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M. L. DE HART ET AL
RECTANGULAR AIR DIFFUSERS

3,468,239

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2 Sheets-Sheet 1

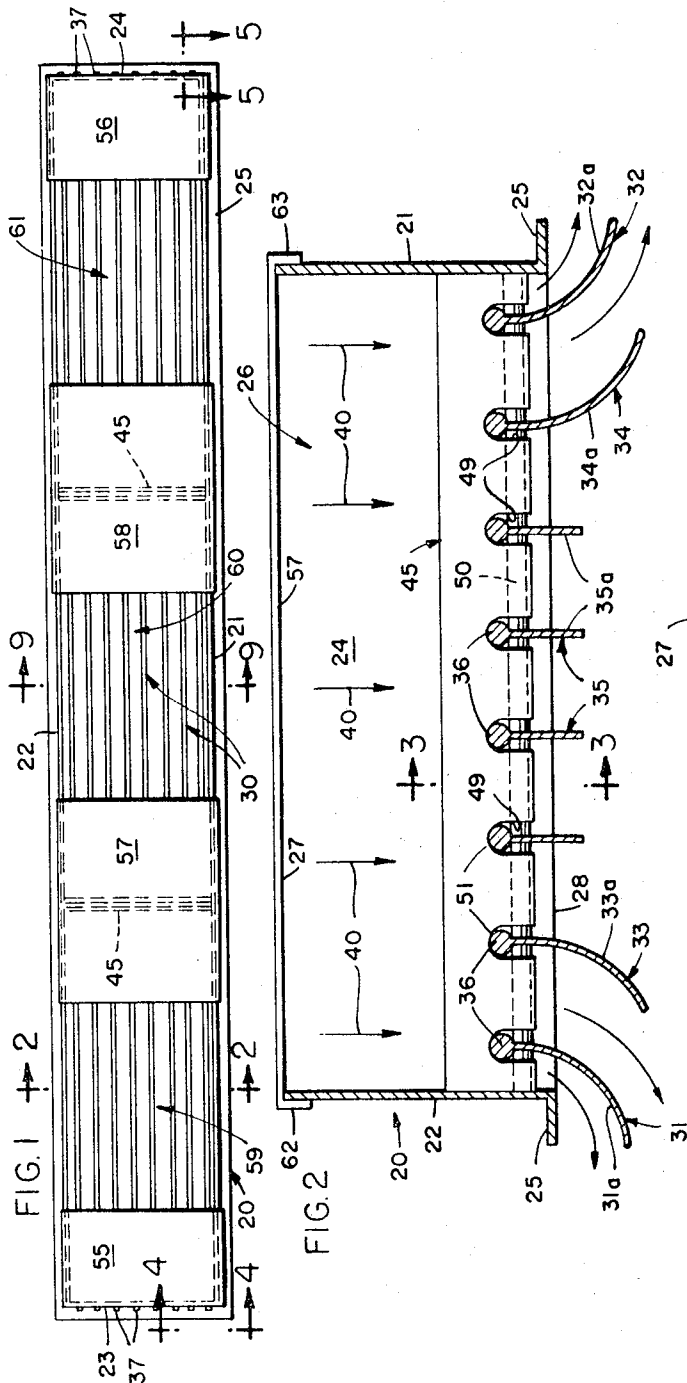
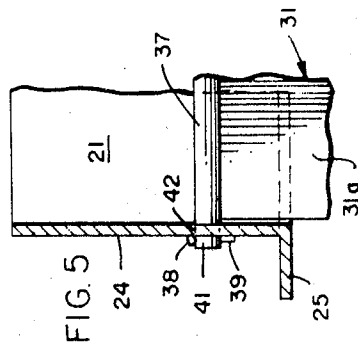
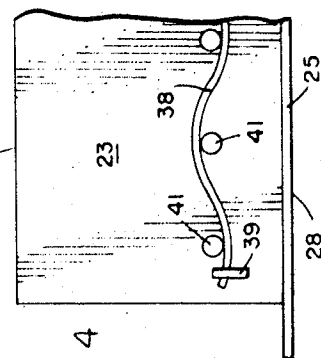
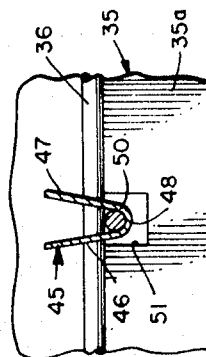


