Nov. 15, 1938. S. HART 2,136,652

REMOTE CONTROL FOR VENTILATING DEVICES

Filed May 11, 1937

Fig. 1

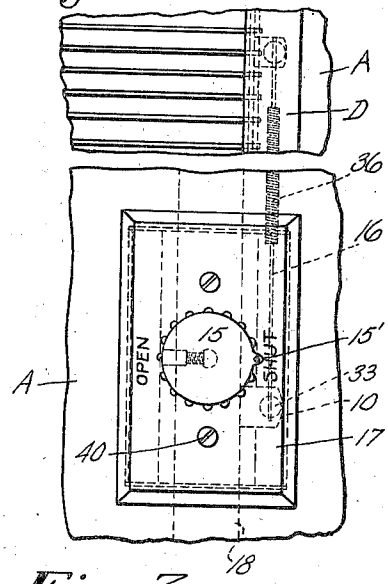


Fig. 2

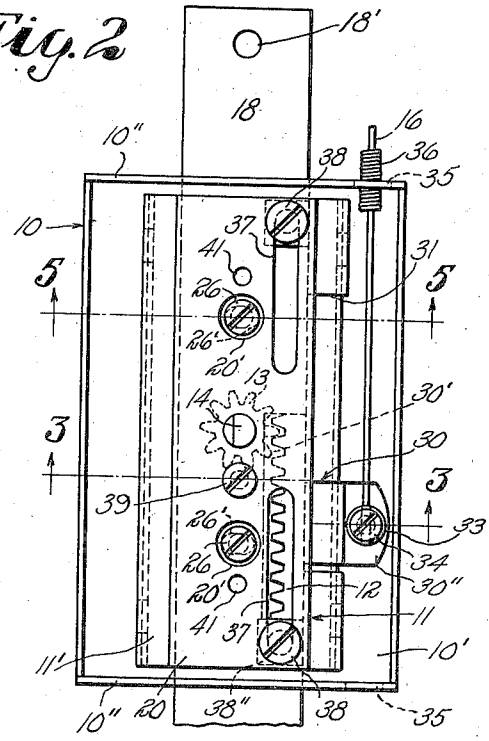


Fig. 3

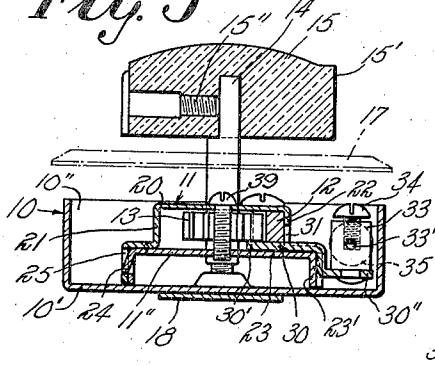


Fig. 4

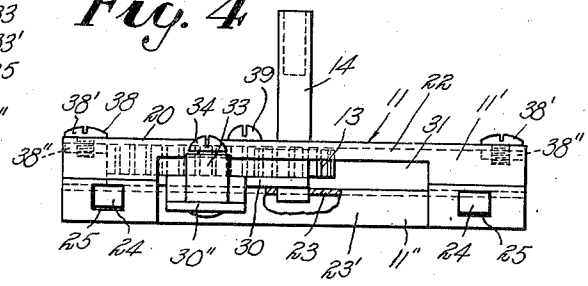
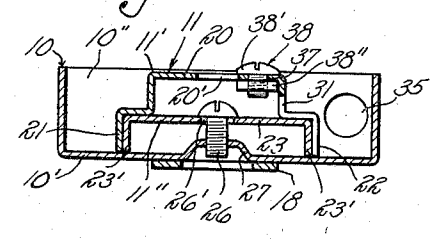


Fig. 5



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REMOTE CONTROL FOR VENTILATING DEVICES

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9 Claims. (Cl. 74—501)

This invention relates to a remote control for a ventilating device and more particularly to a damper or register controlling device which may be located in a wall at any convenient operating position irrespective of the location of the damper or register which it controls.

An aim of this invention is to provide a control device of the type described having various features of novelty and advantage and which is particularly characterized by its simplicity of construction, ease of assembly, facility of adjustment, economy of manufacture, and efficiency of operation.

It is a further aim of this invention to provide a control device which may be easily secured at any convenient position on a wall and arranged to adjustably control a remotely located damper or like device.

A further object of this invention resides in the provision of a remote damper control having an easily adjustable mechanism to limit the extent of movement and the extreme positions to which a damper may be shifted.

A further object resides in the provision of a remote damper control having a manually operable member which may be frictionally and adjustably regulated in its movement to maintain a damper or other device controlled thereby in preset positions.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing which illustrates one embodiment of the present invention and wherein like parts are indicated by like numerals:

Figure 1 is a front elevation of my device mounted on a wall and showing a fragmentary portion of a damper mounted in a wall and associated therewith;

Fig. 2 is an enlarged front elevation of my device with the control knob and escutcheon plate removed;

Fig. 3 is a sectional view taken substantially along line 3—3 of Fig. 2;

Fig. 4 is a side elevation of the guide frame and the parts assembled therewith; and

Fig. 5 is a sectional view taken along the line 5—5 of Fig. 2.

In accordance with this invention, I have provided a remote control device for dampers, registers, or similar apparatus wherein a casing 10 arranged to be mounted within an aperture in a wall *A* removably and adjustably supports a frame 11 which slidably supports a rack 12. A pinion 13 secured to a shaft 14 journalled in the frame and rotated by a knob 15 on the end of the shaft imparts longitudinal movement to the rack which in turn is connected by a relatively stiff but flexible control wire 16 to a ventilating device such as a damper *D* to provide adjustment thereof. An escutcheon plate 17 of suitable decorative appearance is removably secured to the frame and against the wall in covering relation to the casing. This plate may be provided with suitable markings such as the words "Open" and "Shut", and a pointer 15' on the knob is arranged to register with these indicia so that the turning of the knob to various indicated positions shifts the damper to correspondingly "Open," "Closed," or "Intermediate" positions.

The casing 10 may be formed from sheet metal bent into the shape of an open rectangular box having a rear wall 10', spaced end walls 10'', and spaced side walls. A metal strip 18 suitably secured to the rear wall, as by spot welding, extends beyond the ends of the casing, as shown in Fig. 2, and is provided with holes 18' to receive suitable fastening members, such as screws, for securing it within an apertured portion of a wall. Frame 11 which is mounted in the casing is composed of two channel members 11' and 11'' bent to form from sheet metal and arranged to snap into interfitting relationship. The outer channel member 11' has a front wall 20 and opposed stepped side walls 21 and 22. The inner channel member 11'' has a front wall 23 connecting opposed side walls 23' and is removably reecived within the opposed stepped portions 21 and 22 and held in position by struck out portions 24 in side walls 23' respectively received in apertures 25 in walls 21 and 22. As shown in Fig. 3, portions 24 extend outwardly and towards wall 10' and spring into abutting engagement with the edges of apertures 25 when the channel members are fitted together to normally lock them in interfitting relation. The inner member may be easily removed from the outer member by prying the adjacent side walls of the two members apart.

The frame 11 is adjustably fastened to the casing by screws 26 passing through transversely slotted holes 26' in wall 23 and threadably received in inwardly depressed portions 27 of the rear casing wall 10'. Holes are provided through

strip 18 in alignment with the screws 26 so that the screws cannot bottom against the strip. Holes 20' are also provided through wall 20 in substantial alignment with screws 26 and of slightly larger size than the screw heads so that the screws may be easily inserted therethrough and secured in position to facilitate assembly of the frame. The slotted portions 26' provide for lateral and angular adjustment of frame unit within the casing in the event that the casing is not initially located in the exact required position.

