Sept. 22, 1953 N. R. EMERY ET AL 2,652,763

AIR DISTRIBUTION SYSTEM

Filed Oct. 28, 1949 2 Sheets-Sheet 1

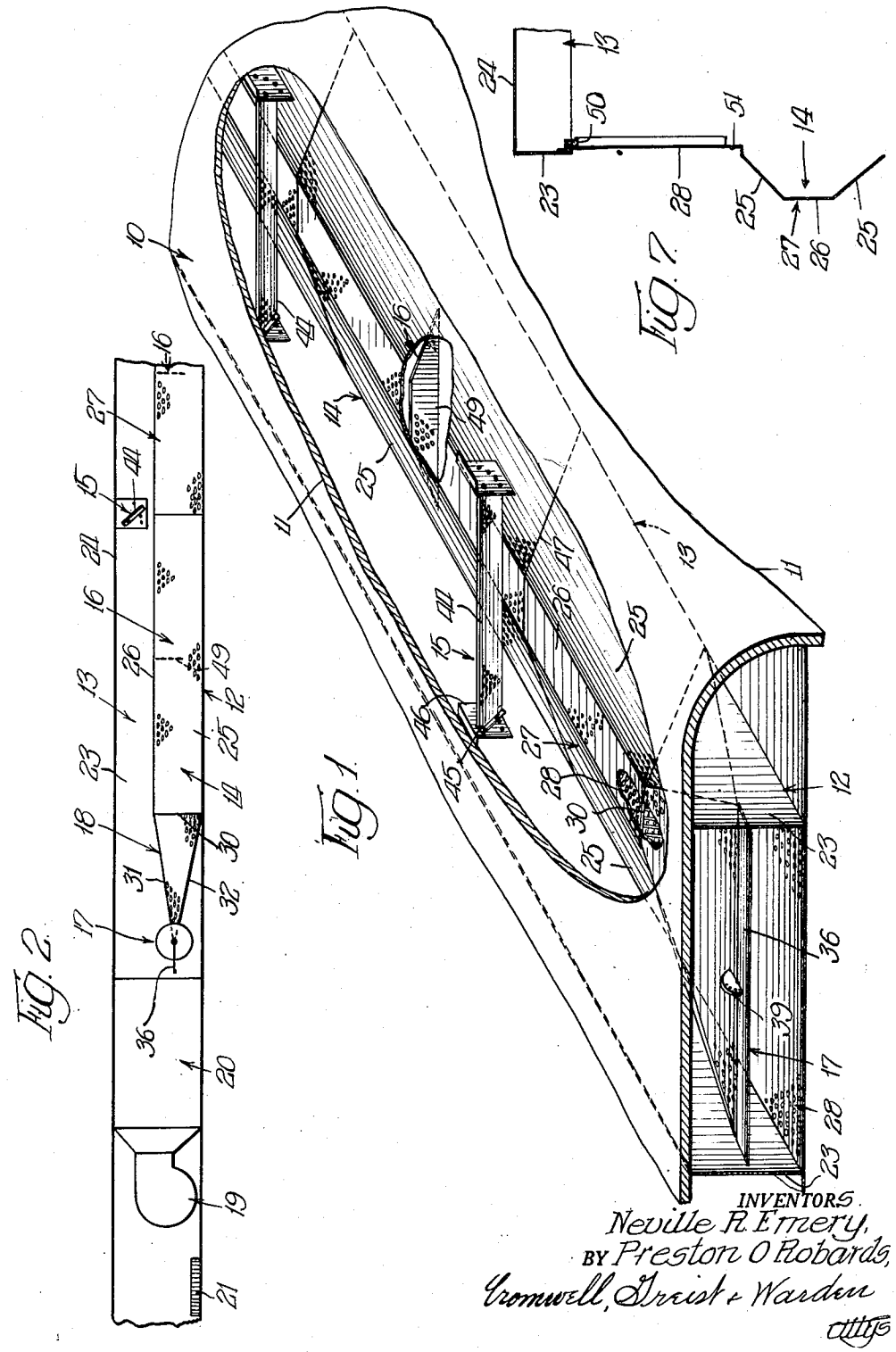


Fig. 1

Fig. 2

Fig. 7

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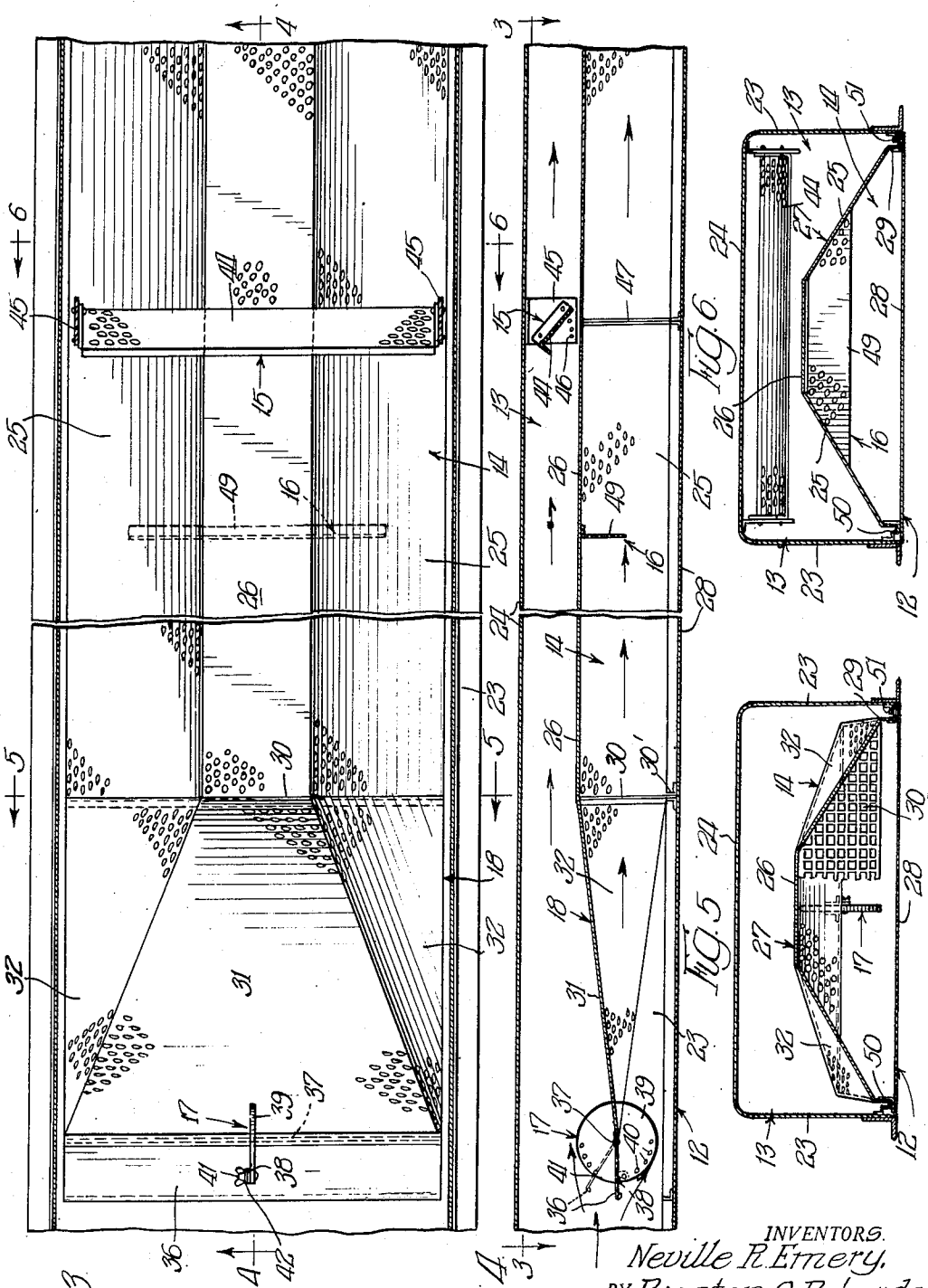


Fig. 3

Fig. 4

Fig. 6

Fig. 5

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AIR DISTRIBUTION SYSTEM

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11 Claims. (Cl. 98—10)

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The present invention relates to an improved system or apparatus for the draft-free distribution or circulation of air, embodied for illustrative purposes in a ventilating system for buses, railway coaches and related installations.