FIG. 4

FIG. 3



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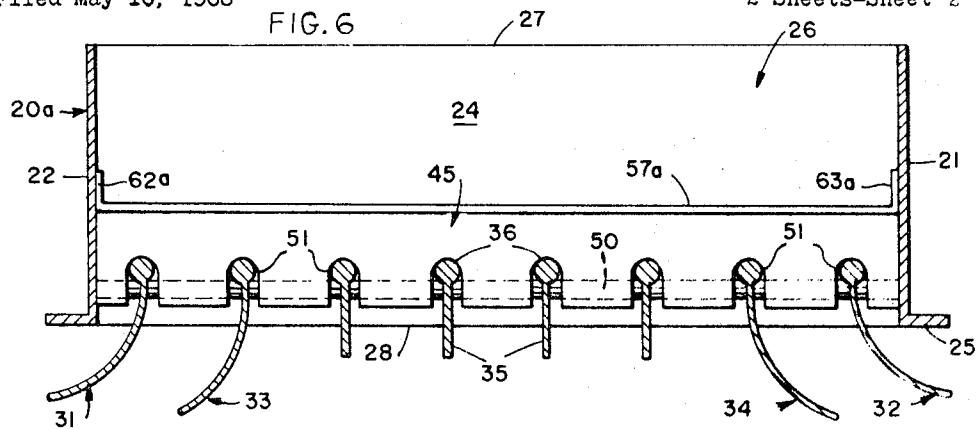
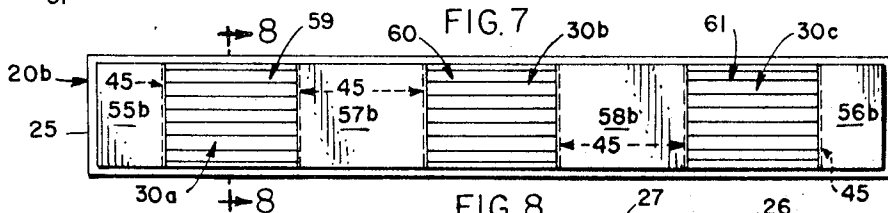
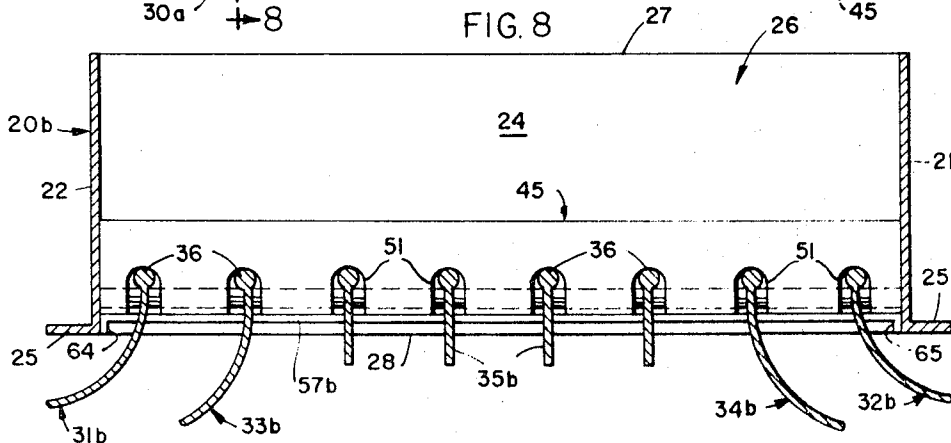
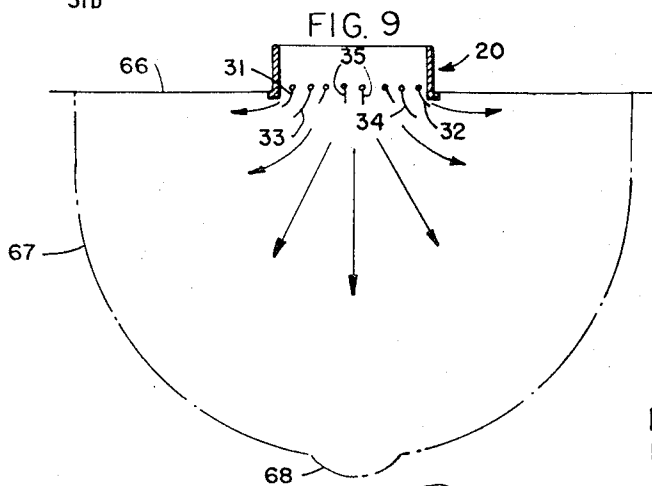
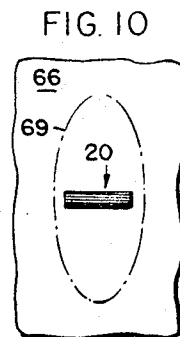
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RECTANGULAR AIR DIFFUSERS

