April 21, 1953 W. W. KENNEDY 2,635,525

AIR DISTRIBUTION OUTLET

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Fig. 1.

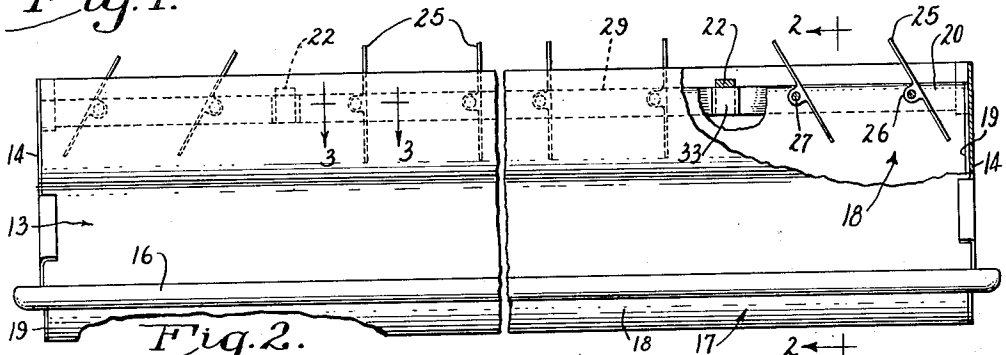


Fig. 2.

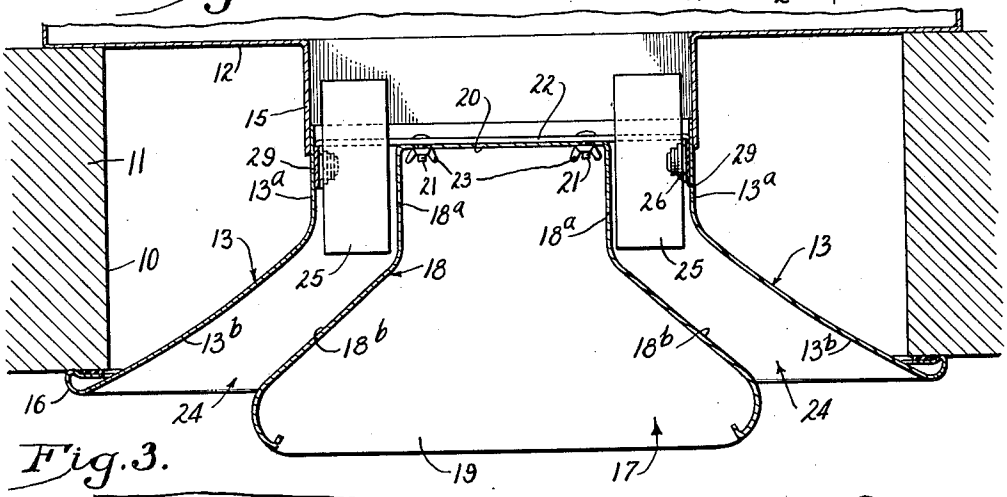


Fig. 3.

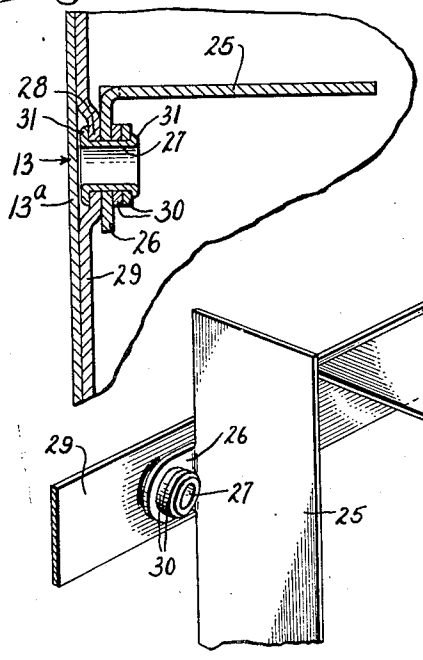
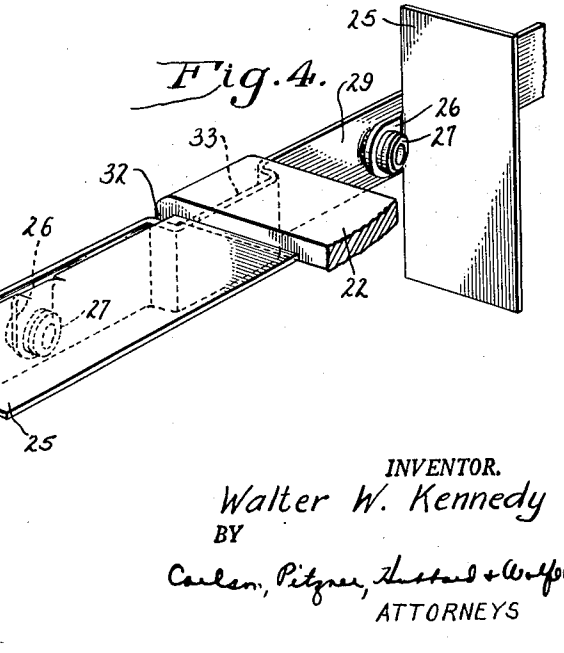


Fig. 4.



