Dec. 20, 1938. S. HART 2,140,935

AIR DEFLECTING DEVICE

Filed Oct. 7, 1936 2 Sheets-Sheet 1

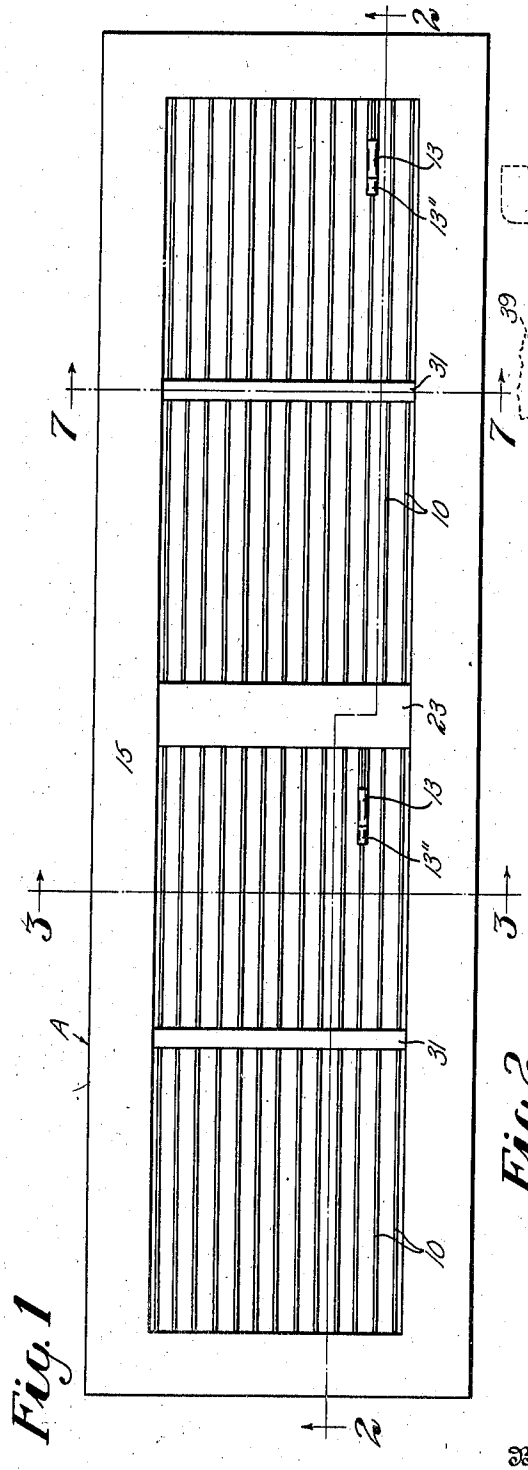


Fig. 1

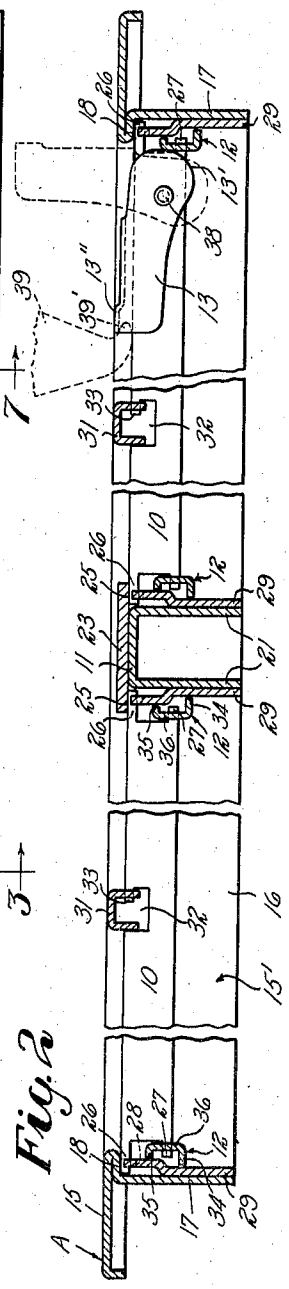


Fig. 2

Inventor
STANLEY HART

By H. Clay Lindsey

Attorney

Dec. 20, 1938. S. HART 2,140,935

AIR DEFLECTING DEVICE

Filed Oct. 7, 1936 2 Sheets-Sheet 2

Fig. 3

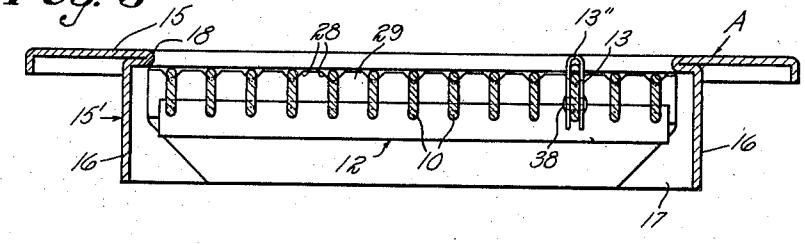


Fig. 4

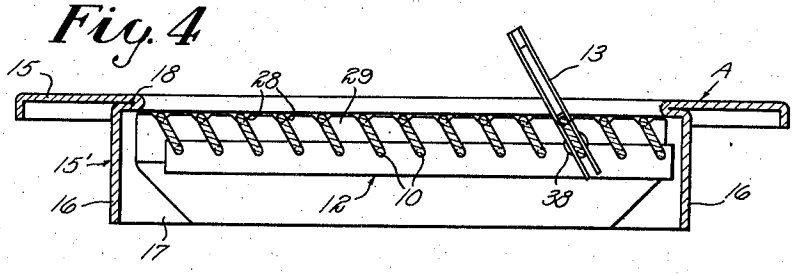


Fig. 5

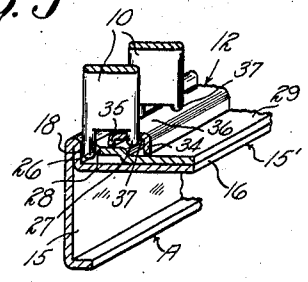


Fig. 6

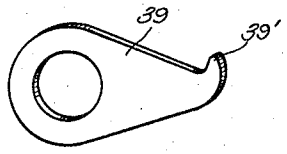
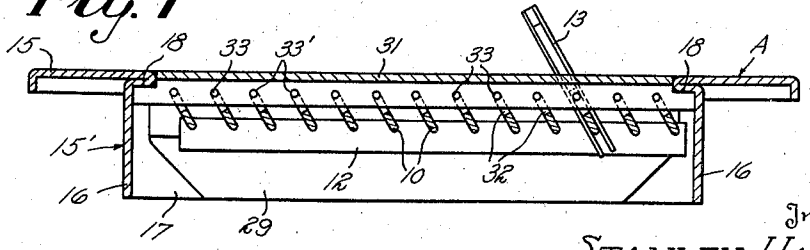


Fig. 7



Inventor

STANLEY HART

By H. Clay Lindsey.

Attorney

Patented Dec. 20, 1938 2,140,935

UNITED STATES PATENT OFFICE

2,140,935

AIR DEFLECTING DEVICE

Stanley Hart, Kensington, Conn., assignor to Tuttle & Bailey, Inc., New Britain, Conn., a corporation of Connecticut

Application October 7, 1936, Serial No. 104,483

10 Claims. (Cl. 98—110)

This invention relates to air deflecting devices and, more particularly, to an air deflecting device in the general form of a register or grille having a plurality of adjustable vanes arranged to direct air flow into a room to be heated or conditioned.

An aim of the invention is to provide a register of the character described with means of an improved and simplified nature for simultaneously adjusting a group of vanes with facility and locking the vanes against movement in any desired pre-adjusted position.

A further aim of the invention is to provide, in a register of this character, means for reinforcing and supporting the vanes in such manner that they are held against sagging or warping and vibration.

It is a still further object of this invention to provide an improved air deflecting device having a multiplicity of adjustable vanes adapted to be simultaneously regulated, which comprises a relatively small number of simply constructed and easily assembled parts cheap to manufacture and adapted to be easily adjusted to meet requirements and which is highly efficient and positive in operation.