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2 Sheets-Sheet 2



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RECTANGULAR AIR DIFFUSERS

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U.S. Cl. 98—40

17 Claims

ABSTRACT OF THE DISCLOSURE

Substantially rectangular, elongated air diffusers having substantially rectangular, elongated air passage, a plurality of pivotable vanes extending longitudinally along the discharge face of the passage, the outermost vane or vanes having laterally directed downstream edge portions, and blank off members extending across the passage at spaced intervals along the length thereof and upstream of the vanes, preferably across the rear face of the diffuser.

BACKGROUND OF INVENTION

This invention concerns improvements in substantially rectangular, elongated air diffusers and particularly concerns improvements in structures of such diffusers adapted to provide air discharge patterns wherein the isovels or isotachs of such air discharge patterns have a substantially hemi-ellipsoid shape. In such shape, the vertical sections through the isovel or isotach pattern parallel to the major axis of the hemi-ellipsoid is substantially semi-circular or semi-oval or semi-elliptical (cut across the major axis) and the vertical sections parallel to the minor axis are substantially semi-oval or semi-elliptical (cut across the minor axis).

Substantially rectangular, elongated air diffusers having a substantially rectangular, elongated air discharge passage pose considerable difficulties in obtaining an isovel or isotach pattern of the type aforescribed. The aforesaid patterns are attainable by the diffusers of the subject invention by employment of vanes extending longitudinally across the discharge face of the diffuser. At least one, and preferably two of said vanes contiguous to the front and rear walls of the diffuser (the longitudinal walls defining the rectangular, elongated air passage) are oriented, e.g., by transverse curvature thereof, to provide laterally directed downstream edge portions directing the discharged air stream portion contiguous to the front and rear walls in a substantially lateral path. Additionally the diffuser is provided in a plane upstream from or intersecting the vanes with a plurality of blank off members which function to blank off air flow through portions of the passage downstream of the blank off. Such blank off members divide the discharge face of the diffuser into active discharge sections alternating with inactive sections. The inactive sections provide areas downstream thereof, i.e., the space into which the air is discharged contiguous to the discharge face of the diffuser, wherein air from said space is aspirated into the air streams discharged from the active sections. The overall effect on the ultimate discharge pattern is to provide the hemi-ellipsoid isovel or isotach pattern before described.

BRIEF DESCRIPTION OF INVENTION

Briefly, the invention herein concerns rectangular, elongated air diffusers of the type aforescribed. It comprises longitudinal front and rear walls and shorter end walls extending between end portions thereof. These walls define a substantially rectangular, elongated air passage. In normal use, such diffusers are mounted in ceilings or like portions of rooms or other space to be

heated, cooled or ventilated by air discharge through the diffuser. In such orientation, the substantially rectangular, elongated dimension of the air passage is parallel to the ceiling of the room and the overall depth of said passage is relatively small.

The discharge face of the passage has a plurality of vanes extending longitudinally across the discharge face. In preferred forms of the invention, these vanes extend continually the entire length of the air passage, i.e., continually between respective end walls. It is within the contemplation of the invention, however, that the vanes be segmental in nature when the blank off members are located substantially in the plane of the discharge face of the passage whereby the segmental portions of the vanes constitute short vanes extending only across the active air discharge sections of the discharge face of the diffuser.

The aforesaid vanes are preferably pivotally mounted with substantially parallel pivot axes at the upstream portions of the vanes. At least one and preferably at least two of the vanes next adjacent to respective longitudinal front and rear walls have laterally directed downstream edge portions directing the discharge air stream portion contiguous to the front and rear walls into a substantially lateral path. A preferred form of such vanes are vanes having a transversely angulated or transversely curved shape providing laterally outwardly directed downstream portions of such vanes. The intermediate vanes, i.e., those vanes between the aforesaid transversely angulated or curved vanes, may be straight blade vanes, viz. vanes without transverse angulation or curvature.

