T. OLINGER AND J. L. DE GLOPPER.

FURNACE DAMPER REGULATOR.

APPLICATION FILED DEC. 7, 1920.

1,399,984. Patented Dec. 13, 1921.

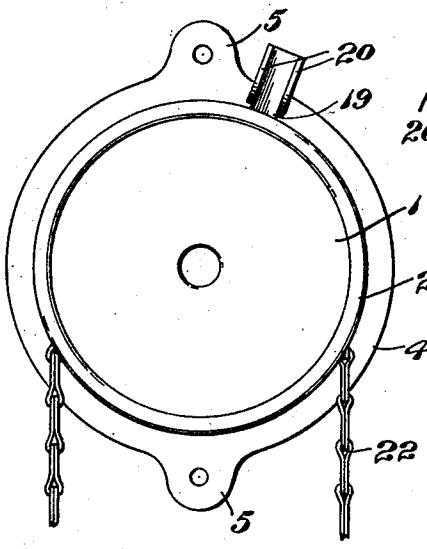


Fig. 1.

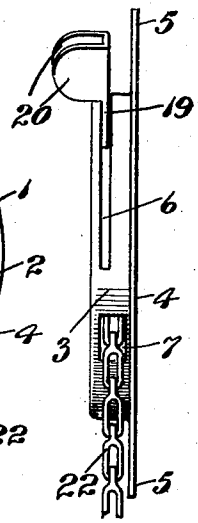


Fig. 2.

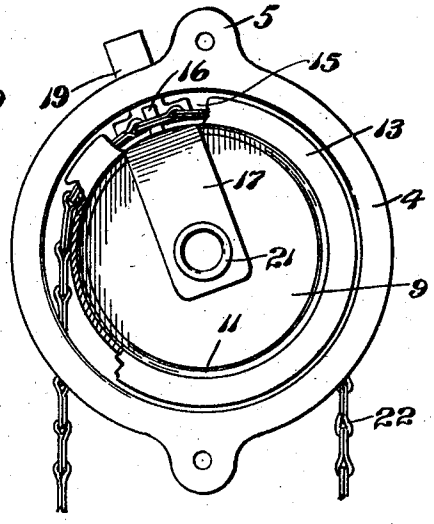


Fig. 3.

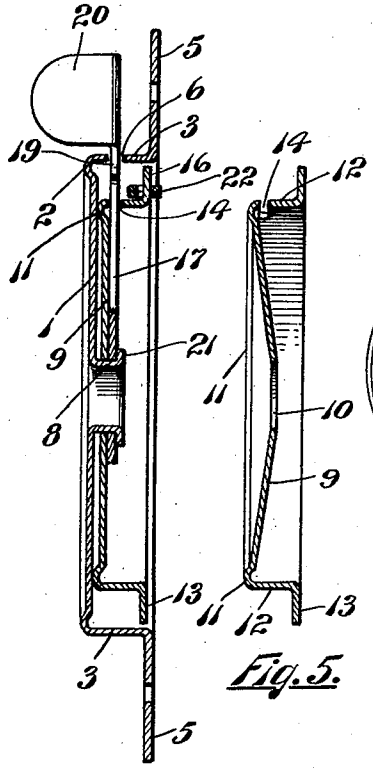


Fig. 5.

Fig. 4.

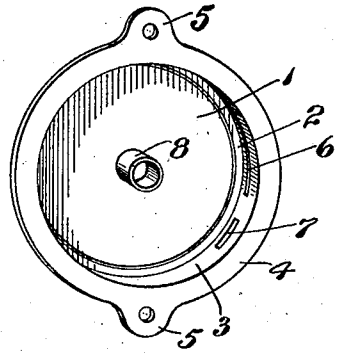


Fig. 6.

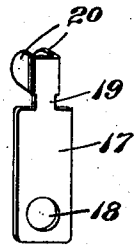


Fig. 8.

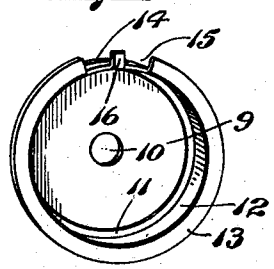


Fig. 7.

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FURNACE-DAMPER REGULATOR.

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To all whom it may concern:

Be it known that we, THOMAS OLINGER and JOHN L. DE GLOPPER, citizens of the United States of America, residing at Holland, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Furnace-Damper Regulators; and we 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 appertains to make and use the same.

This invention relates to a novel construction of furnace damper regulator. Regulators of this character are located in an upper room of a dwelling house or other building in which a furnace is installed and chains run therefrom to the check and draft dampers of the furnace, the same usually consisting of relatively small hinged doors, the one being hingedly mounted in connection with the smoke pipe a short distance from the furnace, and the other being hingedly mounted on the door which closes the front of the ash pit. It is desirable that these dampers may be regulated together so that one may be more or less closed with the similar opening of the other and vice versa.

