D. R. McGINNIS.

MEANS FOR SAVING HEAT.

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1,214,047.

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Fig. 2.

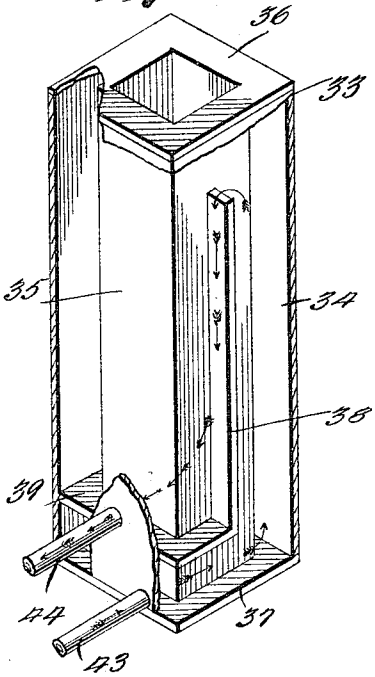


Fig. 1.

Fig. 4.

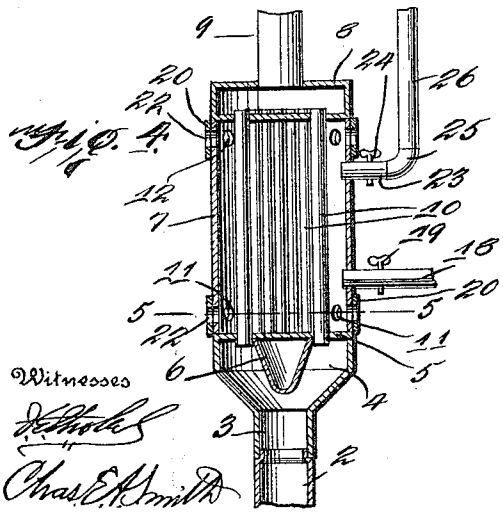


Fig. 3.

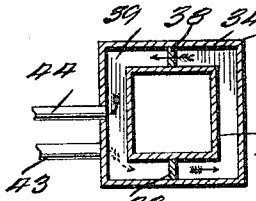
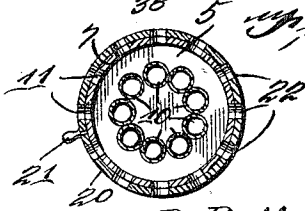


Fig. 5.



Witnesses

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MEANS FOR SAVING HEAT.

1,214,047. Specification of Letters Patent. Patented Jan. 30, 1917.

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To all whom it may concern:

Be it known that I, DAVID R. McGINNIS, a citizen of the United States of America, residing at Fresno, in the county of Fresno and State of California, have invented certain new and useful Improvements in Means for Saving Heat, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a means for saving heat and has for its principal object the production of a simple and efficient device for utilizing the waste heat ordinarily passing from a chimney with the smoke, so that the heat in the smoke may heat air contained within receptacles through which the smoke is passing so that this heated air may be conveyed to desired points for heating purposes.

Another object of this invention is the production of a means for saving heat ordinarily escaping with smoke the device being so constructed as to permit the smoke to freely escape, thus providing a good draft for causing the fire to burn readily, while the means through which the smoke is passing is provided with simple and efficient conductor means for fresh air so that this fresh air may be heated and then conveyed to a place desired for utilizing the same.

Another object of this invention is the production of a means for saving heat wherein a heating drum is employed through which a number of pipes pass, so as to convey smoke from one smoke drum to another smoke drum, whereby the pipes conveying heat will be readily heated for heating the air within the heating drum.

Another object of this invention is the production of a means for saving heat whereby after the smoke has been discharged into the ordinary chimney and is passing upwardly therethrough to escape therefrom it will pass through a closed hollow casing so that this hollow casing having air channels therein may be heated so that the air within the channels may be heated and directed to a desired place to be utilized.

With these and other objects in view this invention consists of certain novel combinations, constructions, and arrangements of parts as will be hereinafter fully described and claimed.

In the accompanying drawing: Figure 1 is a side elevation of the heat saving device as constructed in accordance with this invention, and illustrating how the same is used. Fig. 2 is a perspective view of the casing used in the chimney, showing the same partially broken away and in section so as to illustrate the course of the passing of the heated air therethrough. Fig. 3 is a central transverse section through this casing. Fig. 4 is a vertical sectional view through the heating drum, portions of the pipes used in connection therewith being shown in elevation. Fig. 5 is a section taken on the line 5—5 of Fig. 4.