The blank off members extend across the passage at spaced intervals along the length thereof. In a preferred form, these blank off members are substantially rectangular members. The intermediate blank off member or members have a longitudinal dimension at least substantially equal to the width of the passage and preferably at least somewhat greater than said width, i.e., a ratio in the order of at least 1.25:1. The term longitudinal as used herein refers to the direction of the longitudinal axis of the substantially rectangular air passage unless otherwise stated. The end blank off members have a longitudinal dimension which may be less than the width of the passage and may be in the order of 0.5-1 times the longitudinal dimension of the intermediate blank off member or members. Looking at the diffuser in top plan or bottom plan view, the blank off members divide the air passage into alternating blanked off segments and unobstructed air flow segments of approximately equal longitudinal dimension with the exception that the end blank off members may have a shorter dimension as aforescribed.

Alternately the blank off members, preferably in the same general shape and orientation as aforescribed, may extend across the substantially rectangular air discharge passage in a plane within the passage itself but upstream of the vanes. In such embodiment the vanes also extend the length of the diffuser. In still another embodiment, the blank off members in the shape and orientation substantially as aforescribed may be located substantially at the discharge face of the diffuser in a plane cutting through the vanes at said discharge face. In such embodiment, the vanes do not extend the length of the diffuser but rather are segmented sets of vanes extending only across the active sections.

The vanes which extend the entire length of the diffuser may be pivotally supported at their respective ends by conventional means, e.g., by pivot pin portions extending through the end walls. If desired, a conventional tensioning wire may be zigzagged across said pins to serve as a holding means for retaining the vanes in their desired orientation. It is within the contemplation of the in-

vention that such vanes be fixed vanes, but pivotal mounting thereof is preferred so that the vanes can be individually pivoted after installation of the diffuser to adjust the discharge pattern of the diffuser into the desired or preferred pattern for the particular space being heated, cooled or ventilated.

Where the longitudinal dimension of the diffuser is relatively great, e.g., in the order of 18 or 20 inches or more, intermediate pivot supports for the vanes are provided. A specific feature of the subject invention relates to such intermediate pivot supports, which comprise at least one or more U-strips extending transversely across the intermediate portion of the air passage. These U-strips are connected at respective ends thereof to the longitudinal front and rear walls and extend transversely across the downstream portion of the passage. The downstream bight portions of each U-strip have notches axially spaced therealong. These notches respectively receive the upstream portions of the vanes including the respective pivot axes of said vanes. The vanes have openings in the upstream portions thereof below the respective pivot axes, which openings are aligned with the U-strip. A rod or wire extends axially in the bight portion through the openings and below the pivot axes portion of each vane to support pivotally the intermediate portions of the vanes on the rod or wire. The rod or wire preferably has a transverse dimension sufficient to urge the upstream, pivot axis portion of each vane against the upper wall of respective notches to assist in holding each vane in its desired pivoted orientation and also to eliminate rattling which might otherwise be caused by vibration of the vanes from air flowing through the diffuser.

DESCRIPTION OF THE DRAWINGS

The invention will be further understood and appreciated from the following description of preferred embodiments of the invention, which embodiments are illustrated in the drawings, wherein:

FIG. 1 is a top plan view of a first preferred embodiment of the invention;

FIG. 2 is a vertical section taken on section plane 2—2 of FIG. 1;

FIG. 3 is a fragmentary, vertical section taken on section plane 3—3 of FIG. 2;

FIG. 4 is a fragmentary, end elevation of said embodiment as viewed from section plane 4—4 of FIG. 1;

FIG. 5 is a fragmentary, vertical section taken on section plane 5—5 of FIG. 1;

FIG. 6 is a vertical section taken on a section plane similar to the section plane of FIG. 2 of a second embodiment of the invention wherein the blank off members are in the horizontal plane within the air passage and upstream of the vanes;

FIG. 7 is a bottom plan view of a third embodiment of the invention wherein the blank off members are in a plane substantially at the discharge face of the diffuser;

FIG. 8 is a vertical section taken on section plane 8—8 of FIG. 7;

FIG. 9 is a diagrammatic view of the 75 f.p.m. isovel or isotach and the air discharge pattern of the diffuser embodiment of FIGS. 1—5; and

FIG. 10 is a diagrammatic view of the diffuser and a fragment of the ceiling in which said diffuser is mounted and showing the isovel or isotach pattern at the ceiling line.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, the embodiment of FIGS. 1—5 comprises a substantially rectangular, elongated air diffuser 20 composed of elongated, longitudinal front and rear walls 21 and 22 and shorter end walls 23 and 24 extending between the end portions of the front and rear walls. The front, downstream edges of said walls may have a peripheral flange 25 adapted to lie against portions of a ceiling surrounding an opening therein in which

the diffuser is mounted. The front, rear and side walls define an elongated, substantially rectangular air passage 26 extending from the upstream edge or portion 27 of the diffuser to the downstream edge or portion 28.