The construction according to the invention involves, in operation, the principle of a dual flow of air in double ducts to afford velocity distribution of the air to a space to be ventilated. In this regard the apparatus is generally similar to the underlying dual flow, double duct, velocity distribution principle of the ventilating system illustrated and described in the copending application of John A. Marquardt, Serial No. 44,742, filed August 17, 1948. This involves the use of a pair of elongated, parallel, adjacent ducts extending lengthwise of and usually above the space to be ventilated. Said ducts are mechanically separated from one another by a perforated panel or like construction of air-pervious material through which the air in one duct is adapted to issue into the other. The duct adjoining the space to be serviced is separated therefrom by a perforated panel or wall, to enable controlled issuance of air from that duct into the space. A blower or its equivalent supplies air under pressure to the end of both ducts, causing a stream of air to flow longitudinally of both of said ducts.

In operation, the air flowing in that one of the ducts which is remote from the space to be ventilated is caused to enter the other through the perforated air-pervious member referred to above, usually in the form of a multiplicity of small jets directed transversely of the direction of flow of the air in said other duct. This sets up a turbulence in the latter, with the result that the air flowing therealong and disturbed by the transverse jets is progressively and proportionately directed, in the lengthwise sense with reference to the direction of flow, through the perforations in its panel or wall adjoining the space to be ventilated. A uniformly distributed supply of air at low velocity to the space to be ventilated is assured, characterized by its draft-free nature and also by the constancy of temperature which can be maintained.

As stated, the present system operates on the same dual duct, double flow, velocity distribution principle, but the physical embodiment which is here presented features various structural refinements which have been found to materially increase the efficiency of the system, as well as its adaptability to various installations. These refinements touch on the control of the

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ratio of air volumes longitudinally traversing the respective ducts of the apparatus, the control of the lengthwise distribution of the turbulence-creating jets referred to above, and the control of the uniformity of ultimate issuance of the air to the space to be serviced. They also involve the improvement of the construction in a mechanical sense, particularly with regard to the ease of adjusting the same for different installations and the ease and speed of cleaning and servicing the apparatus from time to time.

Thus it is a general object of the invention to provide a dual flow, double duct, space ventilating or air circulating and distributing apparatus or system operating on the velocity distribution principle, in which improved means are provided to adjustably meter or proportion the air streams longitudinally traversing the respective ducts of said system, and in which provisions are made to control said streams for their intended purpose by partially deflecting the same in a transverse direction, the last named provisions being at least partially adjustable in nature, whereby to adapt the system to satisfy varying conditions or factors existing or likely to exist in any given installation, for example, the length or height thereof, maximum blower output, etc., and to improve its reliability and flexibility of operation.

A further object of the invention is to provide such a dual flow, double duct system which employs mechanical baffling provisions located in one or both of the ducts thereof to supplement and improve the inherent air baffling characteristic thereof, certain of which provisions are preferably adjustable for the purpose of improving the control of the air streams traversing the respective ducts, in particular by insuring desired local control of air deflection at any point along the length of one duct and uniformity of distribution of air issuing from the other, with reference to the length of the installation.

More specifically, it is an object of the invention to provide a ventilating apparatus or system of the sort referred to above, in which each of the longitudinally extending ducts is provided with transverse baffle provisions, of which those in the duct remote from the space to be ventilated adjustably control the deflection of part of the air traversing the same toward and into the other duct, thus insuring that adequate air shall be so deflected at all zones along the duct length in accordance with the particular requirements of those zones, in order to accomplish the desired jet-creating function and, in turn, the

desired ventilation of the space in question; and in which the baffle provisions in the other duct insure uniformity of distribution, in any given zone, of the air emanating to said space to be ventilated.

Generally, it is an object of the invention to provide an improved ventilating or air distributing system which is characterized by improved adjustable proportioning means to meter the relative volumes of air entering and traversing a pair of parallel, elongated, distinct but intercommunicating ducts; by means to insure proper control of the deflection of air traversing one duct toward and into the other, so as to satisfy local or zonal requirements for the desired ultimate distribution along the duct length; and by means to accomplish the issuance of air from said other duct to a space to be ventilated in a low velocity, draft-free manner.