Other objects will be in part obvious and in part pointed out more in detail in the ensuing specification and claims.

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

In the accompanying drawings which illustrate one embodiment of the present invention and wherein like parts are indicated by like numerals;

Figure 1 is a front view of the register;

Fig. 2 is a horizontal section through the register taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is a vertical section taken substantially along the line 3—3 of Fig. 1 and showing the operating lever in locked position;

Fig. 4 is a view similar to Fig. 3 with the lever in operative position for adjusting a set of deflector vanes;

Fig. 5 is a fragmentary perspective view illustrating the pivotal support and connector associated with one end of the vanes;

Fig. 6 is a perspective view of a tool which may be employed to disengage the operating lever from locked position; and

Fig. 7 is a vertical section through the register taken substantially along the line 7—7 of Fig. 1.

In accordance with this invention, I have provided a register wherein a frame or casing A of desired shape and construction is arranged to support a multiplicity of spaced vanes 10 for simultaneous angular adjustment. In the present instance, the frame is provided with an intermediate cross member 11 dividing the register into two similar sections, each of which contains a separately operated set of vanes, but it will be appreciated that this invention applies equally well to a register embodying any number of sets of vanes. The vanes which are journalled for pivotal movement within the frame are also pivotally engaged by a connector bar 12. A manual operating lever 13 is secured to one of the vanes of each set in such manner that it may lie in close relation thereto, in which position it locks the vanes against movement, as shown in Fig. 2, or it may be angularly swung outwardly from the vane to provide a convenient operating handle for angularly adjusting the vanes.

Referring to the illustrated construction, the frame A is preferably rectangular and composed of sheet metal bent to form a wall plate 15 from which rearwardly projects a rectangular portion generally indicated at 15' and having opposed top and bottom walls 16 and opposed side walls 17 defining a rectangular opening within which the adjustable vanes are located. The rearwardly projecting portion 15' is adapted to be received in the end of an air duct, and the walls 16 and 17 are so located with respect to the rearward side of plate 15 as to provide a short shoulder 18 between each wall and the plate and within the frame opening. If desired, the frame may be composed of several members suitably secured together, as by welding.

The cross member 11 may be composed from sheet metal bent into the form of a channel having side members 21. A plate 23 secured to the channel overhangs the side members 21 forming shoulders 25 similar to shoulders 18 and extends into abutting relation with the opposed sides of wall plate 15. Plate 23 and cross member 11 are rigidly fastened together and to the sides of the frame in any suitable manner as by welding.

In the present instance, the vanes are each pivotally secured for angular adjustment about horizontal axes and between the respective side members 17 and 21. However, it will be evident that my construction may be equally well applied to support the vanes for angular adjust-

ment between top and bottom walls 16 and about vertical axes. Each vane is composed of a strip of sheet metal provided at its opposite ends and adjacent its front and rear edges with the respective projecting rounded portions 26 and 27 forming pintles. As shown in Figs. 2 and 5, pintles 26 are considerably longer than pintles 27 and adapted to be journalled respectively within spaced notches 28 in the forward edges of a pair of stepped locating plate 29 respectively fastened against the plates 17 and 21, as by welding. The end portions of pintles 26 are rounded to reduce their frictional contact with plates 17 and 21, and the forward portion of member 29 is offset from its body portion so that the notches 28 engage an intermediate peripheral portion of each of the pintles. Shoulders 18 and 25 respectively engage pintles 26 throughout the major portion of their length and cooperate with the aforementioned notches to support the vanes for pivotal movement, as shown in Fig. 5.