The diffuser has in its downstream portion a plurality of longitudinally extending vanes 30. These vanes comprise outer vanes 31—34 and intermediate vanes 35. These vanes may be made from rolled metal strips or from aluminum or like metal extrusions. They have along their longitudinal, upstream edge cylindrical beads 36 which function in the pivotal support of the vanes, as hereinafter described.

The outermost vanes 31 and 32, i.e., the vanes next adjacent the front and rear walls 21 and 22, have a transversely curved blade portion 31a and 32a. Alternatively said blade portions can be transversely angulated in lieu of transversely curved. The blade portions 31a and 32a extend outwardly from the discharge face 28 of the diffuser and are oriented in the diffuser so that the curved (or angulated) downstream portions thereof turn outwardly. They are preferably shaped substantially as shown in FIG. 2 so that the downstream edge portions of the blades 31a and 32a direct the discharge air stream portion contiguous to the front and rear walls into a substantially lateral path, e.g., a path substantially parallel to the ceiling in which the diffuser is mounted.

The next inwardly pair of vanes 33 and 34 preferably also have transversely curved or angulated blade portions 33a and 34a. Their downstream longitudinal edges are preferably in the same plane as or in a plane downstream of (as illustrated) the plane through the longitudinal downstream edges of the outermost vanes 31 and 32. The transverse curvature or angulation of the blades 33a and 34a may be substantially the same as the transverse curvature or angulation of blades 31a and 32a. If desired, however, the former blades may have less transverse curvature or angulation to give a less lateral throw to the portion of the air stream flowing between vane pairs 31 and 33 and 32 and 34. The blade portions 33a and 34a may, if desired, be straight blades in a less preferred form of the invention whereby they have the general shape of the blade portions 35a, hereinafter described and may be of the same or longer transverse dimension as blade portions 35a.

The remaining vanes, herein designated as the intermediate vanes, preferably comprise intermediate vanes 35 having straight blades without transverse curvature or angulation. As illustrated, the straight blades 35a preferably have a shorter transverse dimension than do the blades 31a—34a but this is not essential for purposes of the invention. They are normally oriented with the blades 35a substantially parallel to the direction of the air flow through the elongated, rectangular passage 26 (indicated by arrows 40) but they may be pivotally adjusted so that the blades 35a are tilted at an angle to said direction of air flow for purposes of decreasing the amount of downward throw of air from the mid portion of the diffuser.

Each of the blades 31 through 35 preferably is pivotally mounted in the diffuser. These vanes may be pivotally mounted in the end walls 23 and 24 by providing pivot pins 41 at respective ends thereof. These pivot pins, particularly in the case of extruded vanes, are extensions of the cylindrical bead 37 at respective ends of the vanes. The pins extend through round holes 42 in the side walls, which holes rotatably journal the ends of each respective vane. A conventional tension wire 38 may be zigzagged alternately above and below respective pins 41 on the outer face of the side walls 23 and 24. The tension wire 38 is drawn tightly and is secured in place by welds or clips 39 at opposite ends thereof whereby the tension wire 38 provides a frictional engagement with the pins 41 to assist in holding the vanes in the desired pivotally adjusted position. It is recommended for elongated diffusers of the type herein defined that the vanes

31 through 35 have additional pivot supports as spacings not more than in the order of 18 to 20 inches between supports. For this purpose, one or more U-strips 45 (two in the illustrated embodiment) extend transversely across the downstream portion of the passage 26. The U-strips 45 are fixedly secured at opposite ends to the front and rear walls 21 and 22. They appear in transverse cross section or end elevation in substantially the shape of a U having upstream vertical strips or legs 46 and 47 and a semi-circular, lower, downstream bight portion 48. The downstream bight portion and the downstream portions of the legs 46 and 47 are notched at longitudinal intervals corresponding to the spacing of vanes 31-35 to provide inverted U-shaped notches 51 in said portions as viewed in side elevation (FIG. 2). A rod or wire 50 extends substantially the full length of the U-strip 45 and is cradled in the bight portion 48 of the U-strip 45. Holes or openings 51 are provided in each vane in alignment with the U-strip or strips 45 and the rod or wire 50 to allow the latter to extend through the vanes below the bead 36 of each vane (FIG. 3). The holes or openings 51 are of sufficient size to permit the vanes 31 through 35 to be pivoted to the extent desired without binding against the rod or wire 50 or the bight portion 48. The rod or wire 50 has a transverse dimension, e.g., diameter, preferably sufficient to urge the upper or upstream sides of the beads 36 against the bases or bight portions of the inverted U-shaped notches 51. The combination as described thus provides additional pivotal supports for the vanes 31-35 wherein the beads 36 rest on the rod or wire 50 against the bight portions of instruction, wherein the bead portions 36 are pressed by the rod or wire 50 against the bight portions of inverted U-shaped notches 51, the combination further provides means in addition to tensioning wires 38 for holding the vanes in their pivotally adjusted positions. The latter arrangement is also advantageous in holding the intermediate portions of the vanes against vibration by air flowing through the diffuser, thereby eliminating a possible source of vibration noise.

