Dec. 27, 1932. W. D. JORDAN 1,892,307

AIR CONDITIONING MECHANISM

Filed June 15, 1931 2 Sheets-Sheet 1

Fig. 1.

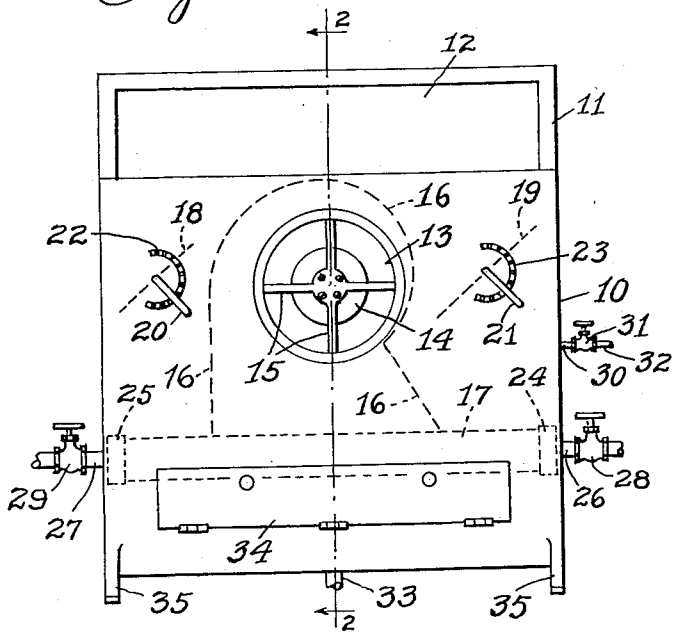


Fig. 2.

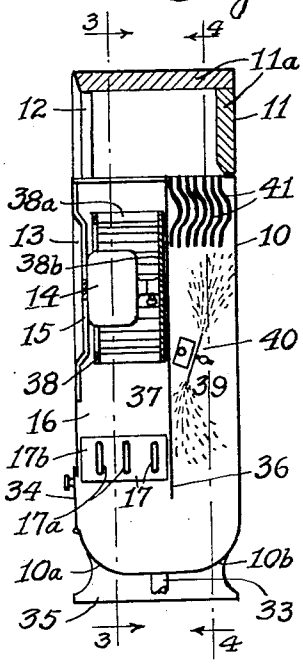


Fig. 3.

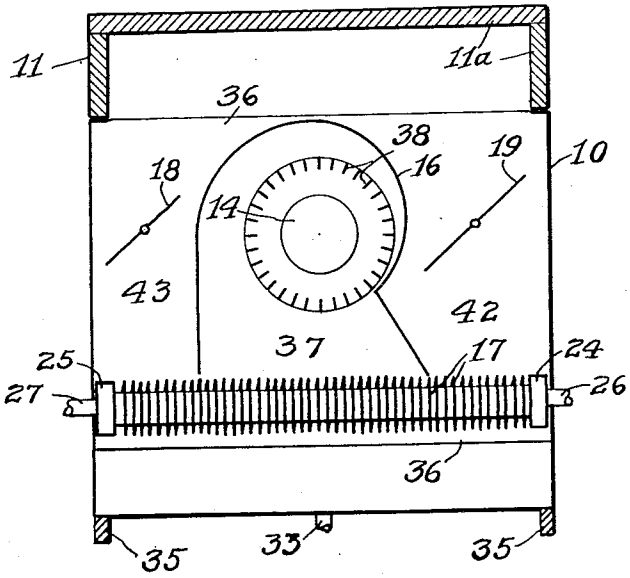
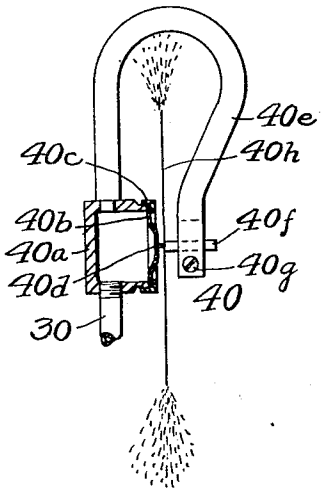


Fig. 5.