Referring to the accompanying drawing by numerals it will be seen that this heat saving device is adapted to be used in connection with an ordinary stove 1 having a pipe 2 thereon, upon which the pipe 3 of the lower smoke drum 4 is secured. This lower smoke drum 4 has a closed top 5 to which is secured the inverted cone 6 so that as the smoke passes through the pipes 2 and 3 it will be deflected away from the central portions of the heating drum. The heating drum 7 is positioned upon the upper surface of the smoke drum 4, as clearly seen by referring to Fig. 4, and this heating drum 7 in turn has the upper smoke drum 8 mounted thereon, from which upper smoke drum leads the smoke pipe 9. The vertically extending pipes 10 are carried so as to extend into each smoke drum 4 and 8, extending vertically through the heating drum 7, so that the smoke deflected by the cone 6 may be passed upwardly through the pipes 10 and into the smoke drum 8 and then through the smoke pipe 9. Of course, owing to the fact that the smoke is in a heated condition as it passes through the pipes 10 the pipes 10 will be heated so as to radiate heat and thus heat the air within the heating drum 7. This heating drum 7 is provided with a number of openings 11 and 12 adjacent its lower and upper portions so that if so desired the air within the heating drum 7 may circulate by passing through the lower openings 11 and then upwardly and around the pipes 10 so as to pass in a heated condition from the heating drum through the openings 12 formed adjacent the upper portions thereof.

The electric blower 13 may be carried at any desired point and has a pipe 14 extending therefrom through the wall 15 to the outer air, although it is, of course, obvious that if so desired this electric blower may be furnished with air within the room or

building. This blower when running will force the air through the tube 16 which communicates by means of the elbow 17 and short pipe 18 with the interior of the heating drum 7. Therefore, it will be seen that when the damper 19 carried by the short pipe 18 is turned favorably the air which is blown or forced from the blower or motor 13 will pass upwardly through the tube 16, through the elbow 17, and short tube 18 into the heating drum 7 so as to more forcibly and quickly force the heated air from the interior of this heating drum.

When it is desired to direct the heated air to other rooms of the house, factory, or building in which this device is employed, the annular collars 20 which are rotatably mounted upon the heating drum 7 are turned by means of the knobs 21 so as to close the openings 11 and 12 formed in the heating drum 7. These collars are also provided with openings 22 which are formed so as to register with the openings 11 and 12 when it is desired to discharge or dispense heated air from the heating drum into the room in which the stove is positioned. At this time the openings 22 will register with the openings 12 and 11 as shown clearly in Fig. 5. When, however, the collars are turned to one side so as to move the openings from registry with each other the discharge of air from the heating drum 7 into the room is prevented and, therefore, it will be necessary to allow the heated air to pass to some other place desired. Consequently, a thimble 23 leads from the heating drum 7 and has a damper 24, for regulating the passage of air therethrough. The elbow 25 supports the tube 26 which in turn supports the elbow 27 upon which the tube 28 is carried and this tube 28 leads to the branch 29 from which a number of tubes or pipes may lead to different rooms so as to allow heat to be dispensed wherever desired. Thus, it will be seen that as the heated air is forced from the heating drum 7 by means of the motor or blower 13 when the openings in the collars 20 are out of registry with the openings in the heating drum 7 the heated air will pass through the pipes 26 and 28 and into the branch 29 so as to be conducted wherever desired.

Of course, as the smoke passes from the smoke pipe 9 and elbow 30 thereof through the smoke pipe 31 into the chimney 32 formed upon the wall 15 it may be again utilized for further using the heat which may be contained before the smoke is finally discharged from the chimney 32. Therefore, there is provided a casing 33 which is adapted to fit in the chimney as shown in Fig. 1. This casing 33 comprises an outer shell 34 and an inner shell 35. These elements are positioned at distances apart although their upper and lower ends are connected by means of the top and bottom 36 and 37 respectively. As long as the lower end of the casing is open as shown in Fig. 3, it will be seen that the smoke from the pipe 31 may pass very freely upwardly therethrough without interference. The vertical partitions 38 formed upon each side of the casing and connected to the opposite side portions of the shells, as shown in Fig. 3, terminate at a distance from the body of the top 36 and bottom 37 of the casing. The substantially U-shaped horizontal partition 39 connects the lower ends of the vertical partitions 38 so that air passageways are formed within the hollow casing. From the tube 18 there leads a vertical tube 40 having a regulating damper 41 and this tube 40 has its elbow 42 provided with a short tube 43 leading into the casing 33 beneath the horizontal partition 39 as shown in Fig. 2. Therefore, the air forced into this casing from the blower 13 will pass around beneath this horizontal partition 39 and then upwardly upon one side of the casing as indicated by the arrows in Fig. 2. Of course, as the smoke passes upwardly through the inner shell 36 this shell will be heated so as to radiate heat into the interior of the casing 33. This action will heat the air passing in currents through the casing and as the air passes upwardly to a point adjacent the top 36 it will then pass over the upper ends of the partition, as clearly shown by the arrows in Fig. 2, and then downwardly upon the opposite side of the partition 38 to a point adjacent the horizontal partition 39 and will then be directed outwardly through the tube 44, which tube 44 communicates with the interior of the elbow 27 so as to be directed through the pipe 28 to the branch 29 to be discharged together with the heated air from the heating drum.

