directly to the atmosphere, an air collecting header communicating with said pedestal through a horizontal pipe and disposed on the hearth, a distributing header carried at the top of the fireplace and a plurality of closely disposed metallic air heating tubes leading upwardly from the collecting header to the distributing header and passing across the path of the ascending products of combustion, said tubes being flexible and individually adjustable in situ to conform to the requirements of the particular fireplace and to regulate the spaces therebetween for the upward passage of the products of combustion.

7. A fireplace and room heating apparatus comprising an air collecting header and an air distributing header with flexible air heating tubes between the two headers which are adapted to be assembled as a unit outside of the fireplace and installed in operative position merely by inserting the same within the fireplace with the headers making suitable air connections and bending and adjusting the flexible tubes to follow the contour of the fireplace and across the path of the ascending products of combustion with the desired spacing therebetween.

8. A fireplace heating apparatus having a header and a spaced intake with a communicating pipe therebetween and a retaining rod passing through said pipe and engaging said intake and said header for positively holding the parts in assembled position, said rod being of a character to yield in response to changes in temperature.

9. An apparatus of the character set forth in claim 8 in which the retaining rod embodies a bend intermediate its ends and at one end is carried by a cross arm bridging the opening of the communicating pipe leading into the intake member.

10. An apparatus of the character set forth in claim 1 in which a rigid guard rail is disposed in front of the flexible air heating tubes.

11. A fireplace heating apparatus including an air collecting header disposed on the hearth, an air distributing header disposed at the top of the fireplace, a multiplicity of air heating tubes connecting said headers and a damper control device carried by said distributing header and adapted to be actuated to different regulating positions, and a weighted arm pivotally attached to the damper control and bearing by gravity upon a fixed part of the apparatus so as to retain the damping control means in the actuated position.

12. An apparatus of the character set forth in claim 6 wherein a rigid cross bar extends in front of the flexible heating tubes for the purpose set forth.

13. A fireplace heater unit comprising an air collecting header disposed on the hearth, a distributing header disposed adjacent the top of the fireplace and a plurality of flexible metallic air heating tubes leading upwardly from the air collecting header to the distributing header for effectively heating the air during its passage therethrough to the distributing header, said tubes being readily and individually adjustable to conform to the requirements of the particular fireplace and to regulate the spaces therebetween for the passage therethrough of the products of combustion and the efficient absorption of heat therefrom.

14. A fireplace, room heating and draft control apparatus comprising an air collecting header communicatingly attached to a hollow andiron structure and an air distributing header with flexible laterally adjustable air heating tubes connecting the two headers, which are adapted to be assembled as a unit outside of the fireplace and installed in operative position therewithin merely by inserting the same within the fireplace with the hollow andiron structure in communication with an opening leading to the atmosphere, and bending and laterally adjusting the flexible tubes to conform to the requirements of the particular fireplace, and with the desired spacing between the tubes to provide for the ascension therebetween of the products of combustion to effect an efficient absorption of the heat units therefrom by passage upwardly through the tubes.

15. A fireplace heater comprising an air collecting header, an outlet header and a

plurality of metallic air heating tubes disposed between the headers for effectively heating the air during its passage therethrough, said tubes being flexible and individually adjustable in situ to conform to the particular requirements of the fireplace and to regulate the spaces therebetween for the passage of the products of combustion.

16. A fireplace heater comprising an air collecting connection, an outlet connection, a plurality of light air heating tubes disposed between the connections for effectively heating the air during its passage therethrough, said tubes being flexible and individually adjustable in situ to conform to the particular requirements of the fireplace and to regulate the spaces therebetween for the passage of the products of combustion, and a regulating and control device associated therewith for insuring a continuous uninterrupted flow of air through the light flexible tubes during the heating operation.

17. In a fireplace heating apparatus, an air collecting connection, a plurality of air heating tubes leading upwardly from said connection and passing through the fire zone, and an air distributing header including a central supporting base plate having an opening therein of substantially the depth and length of the header, an inner terminal member secured to the interior of the plate over the lower part of the opening and receiving the upper ends of the heating tubes, an outer member secured to the exterior of the base plate and embracing both the lower and upper parts of the opening in said plate, said outer member having an upwardly directed outlet for discharging the air into the fireplace room and a control valve for closing either the outlet or the upper part of the opening in the base plate.

In testimony whereof, I have signed my name to this specification.

JOSEPH S. BENNETT.