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Fig. 4.

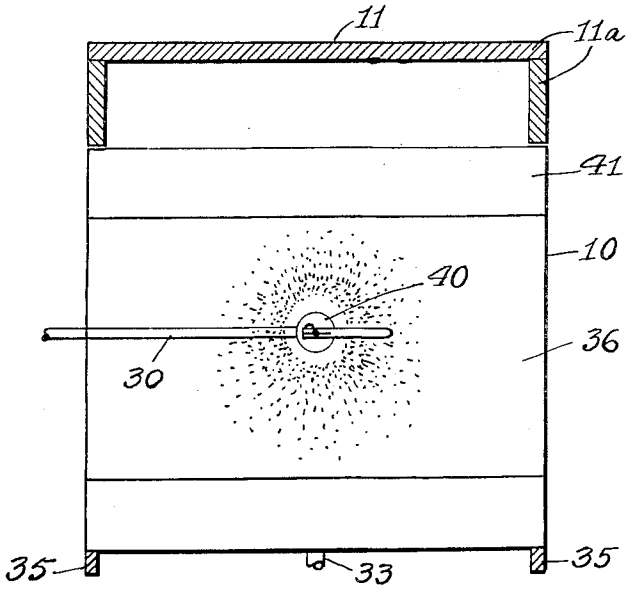
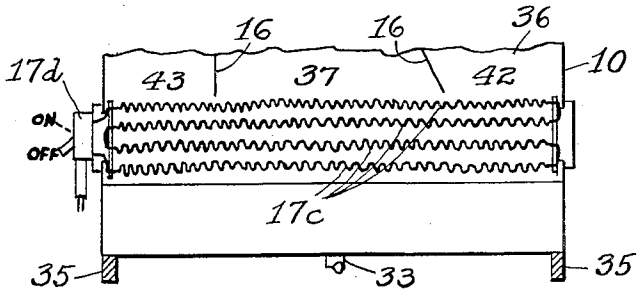


Fig. 6.



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UNITED STATES PATENT OFFICE

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AIR CONDITIONING MECHANISM

Application filed June 15, 1931. Serial No. 544,428.

My invention relates to an improved construction of air conditioning mechanism by which the mechanism may be so compact as to permit its use in rooms of moderate size, the mechanism at the same time providing for effectively washing and humidifying the air of the room in which the mechanism is located, and also, if desired, heating the air passing through the mechanism.

I am aware that mechanisms have been produced heretofore for washing and cleaning the air delivered into a room, and also if desired, heating the air passing through the mechanisms, but as far as I know, mechanisms for effectively performing these functions, have heretofore been restricted to large size installations, for example, where the mechanism is installed in the basement of a building to condition the air delivered to all of the rooms of the building.

By my invention, I provide a mechanism for conditioning air, of the console type, which is sufficiently compact so that the mechanism may be conveniently used in a room of average size in homes, without restricting appreciably the space available for the purposes for which the room is used. At the same time, by a novel arrangement of the mechanism, I provide an effective means for thoroughly washing air flowing through the mechanism and at the same time humidifying the air, together with means for tempering the humidified air so that the moisture content will be appreciably less than a saturated condition of the air, when the air is delivered from the mechanism into the room. These results I accomplish by means of a fan contained in the casing of the mechanism, which forces air through the mechanism through successive passageways, which may parallel each other, to provide the necessary length of air flow in the mechanism to accomplish the results referred to within the limits of the relatively small casing containing the mechanism, certain of the passageways for the air being arranged to by-pass the air around the washing and humidifying devices, so that the by-passed air may be mixed with the humidified air before the latter is discharged from the casing of the mechanism. By my mechanism I also provide for heating the air that is being conditioned by the mechanism, if it is desired to have the air delivered from the mechanism, in substantially warmer condition that the air taken into the mechanism.

The above and other features of my invention will best be understood by reference to the accompanying drawings, in which

Fig. 1 shows my air conditioning mechanism in front elevation,

Fig. 2 is a vertical, sectional view of the construction shown in Fig. 1 taken along the line 2—2,

Fig. 3 is a vertical, sectional view of the parts shown in Fig. 2 taken along the line 3—3,

Fig. 4 is a vertical, sectional view of the parts shown in Fig. 2 taken along the line 4—4,

Fig. 5 is a detail view of atomizing devices preferably employed in connection with my mechanism to wash and humidify the air passing through it, and

Fig. 6 shows in a view similar to Fig. 3, a modified form of heating element.

Similar numerals refer to similar parts throughout the several views.

As shown in Fig. 1, my mechanism consists of a casing 10, preferably of sheet metal, provided with a hood 11 resting on the top of the casing 10 and readily removable therefrom if desired, said hood being provided with an outlet opening 12 in its front wall, which occupies substantially the entire front side of the hood. The front wall of the casing 10, is provided with an admission opening 13 through which air to be conditioned is drawn from the room into the mechanism by a fan below described, said fan being operated by an electric motor 14, supported at its front end by a bracket 15 carried by the casing 10. The fan is surrounded by a housing or scroll 16 which delivers the air downwardly in one passageway of the mechanism against and through a heating element 17 from which the air may pass through the mechanism in several paths below described. The passageways outside of the scroll 16 are provided with dampers 18 and 19 mounted for opera-

tion by handles 20 and 21 respectively, said handles preferably engaging retaining segments 22 and 23 respectively, on the front of the casing 10, so that the dampers will stay in any adjustment given them. The heating element 17 illustrated in Figs. 1, 2 and 3 of the drawings, is of the type to be operated by steam or hot water, and is provided with headers 24 and 25 connected with pipes 26 and 27 respectively, which are preferably provided with valves 28 and 29 outside of the casing 10, to control the flow of heating fluid to and from the heating element 17. The mechanism is also provided with a pipe 30 extending from the atomizing devices of the mechanism through the casing 10, where it is connected with a valve 31 for controlling the flow of water from a supply pipe 32 as desired, to the atomizing devices, the pipe 32 being connected with any convenient source of water under pressure, not shown. The casing 10 is also provided with a drain pipe 33 for removing from the casing 10 any water that collects in it. An inspection door 34 is preferably provided in the lower part of the front wall of the casing, so that the interior of the lower portion of the casing may be inspected and cleaned. The casing 10 is preferably supported on feet 35, 35 as indicated.

As shown in Fig. 2, the casing 10 is provided with a vertical partition 36 between its front and back walls, which partition together with the scroll 16 forms a first passageway 37 extending from the fan 38 downwardly to and through the heating element 17; from the passageway 37, the air may flow around the lower edge of the partition 36, to a second passageway 39 between the partition 36 and the back wall of the casing 10, in which passageway 39, the air flows upwardly around and past the atomizing mechanism 40 and between eliminator plates 41 from which the air is delivered into the hood 11 and directed by said hood forwardly and outwardly through its discharge opening 12. The atomizing devices 40 serve to produce a fine mist or spray across substantially the entire passageway 39, so that the air flowing upwardly in said passageway is practically saturated with moisture, the plates 41 serving to engage any surplus moisture carried by the air, and collect it and drain it from the lower edges of said plates into the upper portion of the passageway 39. The lower portion of the casing 10 is provided with rounded corners 10*a* and 10*b* as indicated, to facilitate turning the moving air from the discharge end of the passageway 37 into the admission end of the passageway 39.

As shown in Fig. 2, the fan 38 consists of vanes 38*a* supported in cylindrical arrangement by an end disk 38*b*, which disk is mounted on the shaft of the motor 14, so that the greater part of the motor is contained within the vanes 38*a*, the outer diameter of the motor being sufficiently smaller than the internal diameter of the vanes 38*a*, to permit air entering the casing through the opening 13, to flow freely around the motor 14 for engagement by the vanes 38*a*. The fan 38 is of a centrifugal type, which projects the air engaged by the vanes 38*a*, outwardly against the inner surface of the scroll 16, the latter projecting the air downwardly in the passageway 37 to and through the heating element 17.