The spaced walls 20 and 23 are provided intermediate of their ends with aligned bores rotatably receiving shaft 14 which extends outwardly from the casing through the escutcheon plate 17 and removably receives knob 15 suitably secured in position, as by a set screw 15'' clamped into engagement with a flattened portion of the shaft. Pinion 13 which is rigidly secured to the shaft between its ends for rotation between walls 20 and 23 is enmeshed with rack 12 which is slidably guided by and located between these walls adjacent to the stepped portion 22. The rack is mounted, as by spot welding, on a substantially T-shaped sheet metal plate 30 bent to form and slidably engaging channel member 11''. This plate which extends laterally to the left, as at 30' (Figs. 2 and 3), to aid in the support of the pinion, also has an arm extending laterally to the right and projecting through a cut away portion 31 in wall 22 and has an inwardly stepped portion 30'' slidably engaging walls 23 and 23' to aid in locating the rack during its slidable movement.

Stepped portion 30'' is provided with a stud 33 extending outwardly therefrom into the casing and secured in position at its inner end, as by riveting. A screw 34 threaded in the outer end of the stud clamps cable 16 within a hole 33' transversely extending through the stud. The end casing walls 10'' are each apertured, as at 35, in general alignment with hole 33' so that flexible conduit 36 in the general form of a longitudinal, tightly wound, flexible, coiled spring may be received through one of the holes 35 and entered into the casing with its other end extending into adjacent relation to damper D, thus providing a flexible support for wire 16 substantially throughout its entire length and preventing buckling of the wire without restricting its longitudinal movement. Hence, a rotation of the knob causing longitudinal movement of the rack will result in either a pulling or pushing movement of the wire to control the operative positions of the damper. By providing a hole 35 in each of the opposed end walls of the casing, the casing may be mounted in reversed or other convenient positions, and the wire and conduit may enter the casing through either of these holes.

My control device is provided with adjustable means to regulate the extent of longitudinal rack movement as well as the extreme positions to which the rack may be shifted by rotation of knob 15 to provide suitable adjustment for the damper. To accomplish this, wall 20 is provided at its opposite ends and adjacent the rack with elongated slots 37 arranged to receive adjustable stop members 38 in the path of rack movement. These stops may comprise screws 38' respectively extending through the slots and received within rectangular nuts 38'' having side edges located adjacent to side walls 22 so that the nuts may be easily and adjustably positioned longitudinally of the slots and in predetermined abutting relation with the ends of the rack by the application of a screw driver to screw slots in the heads of the screws. Aperture 31 through wall 22 is of such extent that in the event the stop members are moved to their extreme outer positions or removed from the frame, the ends of said aperture will prevent the rack from being moved out of enmeshed engagement with pinion 13.

The rotation of shaft 14 is also frictionally regulated so that the damper will be frictionally held in any of its pre-adjusted positions. A clamping screw 39 passing through front wall 20 adjacent shaft 14 threadably engages within wall 23 to adjustably spring these walls towards each other and cause a partial clamping movement of said walls against the pinion, thus frictionally and adjustably restraining the slidable movement of the rack.

The escutcheon plate which engages the wall *A* and overlies the casing to serve as a cover therefor may be suitably secured in position, as by screws 40 passing therethrough and threadably received within holes 41 in front wall 20. Angular positioning of the escutcheon plate on wall *A* may be easily accomplished by adjustment of frame unit 11 within the casing.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In a remote control for a ventilating device, a casing adapted to be secured to a wall, a frame within the casing and having an elongated aperture in one wall thereof, a member slidably mounted for longitudinal movement in the frame aperture and extending through said aperture and having a connection thereon for receiving and operating a control wire, means rotatably journalled in the frame and operatively connected to transmit longitudinal sliding movement to said member, and means to limit the extent of said sliding movement.

2. In a remote control for a ventilating device, a casing arranged to be secured within a wall, a frame within the casing and having an aperture therethrough, a rack supported by the frame for longitudinal slidable movement therein and having means laterally extending therefrom through said aperture, said means being provided with a connection for receiving and operating a control wire, a shaft rotatably journalled in the frame and having a pinion secured thereto in enmeshed engagement with the rack to transmit longitudinal sliding movement thereto, and operating means on the shaft outside of the casing.

3. In a remote control for a ventilating device, a casing adapted to be secured to a wall, a frame within the casing and having an aperture therethrough, means adjustably securing the frame to the casing, a rack mounted for longitudinal slidable movement in the frame aperture and having a connection secured thereto for adjustably receiving and operating a control wire, a shaft journalled in the frame and having a pinion secured

thereon in enmeshed engagement with the rack to transmit longitudinal sliding movement thereto, a manually operable member to transmit rotation to the shaft, and adjustable means on the frame in the path of the rack to limit the extent of movement and locate the extreme positions to which the rack may be moved.

4. In a remote control for a ventilating device, a casing adapted to be secured within a wall, a frame adjustably mounted within the casing, a rack longitudinally movable within the frame and having a laterally extending arm projecting outside of the frame and into the casing, said arm having means for adjustably and operatively receiving a control wire, a shaft journalled in the frame and having a pinion thereon enmeshed with the rack, and stop members secured to the frame for individual adjustment in the path of the ends of the rack whereby the extreme positions of movement of the rack may be adjustably limited.

5. In a remote control for a ventilating device, a casing, an elongated frame, means adjustably securing the frame within the casing, a rack mounted within the casing for longitudinal slidable movement, said frame having a longitudinal aperture at one side thereof, an arm extending through said aperture and secured at one end to said rack, an adjustable connection at the other end of said arm and arranged to clamp over one end of a control wire arranged to actuate a ventilating device, a shaft journalled in the frame and having a pinion mounted thereon in enmeshed relation with said rack to move the rack longitudinally within the frame, and slidably adjustable stop members individually and removably secured to the frame for limiting the extent of movement and locating the extreme positions to which the rack may be shifted.

6. In a remote control for a ventilating device, a casing adapted to be secured to a wall, an elongated frame within the casing having spaced walls defining an elongated aperture therethrough, a member mounted for longitudinal slidable movement in the frame aperture and guided by the frame walls, said member having a connection associated therewith for receiving and operating a control wire, means rotatably journalled in the frame and operatively connected to transmit longitudinal slidable movement to said member, and adjusting means between a pair of opposed frame walls to move said walls relative to one another to frictionally restrain the movement of said slidable member.

7. In a remote control for a ventilating device, a casing arranged to be removably secured within the wall, a frame within the casing and including a pair of interfitting channel members having opposed spaced walls defining an elongated aperture therebetween, means removably securing said members in interfitting relation, a rack mounted for slidable longitudinal movement through said aperture and guided by said walls, a shaft journalled in the frame and having a pinion enmeshed with the rack, means connected to the rack for operating a control wire in response to rack movement, stop members individually and adjustably positioned on the frame in the path of the rack to limit its extreme positions, and adjustable means to frictionally restrain the slidable movement of said rack.

8. In a remote control for a ventilating device, a casing arranged to be removably secured within a wall, a sheet metal frame within the casing and including a pair of interfitting channel members removably secured together and providing an elongated aperture therebetween, a rack slidably mounted within the frame for longitudinal movement, means associated with said rack and extending outwardly of the frame for reception and operation of a control wire in response to rack movement, a shaft journalled between a pair of opposed sides of the frame in the frame, a pinion secured to said shaft and enmeshed with the rack, stop members individually and slidably mounted on one of the interfitting channel members and in the path of the rack to limit its movement, means to adjustably position the frame within the casing, and adjusting means engageable with said pair of opposed sides of said frame to move same relative to one another to frictionally restrain the pinion movement whereby the rack will remain in any preset position.

9. In a remote control for a ventilating device, a sheet metal casing arranged to be mounted within a wall, a two-piece sheet metal frame within said casing and comprising an outer channel member and an inner channel member having an elongated aperture therebetween, said outer member having stepped portions receiving the inner member and provided with apertures adapted to removably receive struck out portions of said inner member to secure said members together in removably interfitting relation, means engageable with the inner member to adjustably secure the frame in the casing, a rack slidably mounted between said members and having an arm projecting outwardly of the frame to receive and operate a wire cable, a shaft journalled in said frame and having a knob on one end and a pinion engageable with said rack, stop members slidably adjustable on the outer frame member to locate the extreme positions of rack movement, and means to frictionally and adjustably clamp the frame against the pinion to restrain the rack movement under predetermined but adjustable friction to secure the rack in any pre-set position.

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