The blank off members in the embodiment of FIGS. 1-5 are located on the upstream edge 27 of the diffuser. The blank off members preferably are substantially rectangular plates extending across the width of the diffuser and longitudinally spaced along the length thereof at regular spaced intervals. As illustrated in FIG. 1, the blank off members comprise rectangular, end blank off plates 55 and 56 and at least one (two in the illustrated embodiment) intermediate, rectangular blank off plates 57 and 58. The spaces between these blank off plates are the active sections 59, 60 and 61 of the diffuser, through which occurs substantially all of the air flow in the substantially rectangular, elongated passage 26. There is little spreading effect on the primary air streams through active sections 59-61 into the portions of the passage 26 downstream of the blank off plates 55-58. The blank off plates 55-58 preferably are tightly secured to the upstream portion of the diffuser to prevent rattle. Any suitable means may be used for this purpose such as the provision of longitudinal flanges or lips 62 and 63 which may be spot welded or otherwise secured to the upstream edges of the front and rear walls 21 and 22.

The longitudinal dimension of the intermediate blank off member or members, i.e., the dimension in the longitudinal direction of the diffuser 20, is at least equal to the width of the passage 26 (distance between front and rear walls 21 and 22) and preferably is somewhat longer than the width dimension. It has been found that a ratio of said longitudinal dimension to said width dimension of at least 1.25:1 is optimum. The end blank off members 55 and 56, on the other hand, need not have the same criteria for longitudinal dimension thereof, i.e., the dimension in the longitudinal direction of the diffuser 20. In the illustrated embodiment shown in FIG. 1, the end blank off plates 55 and 56 have a longitudinal dimension

of approximately one-half the longitudinal dimension of the intermediate blank off plates 57 and 58. It is desirable for purposes of the invention, however, to provide such end blank off plates and they should preferably have a minimum longitudinal dimension, as aforesaid, in the order of 2-4 inches.

In general the longitudinal dimensions of the blank off plates and the spacings therebetween defining the aforesaid active sections are preferably such that the longitudinal dimension of the intermediate blank off member or members and the spacing between blank off members defining the aforesaid active sections are approximately equal. The end blank off members, on the other hand, may have a longitudinal dimension equal to or less than the longitudinal dimension of the intermediate blank off member or members, preferably in the order of 1:0.5-1, respectively.

The embodiment of FIG. 6 is similar in most respects to the embodiment of FIGS. 1-5 and, where applicable, like numerals have been used to designate like parts. In top plane view the diffuser 20a of FIG. 6 would be substantially identical to the embodiment of FIG. 1. The primary difference between these embodiments is the position of the blank off members. In the embodiment of FIG. 6, the blank off members are located inside the air passage 26. Any location within this air passage and above the upstream portions of the vanes 31-35 is suitable. As illustrated, the two intermediate blank off plates, 57a of which is shown in FIG. 6, and the end blank off plates lie in a plane just above the U-strip 45. Their longitudinal dimensions and spacings therebetween are the same as illustrated in FIG. 1. The blank off plates such as 57a may have upturned lips or flanges 62a and 63a which can be spot welded to the front and rear walls 21 and 22 to securely fix these blank off plates in the aforesaid arrangement in the passage 26. The diffuser illustrated in FIG. 6 functions in substantially the same manner as does the diffuser of FIG. 1.