There may also be provided a tube 45 connected to the elbow 17 so that this tube 45 may receive a direct current of air from the blower 13, which current of air may be directed through the elbow 46 and tube 47 into the chimney 32 so as to create a very strong draft for causing the fire within the stove 1 to draw and burn very fast, if so desired. It will further be noted that a set drawer 48 is slidably mounted into the chimney 32 at the lower end thereof so as to receive the soot which may fall downwardly or be brushed into the interior of the casing 33.

From the foregoing description it will be seen that a very efficient heat saving means has been provided which is so constructed as to allow heat to pass through the heating drum and heating pipes so as to heat the air within the heating drum, this air being adapted to pass directly from the drum or be forced therefrom to points desired, after

which the smoke may be passed upwardly through the chimney to be discharged, at which time it will heat the casing carried within the chimney so that the air currents within the casing may be further heated, and then directed to points desired so that all of the heat within the smoke may be thoroughly utilized until the final discharge of the smoke from the chimney, so that this heat may heat the air, which air being collected and directed to desired points may be utilized as desired.

What is claimed is:

1. In a device of the class described, the combination of a hollow heating drum, a lower smoke drum positioned upon said heating drum, an inverted cone carried by said lower smoke drum, whereby smoke passing through said lower smoke drum may be deflected from the central portions of said lower smoke drum, an upper smoke drum positioned upon said heating drum, pipes extending into said smoke drums and through said heating drum, whereby the smoke deflected by said cone will pass into said pipes and then upwardly into the remaining smoke drum, said heating drum being provided with a plurality of openings adjacent its upper and lower ends, rotatable collars positioned upon said heating drum and being provided with a plurality of openings, the openings of said collars being adapted to register with the openings in said heating drum, whereby the heat within said heating drum may be dispensed, said collars being adapted to be moved so as to move said openings out of registry, whereby the heat within said heating drum will be prevented from escaping through said openings.

2. In a device of the class described, the combination of a casing, said casing being adapted to be positioned within a chimney so as to conform in shape to the inner shape of the chimney, said casing comprising an outer shell and an inner shell, a top and bottom connecting said outer and inner shells, the upper and lower ends of said inner shell being open so as to permit the passage of smoke therethrough, a pair of vertical partitions formed within said casing so as to span the distance between said shells, a substantially U-shaped horizontal partition extending approximately one-half way around the inner shell, whereby said partitions will divide said casing internally into air passages, whereby as the casing is heated the air may pass beneath said horizontal partition and then upwardly upon one side of the vertical partitions, over the free ends of said vertical partitions and downwardly upon the opposite side of the casing so as to be dispensed in a heated condition.

3. In a device of the class described, the combination of a heating drum, means for supporting said drum, means for conducting smoke through said drum and at the same time radiate heat into said drum, means for injecting air into said drum, said drum having side openings formed therein, and a movable collar carried upon said drum, said collar being adapted to be moved for opening or closing said openings, thereby regulating the passage of air from said drum.

4. In a device of the class described, the combination of a heating drum, means for supporting said drum, means for conducting smoke through said drum and at the same time radiate heat into said drum, means for injecting air into said drum, said drum having side openings formed therein, and a movable collar carried upon said drum, said collar having openings formed therein, said collar being adapted to be moved so as to cause the openings in said collar to register with or move out of registry with the openings in said drum, whereby the openings in said drum may be opened or closed for regulating the passage of air from said drum.

In testimony whereof I hereunto affix my signature.

DAVID R. McGINNIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."