In the present instance, the vanes are of considerable length. Consequently, there is provided an additional pivotal support for each of the vanes intermediate of its ends which is herein illustrated in the form of a reinforcing channel 31 secured at its opposite ends to the opposed sides of frame A as by welding. Each vane is provided intermediate of its ends with a corresponding recessed portion 32 having substantially parallel opposed side faces which slidably engage the sides of channel 31 as shown in Fig. 2. A pintle 33 projects from one side of each recess 32 in coaxial relation to the opposed pintles 26 on the same vane. Pintles 33 are respectively journalled in a series of spaced holes 33' in the side of channel 31. Hence, it will be observed that channel 31 serves to aid in locating the vanes for smooth adjustment, adds rigidity to the frame, and tends to prevent rattling or vibration to the vanes.

The pintles 27 located at the rearward edges and on the opposed ends of each of the vanes are respectively journalled in spaced relation in the connectors 12, and each connector is slidably associated with one of the plates 29 so that all of the vanes of each set may be angularly and simultaneously adjusted through the same extent. To accomplish this, each connector is preferably formed from a sheet metal strip bent substantially to a channel shape and having legs 34 and 35 slidably engaging plate 29 and interconnected by a portion 36 having spaced holes 37 arranged to respectively and pivotally receive pintles 27. These holes are preferably located in uniformly spaced relation corresponding to the spaced relation of notches 28 so that all of the vanes of each set will be maintained in parallel relation. The leg 34 of each connector is preferably of a greater length than leg 35 to compensate for the offset of plate 29 and to locate portion 36 in proper relation to the ends of the vanes. The pintles 27 are preferably of a shorter length than pintles 26 so that they will be free to turn within the connectors 12 without engagement with plate 29.

Each set of vanes is arranged for individual angular adjustment by means of the operating lever 13 which, as herein shown, is substantially U-shaped in cross section and pivotally secured to one of the vanes by means of a pin 38. This operating lever is arranged to be swung into a closed or locking position wherein it closely overlies the vane, or it may be swung outwardly from the vane and provide a convenient lever to angularly adjust the vanes to desired position, as shown in Fig. 2. The rearward end of the lever is journalled on the vane relatively close to one of the connectors 12 and has a pair of rounded ends 13' on opposite sides of the vane and which are of such shape that they cam into tight frictional engagement with the connector to lock the vanes in adjusted position and also clamp the lever in overlying relation close to the vane with which it is associated. This cam lock not only serves as a rigid clamp between its respective vane and the connector 12, but it also serves to force legs 34 and 35 into tight frictional engagement with plates 29 whereby connectors 12 are restrained from slidable movement and each vane is locked in adjusted position. When lever 13 is unlocked and swung outwardly to operative engagement as shown in dotted lines in Fig. 2, the cam portions thereon are disengaged from the connector 12 so that the vanes may be easily adjusted.

Since the operating lever is clamped in its closed position in close overlying relation to its respective vane, the forward portion of the lever overlying the vane is provided with a slight offset 13'' arranged to receive a tool whereby the lever may be pried loose. Any suitable tool may be employed for this purpose, and, as herein illustrated, there is preferably provided a tool 39 (as shown in Fig. 6) having a laterally projecting rounded nose 39' which may be easily inserted beneath offset 13'' as illustrated in Fig. 2.

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. An air deflecting device comprising a frame, a plurality of vanes pivotally mounted in side by side relation within the frame and arranged for angular adjustment to control the direction of air flow through the frame, a connector pivotally secured to the vanes and causing their simultaneous angular movement, an operating lever pivotally mounted on one of said vanes for movement relative thereto and adapted to be swung to an operative and an inoperative position, and cam means on said lever preventing angular adjustment of the vanes when the lever lies in its inoperative position.

2. An air deflecting device comprising a frame, a plurality of vanes movably mounted in spaced relation in the frame for controlling the direction of air flow through the frame, a connector interengaging the vanes and causing a simultaneous adjustment thereof, an operating lever pivotally secured to one of said vanes for movement relative thereto and having an operative and an inoperative position, said lever being adapted to adjustably position the vanes when in its operative position, and clamping means on the lever adapted to frictionally engage said connector when the lever is in an inoperative position and prevent movement of the vanes.