The third embodiment of the invention is illustrated in FIGS. 7 and 8. The diffuser 20b is similar in many respects to the diffuser 20 in the embodiment of FIGS. 1-5 and, where applicable, like numerals designate like parts. There are two major differences. First, the blank off members 55b through 58b, though dimensioned and positioned longitudinally in the diffuser similar to the blank off members 55 through 58 of the earlier embodiment, are positioned substantially in the plane of the discharge opening of the passage 26. The second major difference is that the vanes do not extend completely across the length of the diffuser but rather comprise short sets of vanes 30a-30c having a length substantially equal to the respective lengths of the active sections 59-61. The shapes and sizes of the vanes 31b-35b in transverse cross section or end elevation are substantially the same as the vanes 31-35. The rectangular plate blank offs 55b-58b may be fixedly attached substantially in the plane of the discharge opening in any suitable manner, e.g., by providing longitudinal, downwardly depending flanges or lips 64 and 65 which may be spot welded or otherwise fixedly attached to the front and rear walls 21 and 22.

The shorter vanes or vane sets 30a-30c are preferably pivotally mounted. Such pivotal mounting may be done by use of the aforescribed U-strips 45 positioned along each transverse edge of the blank off plates 55b through 58b as shown in FIG. 7. The end portion of each vane received in the respective U-shaped openings 51 may be a pin similar to the pin 41 shown in FIG. 5. Alternatively the blank off plates may be provided with upstanding flanges or lips along each corresponding transverse edge with holes or openings therein receiving pins like pin 41 in a fashion similar to the mounting of the ends of vanes 30 as illustrated particularly in FIG. 4. A tension wire like tension wire 38 may be used to hold the vanes in their pivotally adjusted position.

In an exemplary embodiment of the invention, an elongated, substantially rectangular diffuser of the type illustrated in FIGS. 1-5 has a length dimension of 48 inches and a width dimension of 6 inches for the air passage 26. The end blank off plates 56 have a longitudinal dimension (the dimension in the longitudinal direction of the diffuser) of 4 inches. The intermediate blank off plates 57 and 58 have a longitudinal dimension of 8 inches and the active sections 59-61, i.e., the distance between edges of blank off plates 55-58, have a longitudinal dimension of 8 inches.

FIGS. 9 and 10 illustrate isovel or isotach air discharge patterns of a diffuser corresponding substantially to the above exemplary embodiment. The isovel or isotach pattern illustrated in FIG. 9 represents by the broken line 67 the 75 f.p.m. isovel or isotach taken on a vertical section through the transverse mid plane 9-9 (FIG. 1) of the diffuser. This isovel or isotach is substantially semi-circular but its shape can be modified into the shape of a semi-oval cut along its major axis by turning vanes 35 outwardly toward respective sets of outer vane sets 31, 33 and 32, 34. The effect of such pivotal movement is to decrease the downward throw of the discharged air in the center or tip portion 68 and thereby flatten the substantially semi-circular isovel or isotach into an oval shape as afordescribed. The isovel or isotach in FIG. 9 resulted from a 160 c.f.m. air feed under isothermal conditions, under which conditions the substantially semi-circular 75 f.p.m. isovel or isotach pattern was attained by orientation of the vanes 31-35 as shown in FIG. 9.

Vertical sections of the isovel or isotach pattern taken on vertical planes on either longitudinal side and parallel to the section plane 9-9 will have a substantially semi-circular or semi-oval shape as afordescribed of smaller radii or length of major and minor axes in the case of the semi-ovals.

The latter will be more apparent from the semi-diagrammatic illustration of FIG. 10, which shows the 75 f.p.m. isovel or isotach 69 along the ceiling 66 in which the diffuser 20 is mounted. The isovel or isotach 69 has the shape of an elongated oval or ellipse with the major axis thereof substantially at right angles to the longitudinal dimension of the diffuser 20 and the minor axis thereof substantially coincident with the longitudinal axis of the diffuser 20. The minor axis of the oval or ellipse 69 is approximately equal to or slightly greater than the length of the air passage 26 of the diffuser 20.

It is thought that the invention and its numerous attendant advantages will be fully understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the forms herein disclosed being preferred embodiments for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A substantially, rectangular, elongated air diffuser comprising elongated, longitudinal front and rear walls and shorter end walls extending between end portions of said front and rear walls, said walls defining a substantially rectangular, elongated air passage, a plurality of vanes extending longitudinally of the discharge face of said passage in the downstream portion thereof, the respective vanes next adjacent said front and rear walls having outwardly laterally directed downstream edge portions directing the air discharge of the air stream portion flowing through said passage contiguous to said front and rear walls into a substantially lateral path, and a plurality of longitudinally spaced, blank off members extending across said passage at spaced intervals along the length thereof, the intermediate blank off member or members having a longitudinal dimension at least substantially equal to the width of said passage, said members blanking off air flow through portions of said passage downstream

of said blank off to divide the airstream at said discharge face into alternating active air discharge sections and inactive sections and thereby providing areas downstream of said inactive sections wherein air from the space into which the air is discharged is aspirated into the airstreams discharged from said active sections.

