

Feb. 7, 1939.

H. ANDERSON
DAMPER FOR REGISTERS
Filed Oct. 9, 1936

2,146,391

2 Sheets-Sheet 1

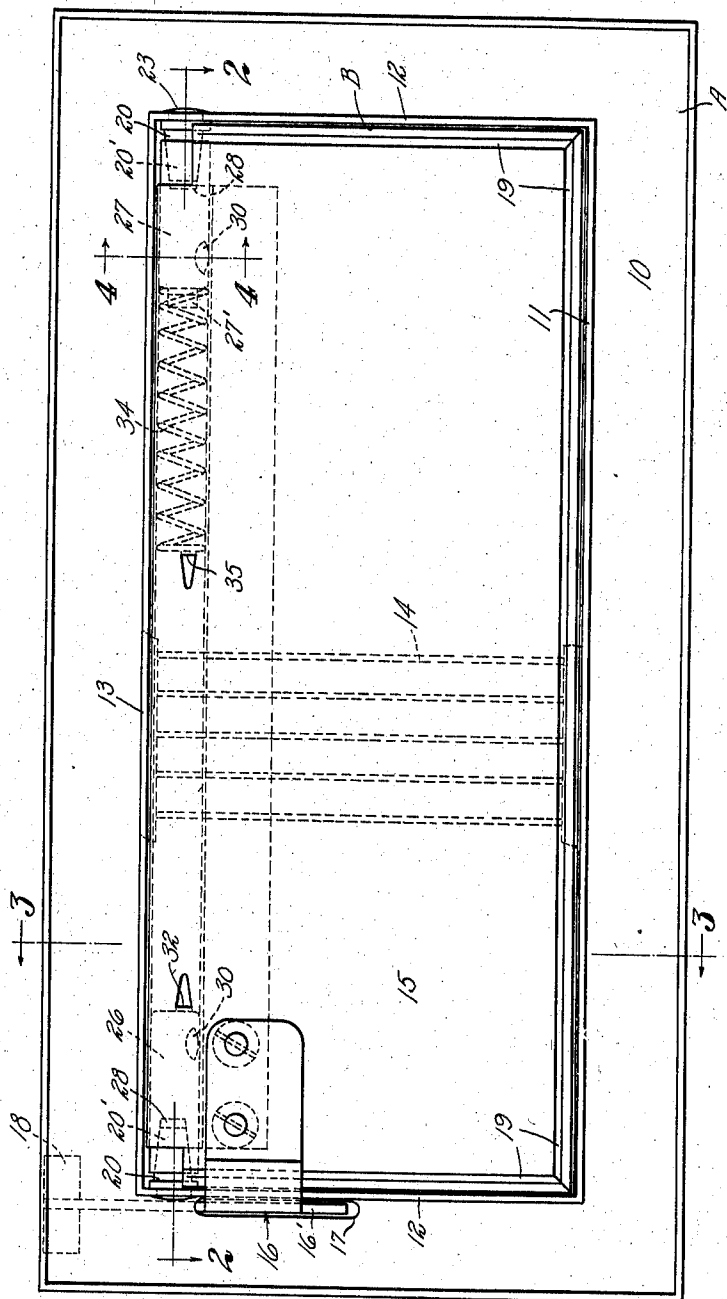


Fig. 1

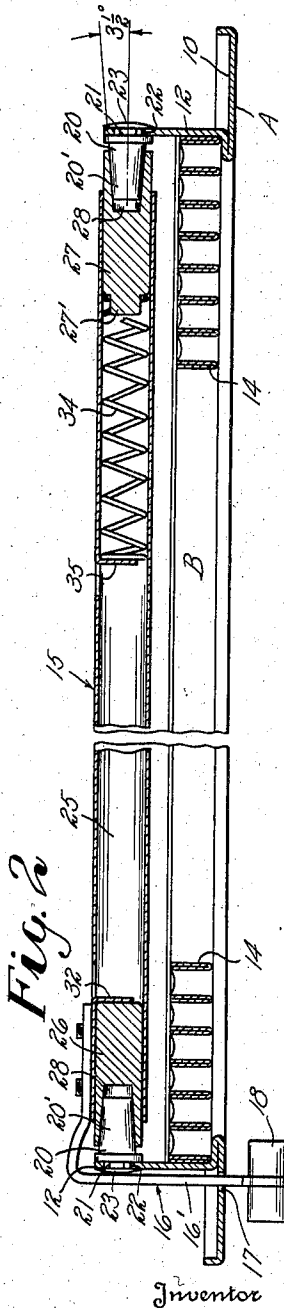


Fig. 2

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2 Sheets-Sheet 2

Fig. 3

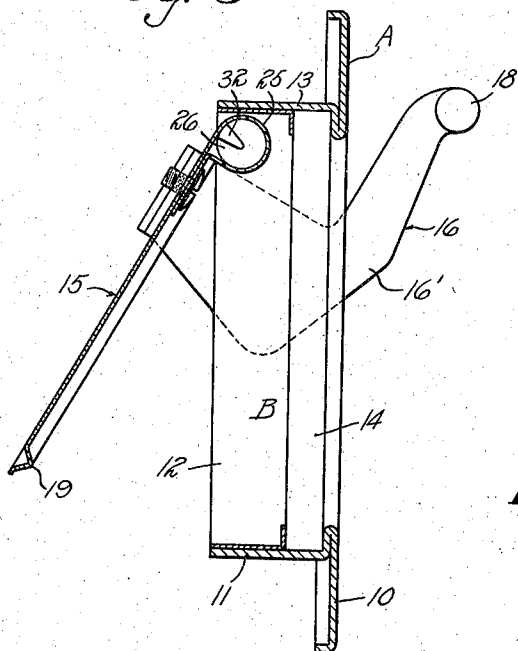


Fig. 4

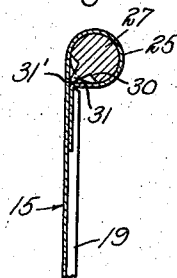
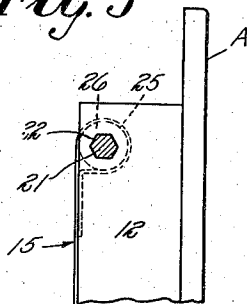


Fig. 5



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UNITED STATES PATENT OFFICE

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DAMPER FOR REGISTERS

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8 Claims. (Cl. 98—106)

This invention relates to a register and, more particularly, to a register having a damper adapted to be adjustably positioned therein to regulate the flow of air into or from a room to be heated or conditioned.

The aim of the present invention is to provide an improved and simplified air register having a manually controlled, pivotally supported damper arranged to adjustably regulate the air flow through the register.

It is a further aim of my invention to provide a register containing a pivotally supported adjustable damper which is resiliently secured under a desired friction on its pivotal support to maintain it in its preadjusted position.

With these and other objects in view, my invention consists in the unique construction and combination of members hereinafter fully described, illustrated in the accompanying drawings, and referred to in the claims appended hereto; it being understood, of course, that various changes in the general form, proportion, and size, as well as other minor details of construction lying within the scope of the claims may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

In the accompanying drawings wherein like parts are referred to by like numerals:

Figure 1 is a rear plan view of my register;

Fig. 2 is a longitudinal section through my invention taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is a transverse section through my register taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary end view of the invention.

In accordance with my invention, one embodiment of which is illustrated in the accompanying drawings, I have provided a frame or casing A of suitable shape and having a central opening B through which air is directed. My frame, which is herein shown in rectangular form and composed of sheet metal, includes a peripheral wall flange 10 from which extends a rectangular inwardly projecting flange 11 having opposed side walls 12 and top and bottom walls 13 arranged to be slidably received within the end of an air duct. The adjacent ends of the side and bottom walls may be interconnected, as by welding. The forward portion of register opening B adjacent flange 10 may have a suitable grille 14 secured therein. I have not illustrated this grille in detail since it does not comprise a part of the present invention.