A further object is to provide various mechanical or structural improvements in a system of the foregoing type which facilitate and expedite the adjustment, cleaning and servicing of the same.

The foregoing statements are indicative in a general way of the nature of the invention, but other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and operation of the device.

A single embodiment of the invention is presented herein for purpose of illustration, but it will be appreciated that the invention is susceptible of incorporation in other modified forms coming equally within the scope of the appended claims.

In the drawings,

Fig. 1 is a fragmentary perspective view of a more or less diagrammatic nature, being partially broken away, illustrating the general arrangement and relationship of parts of an installation of the air circulatory system of the invention, as applied in the ventilating of a standard railway coach;

Fig. 2 is a fragmentary schematic view in side elevation further illustrating the relationship of the component parts of the system;

Fig. 3 is a fragmentary top plan view, partially broken away, of the ventilator construction in the vehicular installation chosen for the purpose of illustration, being viewed from line 3—3 of Fig. 4;

Fig. 4 is a fragmentary view in central longitudinal, vertical section along the section line 4—4 of Fig. 3;

Figs. 5 and 6 are, respectively, views in transverse vertical section along lines corresponding to lines 5—5 and 6—6 of Fig. 3; and

Fig. 7 is a diagrammatic view in transverse vertical cross section, illustrating the manner in which the ducts of the system are exposed for convenient cleaning, adjustment and servicing.

Referring to the drawings, the reference numeral 10 generally designates a structure in which it is desired to install the ventilating or air circulatory system of the invention. This is represented for purpose of illustration, by a railway coach, the roof of which is designated by the reference numeral 11. The roof may, in some installations, serve as the top imperforate wall of the duct structure of the invention, which structure is generally indicated by the reference numeral 12.

Duct structure 12 is made up of the several basic components which are schematically illustrated in Fig. 2 in their operating relationship to one another. These are, generally considered: an elongated, perforated bottom, outer duct 13; an inner, perforated duct 14 housed within the duct 13; a plurality of transverse, adjustable control baffles 15 disposed in the outer duct above but in spaced relation to the inner duct; a plurality of fixed baffles 16 disposed in the inner duct 14, terminating above the bottom of the latter; an adjustable metering or proportioning device 17 located at the air entry side of the duct structure 12; and a transition or connecting unit 18 which extends between the proportioning device 17 and the main body of the inner duct 14, serving to insure the separation of the air streams which traverse ducts 13, 14 as they pass this intermediate zone.

The duct structure 12 is associated in receiving relation to a fan or blower 19 of appropriate size to supply a desired volume of air at a desired pressure and velocity. If desired, an air conditioning unit 20 may be interposed between the blower 19 and duct structure, through which unit the air is forced prior to entry into said structure. A continuous recirculation of air to the blower from the space to be ventilated, i. e., the coach interior, or at least a portion of the air which is not externally exhausted, is accomplished by standard recirculatory and duct provisions, illustrated simply in the present installation by the recirculatory grill 21.

Referring to Figs. 3, 4, 5 and 6, in conjunction with Fig. 1 showing the general layout, the outer duct 13 includes parallel, imperforate, vertical side walls 23 which, in the illustrated embodiment, are shown as being connected at their upper margins by a top wall 24. This wall is insulated appropriately against heat transfer with relation to the roof 11 of the coach to which the system is applied. Side walls 23 are likewise insulated properly in an actual installation. Duct 13 is preferably made up of a plurality of partial lengths or sections of sheet metal, which lengths are disposed in end-to-end relation, being almost, but not quite, in actual end-to-end engagement with one another.

As will be evident from an inspection of Figs. 5 and 6, the perforated bottom wall of the outer duct 13 is, in effect, constituted by the inner duct 14, in the illustrated embodiment. This inner duct is defined by a pair of upwardly convergent, perforated side walls 25 which are integrally joined at their top margins by a horizontal, transversely extending, perforated panel 26. These walls and panel are uniformly perforated throughout 5% of their entire area by round holes of uniform size which are spaced uniformly. However, no attempt has been made to reproduce exactly in the drawings the size of the holes in any of the perforated walls, panels or baffles of the system.

Said walls 25 and panel 26 thus provide a perforated bottom wall, generally of inverted V-shape, for the outer duct 13, which bottom wall is designated for convenience by the reference numeral 27. They at the same time serve as the top and side walls of the inner duct 14. This last named duct is completed by the horizontal, transversely extending bottom wall or panel 28, exposed to the space to be ventilated, which is perforated to the extent of 10% of its entire area by small, uniformly spaced, round holes of uniform size. Vertical extensions 29 of the inner duct walls 25 connect the same to the bottom panel 28.

If desired, a rigid grill 30 presenting ample

area of inlet openings may be disposed transversely of the inner duct 14 at the forward, air entry end thereof, for the purpose of controlling aspiration of the air entering the inner duct from the blower 19. This grill is marginally shaped in conformity with the trapezoidal outline of the inner duct unit, as illustrated in Fig. 5.

The transition unit 18, forwardly of said air entry end of the duct structure 12, is provided with a forwardly and downwardly inclined, perforated bridging panel 31 connecting the forward edge of horizontal inner duct panel 26 with the air proportioning device 17. This device is located just below the vertical mid point of the inner duct 14. Inclined, forwardly and laterally tapered, perforated side plates 32 of triangular shape extend outwardly from the sides of panel 31 and rearwardly to the duct side walls 25. They are, in effect, forward extensions of the inverted V-shaped, outer duct bottom wall 27 and serve to carry the inner and outer ducts 13, 14 forwardly to the proportioning device 17. They are perforated in the same way as the duct wall 27 and perform the same jet creating function in the intermediate, transition zone as the wall 27 performs rearwardly of that zone.

The proportioning device 17 includes a forwardly extending, imperforate blade 36 which is suitably pivoted by a transversely extending, horizontal hinge pin 37 to the forward edge of the panel 31. By adjusting the blade 36 upwardly or downwardly, as indicated in solid and dotted lines in Fig. 4, the ratio of the volumes of air entering the respective outer and inner ducts 13, 14 may be varied as desired. This control feature is of importance in the initial adjustment of the system in accordance with the length thereof, the blower output, or other particular or variable factors.

The blade 36 may be provided with a downturned locking ear 38 adapted to coact with a circular anchoring disk 39 which is fixedly mounted by a small angle bracket on the duct structure centrally of its sides. Disk 39 is provided with a plurality of circumferentially spaced holes 40 adapted to receive a screw and nut 41 for the purpose of clamping the ear 38 and blade 36 in a desired adjustment of the latter.

Rearwardly of the air entry end of the duct structure 12 the outer duct is provided with a plurality of the above identified, longitudinally spaced control baffles 15, the number and spacing thereof being determined in accordance with the length of the installation. These baffles are constituted by transversely disposed rectangular plates 44, which are perforated throughout approximately 5% of their entire area and are adjustably mounted for swinging adjustment on small brackets 45 which depend from the top wall 24 of the outer duct 13.

The baffle plates may be held in adjusted position by means of pins selectively engaging the same with the selective, circumferentially spaced holes 46 in said brackets 45. In the illustrated embodiment of the invention, the control baffles 15 are shown in approximate vertical alignment with the zone 47 at which the duct sections of the inner duct 14 are adjacent one another in the lengthwise sense. The number of baffles 15 is governed by the length of the installation and their purpose is to afford a local or zonal control, with reference to the length of the system, of the amounts of air which are jetted through the outer duct bottom wall 27. Under certain circumstances it is desirable to have a more pronounced jetting action at some zones than at others.

We find that the operating characteristics of the installation are pronouncedly better with the baffle plates 44 disposed in depending relation to the top of the upper duct 13, as compared with other arrangements of the upper duct baffles. In fact, acceptably successful operation of the system is attributable in substantial degree to this particular disposition of control baffle devices 15.

The inner duct 14 is provided with a plurality of the longitudinally spaced baffles 16, shown as being longitudinally staggered with relation to the baffles 15. Like baffles 15, the number of the baffles 16 depends primarily on the overall length of the installation. They are constituted by plates 49 which are trapezoidal in shape to correspond to the internal outline of the duct wall or paneling 27, and which are perforated to the extent of approximately 20% of their entire area. They extend downwardly into the inner duct 14 only partially of the vertical dimension of that duct and their purpose is to insure equal local distribution of the air which ultimately issues downwardly through the perforated bottom wall 28 of the inner duct.

In operation, air supplied by blower 19, heated or cooled by unit 20 if such conditioning is desired, is appropriately metered and directed to enter and traverse the inner and outer ducts 13, 14, respectively, in desired proportion. The air directed respectively above and below the blade 36, panel 31 and side plates 32 flows along the upper or outer duct 13 and the lower or inner duct 14.

A portion of the upper stream progressively passes through the perforations of the inverted V bottom wall 27 of the outer duct to enter the inner duct 14 in a direction normal to the direction of flow of air in said inner duct. This occurs normally both in the main duct structure 12 and in the transition zone immediately forward thereof. The adjustable perforated baffles 15 supplement in a positive manner this natural tendency of the flowing air to issue downwardly through the wall paneling 27, without imposing an undue restriction to the flow of air in the outer duct 13. In practice, these baffles are preferably positioned so that throughout the length of the duct structure small air jets of uniform size and low velocity are caused to issue into the inner duct transversely of the direction of air flow therein. However, adjustment of the baffle plates 44 enables the jetting action to be intensified or lessened at certain zones with reference to other zones in order to meet varying requirements of different installations.

These jets act as air baffles, as described in the Marquardt application identified above, to agitate and create a degree of turbulence in the longitudinal flow of air in the inner duct 14. This turbulence in turn tends to cause the lower stream of flowing air to issue downwardly through the perforations in the bottom wall 28 of the inner duct into the adjoining space to be ventilated, the depending, fixed baffles 16 in this duct to insure continuity and uniformity of distribution of air issuing from said bottom wall 28, in any given zone.

The foregoing system is simple and economical in its parts and, following initial setting or adjustment thereof, is operative to produce a uniform, balanced distribution of air in a draft-free manner, and with reliable temperature control throughout a space to be ventilated. Following

initial installation, subsequent servicing or adjustments are rarely called for, if at all.

A further feature of the invention, illustrated schematically in Fig. 7, concerns the mounting of the duct elements to enable convenient and easy access to the interior of the duct structure 12 for adjustment, cleaning or servicing. To this end, the bottom wall or panel 28 of the inner duct 14 is hinged at 50 to the lower margin of the left-hand side wall 23 of the outer duct 13, as particularly illustrated in Figs. 5 and 6 of the drawings. The wall paneling 27 of said outer duct is in turn hinged at 51 to the opposite right-hand margin of said inner duct bottom panel 28. The latter is maintained in operative horizontal position by any suitable releasable provisions, so that by releasing said provisions the bottom panel 28 and said duct wall paneling 27 may be successively pivoted about their respective hinges to drop the parts involved to the position illustrated in Fig. 7. The interior of the parts is then conveniently accessible to an attendant.

Those skilled in the art will perceive the possibility or desirability of further modifications or changes of the above described features, without departing from the principle of the invention. With this in mind, we desire that the invention be not limited in interpretaion beyond what is reasonably consistent with the appended claims.

We claim:

1. An air circulatory system comprising a pair of elongated ducts arranged in adjacent parallel relation to one another to extend along a space to which air is to be supplied, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space to be supplied, said panel defining a wall of the last named duct, a common air intake member to which the forward ends of said ducts open, a single source of air discharging to said common intake member and flowing longitudinally and unidirectionally through both of said ducts, said source, intake member and ducts being arranged in straight longitudinal alignment, a plurality of baffles in said first named duct spaced from one another longitudinally of the duct and disposed in transversely extending relation to said first named air-pervious element, said baffles acting to deflect air traversing the same toward and through said first named air-pervious element, whereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said last named air-pervious panel to said space to be supplied, and a plurality of further baffles in said other duct spaced longitudinally thereof and acting to equalize throughout the length of said system the distribution of air so issuing to said space.

2. An air circulatory system comprising a pair of elongated ducts arranged in adjacent parallel relation to one another to extend along a space to which air is to be supplied, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space to be supplied, said panel defining a wall of the last named duct, a common air intake member to which the forward ends of said ducts open, a single source of air discharging to said common intake member and flowing longitudinally and unidirectionally through both of said ducts, said source, intake member and ducts being arranged in straight longitudinal alignment, an adjustable proportioning device mounted adjacent the air entry end of said ducts to regulate the ratio of air volumes entering and traversing said respective ducts, a plurality of baffles in said first named duct spaced from one another longitudinally of the duct and disposed in transversely extending relation to said first named air-pervious element, said baffles acting to deflect air traversing the same toward and through said first named air-pervious element, whereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said last named air-pervious panel to said space to be supplied, and a plurality of further baffles in said other duct spaced longitudinally thereof and acting to equalize throughout the length of said system the distribution of air so issuing to said space.

3. An air circulatory system comprising a pair of elongated ducts arranged in adjacent parallel relation to one another to extend along a space to which air is to be supplied, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space to be supplied, said panel defining a wall of the last named duct, a common air intake member to which the forward ends of said ducts open, a single source of air discharging to said common intake member and flowing longitudinally and unidirectionally through both of said ducts, said source, intake member and ducts being arranged in straight longitudinal alignment, an adjustable proportioning device mounted adjacent and extending forwardly of the air entry end of said ducts in opposition to the direction of said flow, said device acting to regulate the ratio of air volumes entering and traversing said respective ducts, a plurality of baffles in said first named duct spaced from one another longitudinally of the duct and disposed in transversely extending relation to said first named air-pervious element, said baffles acting to deflect air traversing the same toward and through said first named air-pervious element, whereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said last named air-pervious panel to said space to be supplied, and a plurality of further baffles in said other duct spaced longitudinally thereof in longitudinally staggered relation to said first named baffles and acting to equalize throughout the length of said system the distribution of air so issuing to said space.

4. An air circulatory system comprising a pair of elongated ducts arranged in adjacent parallel relation to one another to extend along a space to which air is to be supplied, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space to be supplied, said panel defining a wall of the last named duct, a common air intake member to which the forward ends of said ducts open, a single source of air dis-

charging to said common intake member and flowing longitudinally through both of said ducts, said source, intake member and ducts being arranged in straight longitudinal alignment, an adjustable, blade-like proportioning device mounted medially of said ducts to extend forwardly of the air entry end of the same in opposition to the direction of said flow and adapted to regulate the ratio of air volumes entering and traversing said respective ducts, a plurality of longitudinally spaced baffles adjustably mounted in said first named duct in transversely extending relation to said first named air-pervious element, said baffles acting to deflect air traversing the same toward and through said first named air-pervious element, whereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said last named air-pervious panel to said space to be supplied, and a plurality of further baffles spaced longitudinally of one another in said other duct in transversely extending relation to said last named air-pervious panel, said further baffles acting to equalize throughout the length of said system the distribution of air so issuing to said space.

5. An air circulatory system comprising a pair of elongated ducts arranged in adjacent parallel relation to one another to extend along a space to which air is to be supplied, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space to be supplied, said panel defining a wall of the last named duct, a common air intake member to which the forward ends of said ducts open, a single source of air discharging to said common intake member and flowing longitudinally through both of said ducts, said source, intake member and ducts being arranged in straight longitudinal alignment, an adjustable, blade-like proportioning device mounted medially of said ducts to extend forwardly of the air entry end of the same in opposition to the direction of said flow and adapted to regulate the ratio of air volumes entering and traversing said respective ducts, a plurality of longitudinally spaced baffles adjustably mounted in said first named duct in transversely extending relation to said first named air-pervious element, said baffles being air-pervious and acting to deflect air traversing the same toward and through said first named air-pervious element, whereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said last named air-pervious panel to said space to be supplied, and a plurality of further air-pervious baffles spaced longitudinally of one another in said other duct in transversely extending relation to said last named air-pervious panel and in longitudinally staggered relation to said first named baffles, said further baffles acting to equalize throughout the length of said system the distribution of air so issuing to said space.