3. An air deflecting device comprising a frame, a plurality of vanes pivotally mounted in spaced relation in the frame for angular adjustment to control the direction of air flow through the

frame, a connector interconnecting the vanes for simultaneous corresponding angular movement, an operating lever pivotally secured to one of said vanes adjacent the connector and having an operative and an inoperative position, the lever extending outwardly when in its operative position and providing a convenient means for vane adjustment, said lever lying adjacent to and in substantial alignment with the vane when in an inoperative position, and a cam on said lever adapted to clamp into engagement with the connector and prevent adjustment of the vanes when the lever is in an inoperative position.

4. An air deflecting device comprising a frame, a plurality of spaced vanes pivotally mounted in the frame in side by side relation for angular adjustment, a connector pivotally connecting said vanes for simultaneous and corresponding angular movement, an operating lever pivotally mounted on one of the vanes for causing said angular adjustment and having an operative and an inoperative position, said lever having substantially U-shaped transverse cross section and being adapted to closely overlie and straddle the vane when in an inoperative position, and a cam on the operating lever adapted to frictionally engage the connector and lock it against movement when the lever is in an inoperative position.

5. An air deflecting device comprising a frame, a plurality of vanes pivotally mounted therein in side by side spaced relation and arranged for angular adjustment to control the direction of air flow through the frame, a reinforcing member secured at its ends to the frame and extending transversely of said vanes intermediate of their ends, and means pivotally securing each of the vanes to said reinforcing member.

6. An air deflecting device comprising a frame, a plurality of vanes pivotally mounted therein in parallel spaced relation for angular adjustment, a reinforcing member extending across the frame intermediate of the ends of the vanes, said vanes having recessed portions adapted to slidably receive the reinforcing member, and a pintle projecting from each of said vanes and within the recesses and pivotally engaged within the reinforcing member.

7. An air deflecting device comprising a frame, a plurality of vanes pivotally mounted at their ends in side by side relation within the frame and arranged for angular adjustment to control the direction of air flow through the frame, a reinforcing channel extending across the frame intermediate of the ends of the vanes and having substantially parallel opposed sides, said vanes having correspondingly located recessed portions adapted to slidably engage the opposed sides of said channel, and a pintle projecting from each of said vanes within its recessed portion coaxial with the pivotal vane support and pivotally secured within said channel.

8. An air deflecting device comprising a frame, a plurality of vanes pivotally mounted in spaced relation in the frame and arranged for angular adjustment, a reinforcing member secured to the frame and extending transversely of said vanes intermediate of their ends, means pivotally securing each of said vanes to the reinforcing member, a connector pivotally associated with each of said vanes and linking them together for simultaneous angular adjustment, an operating lever pivotally mounted on one of the vanes, and means on the operating lever entering into locked engagement with the connector when the lever is in a predetermined position whereby the vanes may be locked against movement in any desired preadjusted position.

9. An air deflecting device comprising a frame having opposed rearwardly projecting flanges, locating plates respectively associated with two of the opposed flanges, spaced notches in the edges of said locating plates, a plurality of parallel vanes, means pivotally securing each of said vanes at their outer ends in corresponding notches of said plates, a connector slidably engaging one of said plates, means pivotally connecting each of said vanes with said connector whereby a slidable connector movement will result in a simultaneous angular movement of all of the vanes, and an operating lever pivotally mounted on one of said vanes and having a cam portion arranged to enter into frictional locking engagement with the connector and secure the vanes in any preset angular position.

10. In a device of the character described, a frame, a plurality of spaced vanes pivotally mounted in the frame in side by side relation for angular adjustment, a connector slidably mounted in the frame and pivotally engaging successive vanes to cause their simultaneous angular movement, an operating lever pivotally mounted on one of the vanes for causing said angular adjustment, said lever being substantially U-shaped in cross section and adapted to project outwardly from its vane when in an operative position and to closely overlie said vane in straddled relation thereto when in an inoperative position, means on said lever to clamp into engagement with the connector when in an inoperative position to lock the vanes against adjustment, and a recessed portion at the forward end of said lever whereby a tool may be inserted to pry the lever loose from its inoperative locked position.

STANLEY HART.