A damper 15 of substantially rectangular form to fit within opening B is arranged for angular swinging movement therein to regulate the air

flow through the register. This damper is made in the form of a substantially flat plate pivotally supported at its upper end on the opposed side walls 12 and adjacent to top wall 13. An operating lever 16, secured at one end to damper 15 adjacent the pivotal support as by means of screws, is provided with an outwardly projecting arm 16' passing through a slot 17 in wall flange 10. A handle 18 is secured to the outer end of arm 16' and provides a convenient means whereby the damper may be angularly moved about its pivotal support to any desired location. In the present instance, the side and bottom peripheral edges of the damper are reinforced by crimping them as at 19 to aid in making it more rigid. However, this is not essential to the present invention.

In order to maintain my damper in a preset position and yet permit of convenient angular adjustment to control the air flow through the register, I have provided a spring pressed frictionally journaled damper support. As illustrated, this support comprises a pair of studs or bearing supports 20 having coaxial frusto-conical opposed inner ends 20' and reduced outer end portions 21 rigidly secured within holes in the opposed side walls 12. These outer ends are preferably of hexagonal or other suitable form adapted to respectively and non-rotatably fit within similarly shaped mating holes 22 in side walls 12, as shown in Fig. 5. The studs are further secured in position by heading over the outer ends of these reduced portions as at 23. The upper end of the damper plate is curled over or rolled back upon itself and secured to the plate portion thereof in any suitable manner, as by spot welding, thereby providing a tubular end portion 25 adapted to slidably receive a pair of cylindrical bearings 26 and 27 at its opposite ends. These bearings are provided with inwardly extending conical recesses 28 in their outer ends which are adapted to respectively mate with and frictionally receive the opposed conical portions 20'. I have found the angle of taper between the mating conical bearing faces and their common axis to be quite critical, and, as illustrated in Fig. 2, I preferably make this angle $3\frac{1}{2}^\circ$ so that the damper may preset without excessive binding of the bearings.

Recesses 28 are of such depth and contour that the conical end portions 20' do not bottom therein and the engagement between studs 20 and the respective bearings 26 and 27 lies solely along their mating conical faces. As shown in Figs. 1 and 4, I have provided each bearing intermediate of its ends with an upset portion 30 on its outer face and forming a protruding nose 31 adapted to slidably engage within a grooved portion 31' of tube 25 formed where the tubular portion is bent back into engagement with the damper

plate, thus preventing rotation of the bearings within the tube.