6. In an air distribution system, a single source of air, an elongated dual duct unit having a common forward intake duct portion connected to the discharge of said single air source, said unit including a side wall structure and a perforated panel extending transversely of said wall structure and adapted to be disposed adjacent a space to be supplied with air, a further perforated, transversely extending panel in said unit dividing the same into parallel, elongated, outer and inner ducts which communicate with one another through the last named panel, said last named panel comprising angularly related perforated members jointly of inverted V-shape said ducts opening forwardly to said common intake duct portion and said inner duct being adapted to communicate through the first named panel with said space to be supplied, and means to force air longitudinally and simultaneously through both of said ducts, whereby to cause agitation of the air flowing in said inner duct by jets of air from said outer duct, issuing through the inverted V-shaped panel.

7. In an air distribution system, a single source of air, an elongated dual duct unit having a common forward intake duct portion connected to the discharge of said single air source, said unit including a side wall structure and a perforated panel extending transversely of said wall structure and adapted to be disposed adjacent a space to be supplied with air, a further perforated, transversely extending panel in said unit dividing the same into parallel, elongated, outer and inner ducts which communicate with one another through said last named panel, said ducts opening forwardly to said common intake duct portion and said inner duct being adapted to communicate through said first named panel with said space to be supplied, and baffle means disposed in said respective ducts in transversely extending relation to said respective panels to direct air traversing the ducts toward said respective panels, the baffle means in said outer duct being adjustable for variable local control of air deflected thereby to pass through said further panel.

8. In an air distribution system, a single source of air, an elongated dual duct unit having a common forward intake duct portion connected to the discharge of said single air source, said unit including a side wall structure and a perforated panel extending transversely of said wall structure and adapted to be disposed adjacent a space to be supplied with air, a further perforated, transversely extending panel in said unit dividing the same into parallel, elongated, outer and inner ducts which communicate with one another through said last named panel, said ducts opening forwardly to said common intake duct portion and said inner duct being adapted to communicate through said first named panel with said space to be supplied, and baffle means disposed in said respective ducts in transversely extending relation to said respective panels to direct air traversing the ducts toward said respective panels, the baffle means in said outer duct being arranged adjacent and in downwardly depending relation to the upper surface of the latter.

9. In an air distribution system, a single source of air, an elongated dual duct unit having a common forward intake duct portion connected to the discharge of said single air source, said unit including a side wall structure and a perforated panel extending transversely of said wall structure and adapted to be disposed adjacent a space to be supplied with air, a further perforated, transversely extending panel in said unit dividing the same into parallel, elongated, outer and inner ducts which communicate with one another through said last named panel, said ducts opening forwardly to said common intake duct portion and said inner duct being adapted to communicate through said first named panel with said space to be supplied, and baffle means disposed in said respective ducts in transversely extending rela-

tion to said respective panels to direct air traversing the ducts toward said respective panels, the baffle means in said outer duct being arranged adjacent and in downwardly depending relation to the upper surface of the latter and being adjustable for variable local control of air impinging the same and deflected thereby through said further panel.

10. An air circulatory system comprising a common source to create a longitudinal flow of air, a common intake member connected to the discharge of said common flow creating source, a pair of straight elongated ducts arranged in adjacent, parallel relation to one another, and in longitudinal alignment with said common source and intake member, to extend along a space to which air is to be distributed, both ducts opening at their forward ends to and being supplied with air by said common intake means, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space, baffle means in said first named duct acting to deflect air longitudinally traversing the same in a transverse direction toward and through said air-pervious element, whereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said air-pervious panel to said space, and further baffle means in said other duct acting to equalize the distribution of air so issuing to said space.

11. An air circulatory system comprising a common source to a create a longitudinal flow of air, a common intake member connected to the discharge of said common flow creating source, a pair of straight elongated ducts arranged in adjacent parallel relation to one another, and in longitudinal alignment with said common source and intake member, to extend along a space to

which air is to be distributed, both ducts opening at their forward ends to and being supplied with air by said common intake means, one of said ducts comprising a transversely disposed, air-pervious element paralleling and communicating the same with the other duct, said other duct comprising a transversely disposed, air-pervious panel paralleling and communicating the same with said space, a proportioning device to control the ratio of air volumes traversing said respective ducts, baffle means in said first named duct acting to deflect air longitudinally traversing the same in a transverse direction toward and through said air-pervious element, thereby to agitate the air flowing in said other duct, said agitated air issuing from said other duct through said air-pervious panel to said space, and further baffle means in said other duct acting to equalize the distribution of air so issuing to said space.

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