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AIR DISTRIBUTION OUTLET

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3 Claims. (Cl. 98—40)

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This invention relates to an outlet through which air supplied through a duct or plenum chamber behind the wall of a room may be delivered into the room through one or more elongated passages or slots.

The primary object is to provide an outlet of the above character having damper vanes of simple construction so mounted and arranged within the inlet portion of the air passage as to be readily accessible through the passage outlet for adjustment of the damper vanes to control the volume and pattern of distribution of the air discharged into the room.

The invention also resides in the novel location and mounting of the damper vanes.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which

Figure 1 is a fragmentary side elevational view of an air distribution outlet embodying the novel features of the present invention.

Fig. 2 is a cross section of the outlet and a room wall, the section being taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary section taken along the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary perspective view of the damper vanes and their support.

For purposes of illustration, the drawings show the invention incorporated in an air distribution outlet adapted to be mounted in an elongated opening 10 in the wall 11 of a room and to distribute into the room air delivered under pressure to a supply duct 12 concealed behind the wall. The outlet includes an outer unit or housing composed of two elongated side strips 13 rigidly connected at their ends by plates 14 so as to form a frame which is of generally rectangular section in planes parallel to the room wall. The inner margins 13a of the side strips are parallel and these, together with the end plates, telescope with a rectangular flange 15 which forms the duct outlet and to which the side strips or end plates of the housing unit may be secured by screws or the like (not shown). In the present instance, the other or outer margins 13b of the side strips diverge outwardly and laterally and the extreme edges are bent reversely to form beads 16 which abut against the room wall around the opening 10 therein.

Detachably mounted within the housing unit is an inner unit 17 which, in this instance, also comprises side strips 18 of a length substantially coextensive with the housing unit and connected

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by end plates 19. In the form shown, the inner unit has a top wall 20 which is apertured to receive screws 21 projecting downwardly from bars 22 spanning the inner edges of the side strips 13 of the housing. Thus, the inner unit may be secured to the housing by wing nuts 23 which are accessible from the interior of the inner unit to permit detachment and removal of the latter whenever desired. In the present instance, the crossbars are bent downwardly at their ends to form flanges 32 which are received in bosses 33 pressed out of bars 29 that extend along the inner margins 13a of the housing strips 13 and are secured to the latter as by welding. If desired, the flanges 32 may also be welded to the side strips 13a.

The side strips 18 of the inner unit are similar in shape to the outer strips 13 and are spaced inwardly therefrom so as to cooperate with the outer strips in forming air passages 24 through which air delivered through the duct may flow outwardly into the room in the form of two outwardly diverging ribbon-like streams. The inner marginal parts of the two passages 24 are defined by the strip margins 13a and 18a and thus are disposed parallel to each other while the outer parts formed by the outwardly flaring margins 13b and 18b diverge outwardly from points about midway between the inner and outer edges of the passages.

To enable the volume of air and the pattern of the distribution thereof into the room to be varied selectively, damper vanes 25 are arranged within the outlet and mounted in a novel manner not only to permit adjustment from the exterior of the outlet but also to facilitate installation or disassembly of the outlet. The vanes comprise flat rectangular plates of sheet metal only slightly narrower than the inlet portions of the air passages 24 and mounted on the side strips 13, through the intermediary of the bars 29 in this instance, of one of the outlet units to swing in the planes of the inner or parallel portions of the passages. Herein, each vane is nearly twice as long as the width of the parallel portions of the passages so that when disposed perpendicular to the room wall as shown in Fig. 2, one end portion projects outwardly to the junction of the parallel and flaring parts of the air passages 24 while the other end projects inwardly beyond the top wall 20 of the inner unit 17 and into the duct flange 15.

In the present instance, the vanes are supported solely from the inner margins 13a of the outer or housing unit to swing on axes which are perpendicular to these strips and disposed about

midway between the ends of the vanes. To this end, a lug **26** is bent at right angles to each vane at the center of the outer edge thereof and is apertured to receive a hollow pivot pin or rivet **27** by which the lug is clamped frictionally against a boss **28** on the bar **29**. The rivet projects through washers **30** of friction material and its end heads **31** are forced together under sufficient pressure to provide the desired amount of friction for holding the vane in any position or adjustment while at the same time permitting the vane to be turned back and forth by applying lateral pressure to its ends. The vane pivots are spaced apart along the bar **29** distances such as to enable the vanes to be swung through a quarter of a revolution as illustrated in Fig. 4, or through a greater angle if necessary. The vanes which are disposed adjacent the supporting crossbars **22** lie adjacent the edges of the bars when in closed position. Thus, complete closure of the air passages when desired is made possible simply by sizing the vanes properly and locating the vane supporting bars **29** in relation to the crossbars **22**.