2. An air diffuser as claimed in claim 1 wherein said blank off members are substantially rectangular plates extending between said front and rear walls and comprising at least two end plates extending across respective ends of said passage and at least one intermediate plate extending across a longitudinally intermediate portion of said passage.

3. An air diffuser as claimed in claim 2, said intermediate plate or plates being positioned to provide spacing between said end and intermediate plates substantially equal to the longitudinal dimension of said intermediate plate or plates.

4. An air diffuser as claimed in claim 2 wherein said end plates have a longitudinal dimension about one-half of the longitudinal dimension of said intermediate plate or plates.

5. A diffuser as claimed in claim 2 wherein said diffuser has at least two intermediate plates of substantially equal size respectively spaced from each other and said end plates by distances substantially equal to said longitudinal dimensions of said intermediate plates.

6. An air diffuser as claimed in claim 2 wherein said vanes comprise at least two spaced vanes with transversely, laterally outwardly curved blades contiguous to each of said front and rear walls and a plurality of intermediate vanes with substantially straight blades between said curved vanes.

7. An air diffuser as claimed in claim 6 wherein the downstream edges of said transversely curved blades project beyond the discharge opening of said passage.

8. An air diffuser as claimed in claim 1 wherein said vanes comprise at least one vane next adjacent each of said front and rear walls with transversely, laterally outwardly curved blades and a plurality of intermediate vanes with substantially straight blades.

9. An air diffuser as claimed in claim 8 wherein the downstream edges of said transversely curved blades project beyond the discharge opening of said passage.

10. An air diffuser as claimed in claim 1, and means pivotally supporting said vanes.

11. An air diffuser as claimed in claim 10, wherein said means includes at least one fixed U-strip extending transversely across the downstream portion of said passage, said U-strip having notches axially spaced therealong in the downstream bight portion of said U-strip and respectively pivotally receiving therein the upstream portions of said vanes, said vanes having openings in the upstream portions thereof and aligned with the U-strip, and a rod or wire extending axially in said bight portion through said openings to support pivotally the intermediate portions of said vanes on said rod or wire.

12. An air diffuser as claimed in claim 1 wherein said blank off members are substantially rectangular plates extending across the upstream face of said passage.

13. An air diffuser as claimed in claim 1 wherein said blank off members are substantially rectangular plates extending within and across said passage upstream of said vanes.

14. An air diffuser as claimed in claim 1 wherein said blank off members are substantially rectangular plates extending across said passage substantially in the plane of the discharge opening thereof.

15. A diffuser as claimed in claim 14, wherein said vanes comprise individual sets of vanes of the approximate length of and extending longitudinally of each of said respective air discharge sections in said discharge face.

16. In an air diffuser having front, rear and end walls defining a substantially rectangular air passage, a plurality of vanes extending across the discharge face of said pas-

sage in the downstream portion thereof, the improvement comprising means pivotally mounting the upstream portions of said vanes for pivotal movement thereof about substantially parallel pivot axes, said means including at least one fixed U-strip extending transversely to said pivot axes across the downstream portion of said passage, said U-strip having notches axially spaced therealong in the downstream bight portion of said U-strip and respectively pivotally receiving therein the upstream portions of said vanes, and a rod or wire extending axially through said bight portion immediately downstream of said pivot axes to support pivotally the intermediate portions of said vanes on said rod or wire.

17. The improvement as claimed in claim 16 wherein said U-strip extends across an intermediate portion of said passage, said vanes having openings through the upstream

portions thereof and downstream of respective pivot axes and aligned with the bight portion of the U-strip, and said rod or wire extending axially of and cradled in said bight portion and extending through said openings.

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WILLIAM E. WAYNER, Primary Examiner

U.S. Cl. X.R.

49—74; 98—121

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,468,239 Dated September 23, 1969

Inventor(s) Marvin L. DeHart et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 4, "potrion" should read --portion--.

Column 5, lines 31-32, "the rod or wire 50 against the bight portions of instruction;" should read --the rod or wire 50. Additionnally, in the preferred construction,--.

Column 8, line 74, "subtsantially" should read --substantially--.

SIGNED AND
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APR 28 1970

(SEAL)

Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents