

"Damper for air conditioning"

This invention provides a damper for controlling air flow in a duct of an air-conditioning installation, the damper comprising a rectangular frame with top and bottom walls and opposed sidewalls, the frame having open ends adapted to be connected to respective upstream and downstream sections of a duct of an air-conditioning installation, damper blades pivotably mounted in the frame, and a control member which is rotatable to pivot the damper blades, the control member being kinematically connected to one of the damper blades via a worm gear mounted on one sidewall, the remaining damper blade(s) being connected to the said one damper blade by a linkage so as to pivot synchronously with it, the control member being manually accessible below the bottom wall and being fixed on one end of an extension rod whose other end is rigid with the worm of the worm gear, the worm wheel of the worm gear being connected to an indicating means for indicating to the operator of the control member the angle through which the worm wheel is turned.

An advantage of this arrangement is that the damper blades can be turned by application of a low torque to the control member at a convenient position even when a strong air flow is acting on the damper blades, the indicating means indicating the degree of damping by the blades.

The invention will be described further, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a front view of a damper for use in an air conditioning installation, with damper blades all pivoting in the same direction;

Figure 2 is a side view of the damper;

Figure 3 is a front view of a damper with damper blades pivoting in opposite directions; and

Figure 4 is a side view of the damper of Figure 3.

5 The damper illustrated in Figures 1 and 2 has a rectangular frame 1 with front and rear flanges 2 having punched holes 3, for connection by means of nuts and bolts to corresponding flanges on upstream and downstream sections of a duct of an air conditioning
10 installation. Three damper blades 4,5,6 are pivoted between sidewalls 7,8 of the frame 1 with their pivot axes parallel to the base wall 9. The blades 4-6 have brackets 11 pivoted to respective brackets 12 on a vertical link 13 which ensures that all the blades pivot
15 in synchronism and in the same direction.

 A gear box 14 accommodating a worm gear is mounted on the outside of the sidewall 8. The worm wheel is rigid with the pivot axis of the middle blade 5 and is also connected to an indicating finger 16 whose position
20 can be read in conjunction with an angular scale 17 on the gear box 14. An extension rod 18, rigid with the worm of the worm gear, is rotatably mounted parallel with the sidewall 8 by means of a bracket 19. The free end of the rod 18 projects beyond the base wall 9 and
25 carries a control knob 21 which is manually accessible without difficulty. The gearing down provided by the worm gear is such that the control knob 21 can be turned

by hand even when a forceful stream of air is passing over the blades 4-6.

The damper illustrated in Figures 3 and 4 is similar to the damper described above, except that the upper and lower blades 4 and 6 pivot in the opposite direction to the middle blade 5. For this purpose a bracket 22 on one side of the pivot axis of the middle blade 5 is connected by a linkage 23 to a bracket on the opposite side of the pivot axis of the upper blade 4; and the upper and lower blades 4 and 6 are linked by brackets 11,12 and a vertical link 13 in the manner described above with reference to Figures 1 and 2.

Although the above-described dampers are shown with three blades, more or fewer blades can be used, depending on the required size of the damper. The materials used in the construction of the damper, such as, for example, galvanized steel, stainless steel, mild steel, and aluminium, are selected in accordance with requirement of weight, wear resistance, corrosion resistance, fire resistance, and cost.

Claims:-

1. A damper for controlling air flow in a duct of an air-conditioning installation, the damper comprising a rectangular frame with top and bottom walls and opposed sidewalls, the frame having open ends adapted to be connected to respective upstream and downstream sections of a duct of an air-conditioning installation, damper blades pivotably mounted in the frame, and a control member which is rotatable to pivot the damper blades, the control member being kinematically connected to one of the damper blades via a worm gear mounted on one sidewall, the remaining damper blade(s) being connected to the said one damper blade by a linkage so as to pivot synchronously with it, the control member being manually accessible below the bottom wall and being fixed on one end of an extension rod whose other end is rigid with the worm of the worm gear, the worm wheel of the worm gear being connected to an indicating means for indicating to the operator of the control member the angle through which the worm wheel is turned.

2. A damper as claimed in claim 1, in which the linkage is so arranged that the blades all pivot in the same direction.



3. A damper as claimed in claim 1, in which the linkage is so arranged that the pivoting of the said remaining blade(s) is in the opposite direction to the pivoting of the said one blade.

4. A damper substantially as described with reference to, and as shown in, Figures 1 and 2 or Figures 3 and 4 of the accompanying drawings.

5. An air conditioning installation including an air duct provided with a damper according to any preceding claim.



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