With our invention, a particularly simple, yet durable and efficient furnace regulator is made, and at a relatively low cost. All of the parts except the chain used with the regulator are of sheet metal and may be readily blanked and formed from sheet metal with dies. There are but three parts to the structure. It is a primary object and purpose of the invention to produce a furnace regulator which is not only very simple in structure, containing a minimum number of parts with a resultant low cost of manufacture, but one which from its construction has inherent durability such that its effective life under usual service is practically indefinite. A further object of the invention is to make a furnace regulator of parts easily assembled and so constructed that the chain associated therewith may be readily connected either before or after the parts are in assembled relation or, if desired, may be changed as to position as readily in the complete assembled structure. A still further object of the invention is to provide a novel manner of attaining a frictional engagement between the relatively stationary member of the regulator and the movable chain actuating member thereof such that the movable member will stay in any position to which it may be moved for a greater or less opening or closing of the check and draft dampers. All of these features, together with many others not at this time specifically enumerated will appear fully and in detail as understanding of the invention is had from the following description, taken in connection with the accompanying drawing, in which:

Figure 1 is an elevation of the regulator.

Fig. 2 is an edge view thereof.

Fig. 3 is a rear elevation of the regulator, with a part of the chain actuating member broken away at one side to show the position of the chain thereon.

Fig. 4 is a vertical section through the regulator.

Fig. 5 is a similar section through the chain actuating member showing its form before assembly.

Fig. 6 is a perspective view looking at the rear of the outer stationary supporting member of the regulator.

Fig. 7 is a similar view of the chain actuating member, and

Fig. 8 is a perspective view of the operating handle which forms the third member of the regulator.

Like reference characters refer to like parts in the different views of the drawing.

In the construction of the regulator, an outer supporting member of sheet metal is used, comprising a substantially circular face 1 at the outer edges of which an outwardly extending bead 2 is formed, from which the metal extends backward for a distance making a continuous annular side 3, from which a flange 4 is turned outwardly, the same being formed at its upper and lower points with projecting ears 5 through which screws or equivalent fastening means may pass to connect the support and the parts carried thereby to the side of a wall or other stationary support in the room where the regulator is installed. A relatively long and narrow slot 6 is cut in the side 3 at the upper part thereof for substantially half of

the length of said side. Below each end of the slot, an opening 7 is made in the side 3 for the passage of the chain. Centrally of the face 1 an opening is made and the metal pressed to the rear to make a cylindrical hub 8 the purpose of which will later appear.

This outer supporting member constitutes a housing within which the chain actuating member is mounted. Said member is similar to the outer member in construction in many respects, comprising an outer face 9 through which a central opening 10 is made, an outwardly formed bead 11 at the outer edges of the face 9, a rearwardly extending continuous annular side 12 and a flange 13 turned outwardly therefrom. A short slot 14 is cut through the upper side of the side 12 and at the same side of the actuating member the flange 13 is cut away as indicated at 15 to leave a projecting tang 16 as shown in Fig. 7.

The third member of the regulator is the operating handle. This handle is formed from a flat piece of sheet metal 17 through which at its lower end an opening 18 is made. Adjacent its upper end the handle is narrowed as indicated at 19 and two ears 20 turned forwardly therefrom so that in the assembled regulator the same project in front of the outer supporting member as shown in Fig. 4.

The chain actuating member in forming the same has its face 9 dished rearwardly as shown in Fig. 5. In the assembly, the chain actuating member is placed within the outer member with its bead 11 bearing against the rear side of the face 1 of the outer supporting member. The dished face 9 of the chain actuating member is pressed substantially flat so that the hub 8 passes through the opening 10 in face 9. The operating handle is passed through slots 6 and 14 and the hub 8 passed through the opening 18 therein, after which the end of the hub is pressed outwardly to make a securing flange 21 which permanently secures the three parts of the regulator together. It is evident that the normal tendency of the dished face 9 of the chain actuating member to return to its original position causes the bead at 11 to press with considerable pressure against the rear side of the face 1 of the outer member, making a frictional engagement which holds the parts in any position which they may take or to which they may be moved with respect to each other. The chain 22 is placed around the inner chain actuating member before assembly, ordinarily, the tang 16 being passed through one of the chain links and the ends of the chain being carried through openings 7 when the chain actuating member is placed inside the outer supporting member. It is obvious that one end of the chain leads to the check damper and the other to the draft damper as is usual in furnace regulators.

This construction of furnace regulator comprises but three pieces, all readily stamped and formed from sheet metal and easily assembled. The frictional engagement of the chain actuating member with the outer supporting member is firm and precludes any movement of the chain actuating member from the weight of either damper on its attached chain, yet movable when sufficient force is applied through the operating handle or in certain cases when necessary, by pulling on either chain, as for instance, when it is desired to change the position of the dampers from the basement where the furnace is installed. The large frictional bearing surface insures against undue wear and gives an exceptionally long life to the regulator. In fact, an attempted destructive test of this regulator by operation thereof through sufficient number of movements to comprehend fifteen years ordinary service shows no change in the regulator in any respect. Economy of manufacture, a minimum number of parts, exceptional durability, and simplicity of construction, all combine to make the regulator one of value and merit.

It will be noted that the flange 13 in the assembled regulator extends nearly to the side of the outer member, rendering it impossible for the chain to escape from the chain actuating member. By bending the tang 16 outwardly, however, the chain may be detached and removed from its actuating member. It is also possible to thread the chain through an opening 7 and connect it with the tang, after which it may be carried by turning the chain actuating member to the other opening 7 for passage therethrough, making it possible to easily thread the chain through the regulator should it ever be necessary after the parts are assembled. These possibilities in connection with the furnace regulator add to its practical value as is evident.

We claim:

1. In a furnace regulator, an outer member having a front face, rearwardly extending annular side and flange turned from the rear edge of said side, said member being formed centrally of its face with a hub pressed rearwardly therefrom, a second chain actuating member formed with a front rearwardly dished face with a central opening therethrough, an outwardly projecting bead at its edges, a rearwardly extending annular side and an outturned flange located within the first member with the hub passing through said opening, said flange on the second member being partly cut away at its upper portion with a chain attaching tang left between the portions cut away, and an operating handle having an opening in

its lower end passed through the upper portions of said sides of the members and engaged with the hub, said hub passing through the opening in the handle and having its end pressed outwardly to secure the parts together with the dished face of the second member forced to substantially parallel relation with the face of the outer member, said side of the outer member at its upper portion being slotted substantially half of its length where the operating handle passes therethrough and having an opening for the passage of a chain at a point below each end of the slot, substantially as described.

2. In a furnace regulator, an outer housing member of sheet metal of substantially cup shape and provided with an integral rearwardly extending hub, a second chain actuating member of sheet metal located within the first member having an opening in its face for the passage of the hub, means for attaching a chain between its ends to said second member, and an operating handle passing through a side of the outer and inner members and passing over the hub at its inner end, said hub being outwardly pressed at its end to secure the three members together, said outer housing member having a slot for the passage of the handle member which permits its movement through substantially one hundred and eighty degrees of movement and an opening at each end of the slot for the passage of a chain to the chain actuating member, substantially as described.

3. In a furnace regulator, an outer housing member of sheet metal, a similar inner chain actuating member, and an operating handle passing through an elongated slot in the outer member and a short slot in the inner member, and means integral with the outer member passing through said inner member and handle for permanently securing the members together and permitting rotative movements of the inner member with respect to the outer member on operation of the handle, substantially as described.

4. A construction containing the elements in combination defined in claim 3, combined with means for detachably connecting a chain between its ends to the inner member, said outer member having openings for the passage of the chain to the inner member.

5. A construction containing the elements in combination defined in claim 3, said inner member being formed with a dished face which is sprung and forced toward the outer member when the parts are connected together, whereby a frictional engagement is made between the outer and inner members resisting movement of the inner member with respect to the outer member.

6. In a furnace regulator, an outer member having a substantially vertical face and a rearwardly extending annular flange extending from the edges of said face, said flange having an elongated slot in its upper portion substantially paralleling the plane of the face of said member, an inner member having a rearwardly dished face, and a similar rearwardly extending flange with a short slot in its upper side, means for attaching a chain to the inner member and for holding the chain between the inner and outer members, an operating handle extending through said slots, and means for rotatably mounting the inner member on the outer member and attaching the handle to move with the inner member, said dished face of the inner member being forced toward the face of the outer member by said mounting and said flange of the outer member having an opening adjacent each end of the slot for the passage of the ends of the chain.

7. In a furnace regulator, an outer supporting member, an inner chain actuating member rotatably mounted on and within the outer member, and an operating handle for turning the inner member back and forth between two positions, all of said parts being made of sheet metal and said inner member frictionally engaging the outer member, substantially as described.

8. In a furnace regulator, an outer cup-shaped supporting member, an inner cup-shaped chain actuating member rotatably mounted on and within the outer member, and a handle attached to the inner member for turning the same, said handle passing through an elongated slot in the outer member to permit a given range of movement thereof, substantially as described.

9. In a furnace regulator, an outer cup-shaped supporting member of sheet metal having an integral hub, an inner cup-shaped chain actuating member of sheet metal rotatably mounted on the hub, said inner member having a rearwardly dished side pressed forward toward the outer member when connected thereto on the hub to thereby frictionally press the inner member against the outer member, and means for manually turning the inner member, substantially as described.

10. In a furnace regulator, a supporting member, a chain actuating member rotatably mounted with respect to the outer member and frictionally held thereagainst through spring pressure inherent in the chain actuating member, said chain actuating member having means for the attachment of a chain thereto, and means for rotating the chain actuating member manually from a point outside of the supporting member.

11. In a furnace regulator, a three part construction comprising a supporting member, a chain actuating member to which a

chain is adapted to be attached rotatably mounted on the supporting member, and an operating handle for manually moving the chain actuating member, said supporting and chain operating members frictionally engaging and being held in frictional contact through spring force inherent in the chain actuating member, substantially as described.

In testimony whereof we affix our signatures.

THOMAS OLINGER.
JOHN L. DE GLOPPER.