Bearing 26 is axially located within the outer end of tube 25 by means of an inwardly protruding lug 32 partially punched out of the side of the tube and bent over to engage the end of the bearing. The inner end of bearing 27 within tube 25 terminates in a reduced hub 27' which is compressively engaged by a coiled spring 34 slidably received within the tube and engaged at its other end by an inwardly depending punched-out lug 35 similar to lug 32. It will thus be appreciated that the compressive force of the spring tends to slidably move bearing 27 out of the tube, thereby resulting in frictionally engaging the two sets of conical mating bearing surfaces under a predetermined pressure which tends to frictionally restrain the damper movement. In view of the smooth interfitting relation of these bearing surfaces, it will be appreciated that the damper may be easily adjusted by manual operation of lever 16, and the extent of frictional restraint on this pivotal damper movement is dependent entirely upon the force exerted by spring 34 which may be predetermined by the initial location of lug 35 and the size of the spring. This frictional restraint is preferably so chosen that air passing through the register will not tend to move the damper from its preadjusted position and yet permit easy positioning of the damper by means of handle 18.

I claim as my invention:

1. In a device of the character described, a frame having an opening therethrough, a damper movably mounted in the frame to control air flow through said opening, bearings slidably mounted on the damper, journal members mounted in the frame and respectively journaled within said bearings, and resilient means engageable with one of said bearings urging the bearings into frictional engagement with said journal members to frictionally restrain pivotal movement of the damper whereby it will remain in any preadjusted position.

2. In a device of the character described, a frame having an opening therethrough, a damper in the frame arranged to regulate the air flow through said opening, a tubular portion on the damper, a pair of opposed studs coaxially secured to opposite sides of the frame, bearing members in said tubular portion and respectively journaled on said studs, and resilient means within the tubular portion urging the bearings into frictional stud engagement to frictionally restrain the bearing rotation and maintain said damper in any preadjusted angular position.

3. In a device of the character described, a frame having an opening therethrough, a damper movable in the frame to control the air flow through said opening, one edge of said damper being bent back upon itself to provide a tube, a pair of opposed coaxial studs rigidly secured to the frame and projecting inwardly therefrom, bearing members slidably mounted in the ends of the tube and respectively journaled on said studs, and yieldable means within the tube urging said bearings into frictional stud engagement.

4. In a device of the character described, a frame, a damper pivotally movable in the frame, said damper having a transverse tubular portion, a pair of opposed studs respectively secured to opposite sides of the frame in coaxial relation and projecting inwardly therefrom, bearing members

slidably received in the ends of the tubular portion and respectively journaled on said studs, means preventing rotation of said bearings within the tubular portion, and resilient means within the tubular portion urging the bearings into frictional engagement with said studs under a predetermined pressure.

5. In a device of the character described, a frame having an opening therethrough, a damper adjustably positioned within said frame to control the flow of air through said opening, means secured to said damper and projecting through said frame to control its movement, a pair of coaxial supporting members rigidly mounted in opposite sides of the frame in opposed relation, said supporting members having conical bearing faces, a pair of bearings respectively journaled on said bearing faces, means securing the damper to said bearings, and resilient means supported by the damper yieldably urging said bearings into frictional engagement with the conical faces whereby the pivotal movement of the damper is restrained sufficiently to maintain it in a preadjusted position.

6. In a device of the character described, a frame having an opening therethrough, a movable damper in the frame arranged to control the air flow through said opening, the damper having a longitudinal tubular portion, a pair of studs respectively secured to opposite sides of the frame in inwardly projecting aligned relation, bearings slidably mounted in the tubular portion and respectively journaled on said studs, means limiting the slidable movement of one of said bearings, a coiled spring mounted within the tubular portion, and means compressively engaging said spring between the damper and the other bearing whereby the bearings are yieldably urged into frictional engagement with the studs to hold the damper in any preadjusted position.

7. In a device of the character described, a frame, a damper pivotally movable within the frame to control the flow of air therethrough, a pair of studs mounted in opposed aligned relation on opposite sides of the frame, inwardly projecting frusto-conical portions on said studs, an end of the damper being bent back upon itself to provide a tube, bearings slidably mounted within the ends of said tube and having tapered recesses respectively mating with the conical stud portions, and a coiled spring mounted within the tube and compressively engaging against one of said bearings whereby the bearing faces are frictionally engaged to restrain the damper against angular movement.

8. In a register, a substantially rectangular frame, a pivotally adjustable damper within said frame, an operating lever secured to said damper and projecting through said frame, said damper having a tubular portion adjacent one edge, studs mounted in opposite sides of the frame, frusto-conical inwardly projecting bearing faces on said studs, bearing members slidably received within the ends of the tubular portion, means on each bearing member preventing its rotation in said tubular portion, each bearing having a conical recess adapted to mate with a frusto-conical bearing face, and means including a spring within the tubular portion arranged to yieldably engage a bearing and compressively urge the respective bearing surfaces into frictional engagement under a predetermined pressure.

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