As shown in Fig. 2, the heating element 17 consists of a plurality of vertically disposed, flat tubes 17*a*, extending from side to side of the casing 10, through a plurality of closely spaced plates 17*b* of thin metal, having good heat conductivity for effectively communicating the heat of the heating element to the air flowing between the said plates.

As shown in Fig. 3, the scroll 16 terminates at its lower edges, to embrace the central portion of the upper part of the heating element 17, so that air forced downwardly in the passageway 37, is restricted to and flows through the central portion of the heating element. The air flowing downwardly through the heating element as described, as soon as it emerges from the lower portion of the heating element, may take any one of three paths of flow as follows: first, the path above traced around the lower edge of the partition 36 and upwardly in the passageway 39; second, without passing under the partition 36, upwardly through the right hand portion of the heating element 17 and into a passageway 42 in front of the partition 36 and to the right of the scroll 16, which passageway discharges the air flowing upwardly in it, into the hood 11 in front of the air entering the hood from the eliminator plates 41; and third, without passing under the partition 36, upwardly through the left hand portion of the heating element 17, into a passageway 43 in front of the partition 36 and to the left of the scroll 16, from which the air is delivered into the hood 11 in front of air entering the hood from the eliminator plates 41. The dampers 18 and 19 are provided in the passageways 43 and 42 respectively, to open and close said passageways as desired, and thus control the amount of air by-passed around the passageway 39, and therefore around the humidifying devices, to temper the air delivered from the eliminator plates 41 as desired, before discharging the mixed air in the hood 11, from its discharge opening 12.

As illustrated in Fig. 4, the eliminator plates 41 extend from one side of the casing 10 to the other, so that all of the air flowing upwardly in the passageway 39, must pass between said eliminator plates and in this manner, all coarse spray and surplus moisture is removed from the air passing between

said plates. As shown in Fig. 2, it will be noted that each of the eliminator plates is of curved cross section vertically, its lower edge portion being in a vertical plane substantially parallel with the partition 36, and its upper edge portion being in substantially the same plane, its midportion having a curved conformation consisting of two reversed curves, so that the direction of flow of air passing between any two adjacent ones of the plates 41, is changed gradually and constantly, said air being first deflected in one direction and then in another in its passage between said plates, which effectively brings the surplus moisture in the air, into engagement with the plates by the inertia of the moisture, and at the same time delivers the air from the plates in practically the same direction as it enters between them. Two important advantages result from the particular construction of eliminator plates described. First, the curved construction of the plates, provides for air flow between them with much less back pressure on the flowing air, than if the plates were provided with sharp angles, or abrupt changes of direction; second, with air conditioning mechanism of the kind described, it is of considerable importance to suppress as far as possible, all noise of operation of the mechanism, which in my construction is effectively accomplished as far as the noise of the atomizing mechanism is concerned, by the direction of delivery of the air from between the eliminator plates 41. The hood 11 is preferably provided with a lining of sound insulating material as shown at 11*a* and the path of discharge from the plates 41 is directly against the top layer of said insulating material, instead of being directed towards the discharge opening 12 of the hood 11. Any sound vibration that may be imparted to the air by the atomizing mechanism that finds its way through the eliminator plates 41, is thus absorbed by the sound insulating material 11*a*, instead of being carried by the air through the discharge opening 12 and projected into the room containing the air conditioning mechanism.

As shown in Fig. 4, the passageway containing the atomizing devices 40, is the full width of the casing 10, as a result of which air entering said passageway from the central portion of the heating element 17 and under the partition 36, spreads out in said passageway and has appreciably less velocity of flow, than it had when leaving the heating element 17. The atomizing device 40 fills practically all of the passageway 39 with fine mist or spray, and thus all of the air in said passageway is subjected to the washing action of the spray, and due to the relatively low velocity of the air, dust and dirt are effectively washed from it by the spray, and it absorbs enough moisture from the spray to thoroughly humidify it.

As shown in Fig. 5, the atomizing device 40 consists preferably of a casing 40*a*, cylindrical in form and provided with a thin disk of metal 40*b* closing its open end and held in place by a threaded ring 40*c* screwed onto the casing, said disk having a discharge orifice 40*d* in its central portion. The casing 40*a* has rigidly secured thereto a bent arm 40*e* supporting a rod 40*f* in line with the orifice 40*d*, the rod being preferably somewhat larger in diameter than the diameter of the orifice, and having a flat end closely adjacent the orifice. The pipe 30 supplies water under pressure to the interior of the casing 40*a*. The rod 40*f* is held in desired adjustment by a clamping screw 40*g*. As a result of this construction, the water projected forcibly through the orifice 40*d*, strikes the flat end of the rod 40*f*, and is forced outwardly in substantially the plane of the flat end of the rod 40*f*, in the form of a thin film of water as illustrated at 40*h*, held together only by the surface tension of the water. At the edge of the film 40*h*, the film becomes so thin that the surface tension of the water is no longer able to hold it in the form of a film, and the film breaks up into a spray of very minute particles, which float throughout practically the entire extent of the passageway 39.

It will be understood that the heating element 17 above described is illustrative of any means that may be used for heating the air flowing from the first passageway into one or more of the other passageways as described.

In Fig. 6, I illustrate a modified form of heating element consisting of resistance wires 17*e* extending across the lower portions of the passageways 37, 42 and 43, through which the air may flow in the manner above described and be heated by the heat of said resistance wire, when electric current flows through it. The resistance wire referred to is, it will be understood, illustrative of any equivalent electrical heating element, the terminals of which may be connected with a switch 17*d* and suitable source of current not shown, for causing current flow through the heating element, or not, as desired.

When it is desired to use the mechanism described as a washing and humidifying mechanism, without heating the air flowing through the mechanism, the valves 28 and 29 are closed, for the construction of heating element illustrated in Figs. 1, 2 and 3, or the switch 17*d* is moved to its open circuit position for the type of heating element illustrated in Fig. 6. This results in air flow from the passageway 37 to the passageways 39, 42 and 43, without heating the air, the result being substantially the same as though the heating element were not present in the mechanism. It will be observed that the atomizing, humidifying, air by-passing and tempering operations, are substantially the same whether the air is heated or not, the

principal difference being that the heated air will absorb more moisture from the spray than it will if it is not heated, and that heating the air may serve to heat the air of the room in which the mechanism is located. It will also be observed that the eliminator plates 41 function in the same manner, whether the air delivered to the passageway 39 is heated or not.

It will be understood that any desired form of atomizing devices may be used in connection with my air conditioning mechanism, the form described being illustrative and showing a form found to be very effective. It will also be understood that other liquid than water may be atomized as described, for example, for disinfecting purposes.

From the above, it will be observed that I have provided by my invention, a construction of mechanism for conditioning air, that is compact and yet provides for heating the air if desired, and whether the air is heated or not, for thoroughly washing and humidifying the air passing through the mechanism, without the possibility of surplus moisture being discharged from the mechanism, and with the certainty that the air delivered from the mechanism, will be tempered by mixture with unmoistening air to a desired degree; also that the results referred to are accomplished with a relatively small casing for the mechanism, with a minimum of noise and with substantially complete suppression of any noise of atomization of the water. I find the particular type of atomizing devices described, is quiet in operation with practically complete elimination of the high pitched hissing sound commonly heard in connection with atomizing mechanism.

While I have shown my invention in the particular embodiment above described, it will be understood that I do not limit myself to this exact construction as I may employ equivalents known to the art at the time of the filing of this application without departing from the scope of the appended claims.

What I claim is:

1. In a mechanism for conditioning air, the combination of a casing having an air admission opening in the upper portion of its front wall, a partition wall in said casing, a rotary fan in said casing adjacent said opening for drawing air into said casing through said opening, a housing around said fan in front of said partition wall directing air delivered from said fan downwardly, a heating element between said partition wall and the front wall of the casing and extending from side to side of said casing, said heating element being above the bottom of said casing, said housing being narrower than the width of said casing and leaving a side passageway on each side of said housing, said partition wall having its lower edge above the bottom of the casing, water atomizing means back of said partition wall, eliminator plates back of said partition wall and above said atomizing means, and a hood forming a mixing compartment for air delivered to it from said plates and said side passageways and having a discharge opening in its front wall, whereby air discharged downwardly from said housing through said heating element, may pass in part adjacent said atomizing means and between said eliminator plates into said hood, and in part upwardly in said side passageways and into said hood and the moistened air mixed with the unmoistened air is delivered from the hood into the room containing the mechanism.

2. In a mechanism for conditioning air, the combination of a casing having an air admission opening in the upper portion of its front wall, a partition wall in said casing, a rotary fan in said casing adjacent said opening for drawing air into said casing through said opening, a housing around said fan in front of said partition wall directing air delivered from said fan downwardly, a heating element between said partition wall and the front wall of the casing and extending from side to side of said casing, said heating element being above the bottom of said casing, said housing being narrower than the width of said casing and leaving a side passageway on each side of said housing, said partition wall having its lower edge above the bottom of the casing, water atomizing means back of said partition wall, eliminator plates back of said partition wall and above said atomizing means, a hood forming a mixing compartment for air delivered to it from said plates and said side passageways and having a discharge opening in its front wall, whereby air discharged downwardly from said housing through said heating element, may pass in part adjacent said atomizing means and between said plates into said hood, and in part upwardly in said side passageways and into said hood, and the moistened air mixed with the unmoistened air is delivered from the hood into the room containing the mechanism, and a motor mounted within said fan to support and drive it.

3. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said passageways, and a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into

said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism.

4. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said passageways, a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism, and a heating element extending across the discharge end of said first passageway.

5. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said passageways, a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism, and a heating element extending across the discharge end of said first passageway and also across the admission end of said third passageway.

6. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said passageways, a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism, and eliminator plates extending across the discharge end portion of said second passageway.

7. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said passageways, a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism, and eliminator plates extending across the discharge end portion of said second passageway, said plates being in substantially parallel relation and having their upper and lower edge portions in substantially vertical planes and their mid-portions bent from the planes of their said edge portions with reverse curves.

8. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said passageways, and a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism, said second and said third passageways opening into said hood towards the closed portion thereof.

9. In a mechanism for conditioning air, the combination of a casing containing three vertically extending passageways, a first one of said passageways having an air inlet opening at its upper end and otherwise closed at its upper end, the others of said passageways being open at their upper ends and all of said passageways being open and connected at their lower ends, a fan in said first passageway for moving air downwardly therein, water atomizing means in the second of said pas-

sageways, and a hood on said casing receiving air from said second and third passageways, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways, and is then mixed in said hood and delivered therefrom into the room containing said mechanism, said second and said third passageways opening in substantially parallel directions into said hood and towards a closed wall thereof.

10. In a mechanism for conditioning air, the combination of a casing having air passageways, a first one of said passageways having an admission opening for air to be conditioned, a fan in said first passageway, and atomizing means in a second of said passageways, the discharge end of said first passageway being connected with the admission end of said second passageway, said second passageway having a discharge opening for conditioned air, said casing containing a third passageway from the discharge end of said first passageway by-passing said second passageway and having a discharge opening adjacent the discharge opening of said second passageway.

11. In a mechanism for conditioning air, the combination of a casing having air passageways, a first one of said passageways having an admission opening for air to be conditioned, a fan in said first passageway, atomizing means in a second of said passageways, the discharge end of said first passageway being connected with the admission end of said second passageway, said second passageway having a discharge opening for conditioned air, said casing containing a third passageway from the discharge end of said first passageway by-passing said second passageway and having a discharge opening adjacent the discharge opening of said second passageway, and eliminator plates extending across the discharge portion of said second passageway.

12. In a mechanism for conditioning air, the combination of a casing having air passageways, a first one of said passageways having an admission opening for air to be conditioned, a fan in said first passageway, atomizing means in the second of said passageways, the discharge end of said first passageway being connected with the admission end of said second passageway, said second passageway having a discharge opening for conditioned air, said casing containing a third passageway from the discharge end of said first passageway by-passing said second passageway and having a discharge opening adjacent the discharge opening of said second passageway, and eliminator plates extending across the discharge portion of said second passageway, said plates being in substantially parallel relation and having their edge portions in planes extending substantially in the direction of said second passageway and their mid-portions bent from the planes of their edge portions with reverse curves.

13. In a mechanism for conditioning air, the combination of a casing having air passageways extending in different directions, a first one of said passageways having an admission opening for air to be conditioned, a fan in said first passageway, atomizing means in the second of said passageways, the discharge end of said first passageway being connected with change of direction with the admission end of said second passageway, said second passageway having a discharge opening for conditioned air, the different direction of said first passageway from said second passageway protecting said fan from spray projected by said atomizing means into said second passageway, and eliminator plates extending across the discharge portion of said second passageway, said plates being in substantially parallel relation and having their edge portions in planes extending substantially in the direction of said second passageway and their mid-portions bent from the planes of their edge portions with reverse curves.

14. In a mechanism for conditioning air, the combination of a casing having air passageways, a first one of said passageways having an admission opening for air to be conditioned, a fan in said first passageway, atomizing means in a second of said passageways, the discharge end of said first passageway being connected with the admission end of said second passageway, said second passageway having a discharge opening for conditioned air, said casing containing a third passageway from the discharge end of said first passageway by-passing said second passageway and having a discharge opening adjacent the discharge opening of said second passageway, and a heating element extending across the discharge end of said first passageway.

15. In a mechanism for conditioning air, the combination of a casing having air passageways, a first one of said passageways having an admission opening for air to be conditioned, a fan in said first passageway, atomizing means in a second of said passageways, the discharge end of said first passageway being connected with the admission end of said second passageway, said second passageway having a discharge opening for conditioned air, said casing containing a third passageway from the discharge end of said first passageway by-passing said second passageway and having a discharge opening adjacent the discharge opening of said second passageway, and a heating element extending across the discharge end of said first passageway and also across the admission end of said third passageway.

16. In a mechanism for conditioning air, the combination of a casing containing substantially parallel passageways, a first one of said passageways having an air inlet open-

ing at one of its ends and otherwise closed at said one end and open at its other end, a fan in said first passageway for moving air therein towards the other end thereof, atomizing means in a second of said passageways, said second passageway being open at each of its ends, a third of said passageways by-passing said atomizing means and open at each of its ends, the said other end of said first passageway being in open communication with one end of each of said second and said third passageways, and a hood on said casing, the other end of each of said second and said third passageways opening into said hood, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways and is then mixed in said hood and delivered therefrom into the room containing said mechanism.

17. In a mechanism for conditioning air, the combination of a casing containing substantially parallel passageways, a first one of said passageways having an air inlet opening at one of its ends and otherwise closed at said one end and open at its other end, a fan in said first passageway for moving air therein towards the other end thereof, atomizing means in a second of said passageways, said second passageway being open at each of its ends, a third of said passageways by-passing said atomizing means and open at each of its ends, the said other end of said first passageway being in open communication with one end of each of said second and said third passageways, a hood on said casing, the other end of each of said second and said third passageways opening into said hood, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways and is then mixed in said hood and delivered therefrom into the room containing said mechanism, and a heating element extending across the discharge end of said first passageway and also cross the admission end of said third passageway.

18. In a mechanism for conditioning air, the combination of a casing containing substantially parallel passageways, a first one of said passageways having an air inlet opening at one of its ends and otherwise closed at said one end and open at its other end, a fan in said first passageway for moving air therein towards the other end thereof, atomizing means in a second of said passageways, said second passageway being open at each of its ends, a third of said passageways by-passing said atomizing means and open at each of its ends, the said other end of said first passageway being in open communication with one end of each of said second and said third passageways, a hood on said casing, the other end of each of said second and said third passageways opening into said hood, said hood having a discharge opening through one of its walls, whereby air delivered from said first passageway passes into said second and third passageways and is then mixed in said hood and delivered therefrom into the room containing said mechanism, and eliminator plates extending across the discharge end portion of said second passageway, said plates being in substantially parallel relation and having their edge portions in planes extending longitudinally of said second passageway and their mid-portions bent from the planes of their said edge portions with reverse curves.

In witness whereof, I hereunto subscribe my name this 12th day of June, A. D. 1931.

WAYNE D. JORDAN.