It will be apparent that the vanes **25** and the bars **29** form a unit which may be assembled independently of the housing unit. The vanes are mounted in proper positions simply by fastening the bars **29** to the side strips **13a** of the housing. Since the vanes are supported solely from the housing unit and disconnected from the inner unit, it is possible to install the inner unit in the housing readily after installation of the housing unit in the room wall or to detach and remove the inner unit whenever it becomes desirable to have access to the interior of the outlet or the duct for cleaning or otherwise.

Mounting of the vanes **25** in the location described above is advantageous for several reasons. In the first place, it permits the use of vanes of substantial width in the direction of the air flow. With such vanes it is possible to gain better control over the air and thus utilize the vanes as deflecting elements as well as for controlling the volume of air. Thus, by setting the vanes at different angles as shown in Fig. 1, especially when a larger number of vanes are employed, it is possible to increase the widths of the ribbon-like bands of air discharged through the passages **24** and thus distribute the air over a greater length of the room or in any other desired pattern.

Secondly, the vanes in the final assembly, although well concealed within the outlet, are readily accessible for individual adjustment. This is effected by inserting a bar or tool through the outer part of the passage **24** and applying pressure to the end of the vane to swing the latter in the desired direction.

I claim as my invention:

1. An air distribution outlet having, in combination, a housing unit including laterally spaced outer walls parallel at one margin and outwardly flaring at the other margin, an inner unit disposed between said walls and having outer surfaces cooperating with said parallel margins to form narrow longitudinally elongated inlet passageways and with said flaring margins to form outwardly flaring outlet passages communicating with said inlet passageways, means secured to said housing unit and removably supporting said inner unit, bars secured to the inner sides of said parallel margins, damper vanes spaced along said inlet passageways and each pivotally mounted at one edge on one of said bars

to swing in the plane of the adjacent inlet passageway, and means for frictionally holding the individual vanes in their adjusted positions, said vanes being disconnected from said inner unit whereby to permit removal of the latter from the housing unit.

2. An air distribution outlet having, in combination, laterally spaced outer walls parallel at one margin, bars extending along and secured to said outer walls on the inner sides thereof, a cross member spanning said outer walls and supported thereby, a unit disposed between said walls and removably secured to and supported by said cross member, said unit having outer walls cooperating with said first mentioned walls to form narrow longitudinally elongated passages, and damper vanes spaced along said passages and said parallel wall margins each pivotally mounted on one of said bars to swing about axes extending transversely of said passages.

3. In an air distributing outlet, the combination of a housing comprising a pair of laterally spaced side walls and connecting end plates cooperating to form a generally rectangular air inlet, the inlet portions of said side walls being disposed parallel to each other while the remaining outlet portions of the walls flare outwardly away from each other beyond a bend at the junction of the two portions, means formed on the interior of said housing for removably supporting an inner unit for cooperation with said walls to form two laterally spaced passages communicating with said rectangular inlet at the longitudinal sides thereof and adapted for the flow of air from said inlet through said housing in separate ribbon-like streams that flare outwardly along the outlet portions of said walls, two bars respectively lying alongside and secured against the inner surfaces of said parallel side walls, a plurality of pivots on each of said bars spaced along the latter and defining axes paralleling each other and perpendicular to said air streams, and a plurality of damper vanes spaced along each of said bars and fulcrumed intermediate their ends on said pivots to lie alongside an inlet portion of said walls and swing in a plane parallel thereto to and from open positions in which one end of each vane projects beyond and is disposed adjacent said bend whereby each vane in all of its positions is accessible for adjustment from the outlet end of said housing and through the outwardly flaring part of the air stream.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
518,984	Zimmerman	May 1, 1894
520,495	Patchin	May 29, 1894
540,049	Gaitley	May 28, 1895
572,877	Dunlap	Dec. 8, 1896
1,931,263	McKnight	Oct. 17, 1933
2,010,322	Riddell	Aug. 6, 1935
2,109,071	Mautsch	Feb. 22, 1938
2,150,449	Madden	Mar. 14, 1939
2,197,614	Hall et al.	Apr. 16, 1940
2,224,312	O'Day	Dec. 10, 1940
2,236,865	Bailey et al.	Apr. 1, 1941
2,396,025	Seid	Mar. 5, 1946
2,403,291	Kurth	July 2, 1946

FOREIGN PATENTS

Number	Country	Date
222,343	Great Britain	Oct. 2, 1924