

March 16, 1937.

A. J. GREENE

2,074,178

DISPLAY STAND

Filed April 21, 1936

3 Sheets-Sheet 1

Fig. 1.

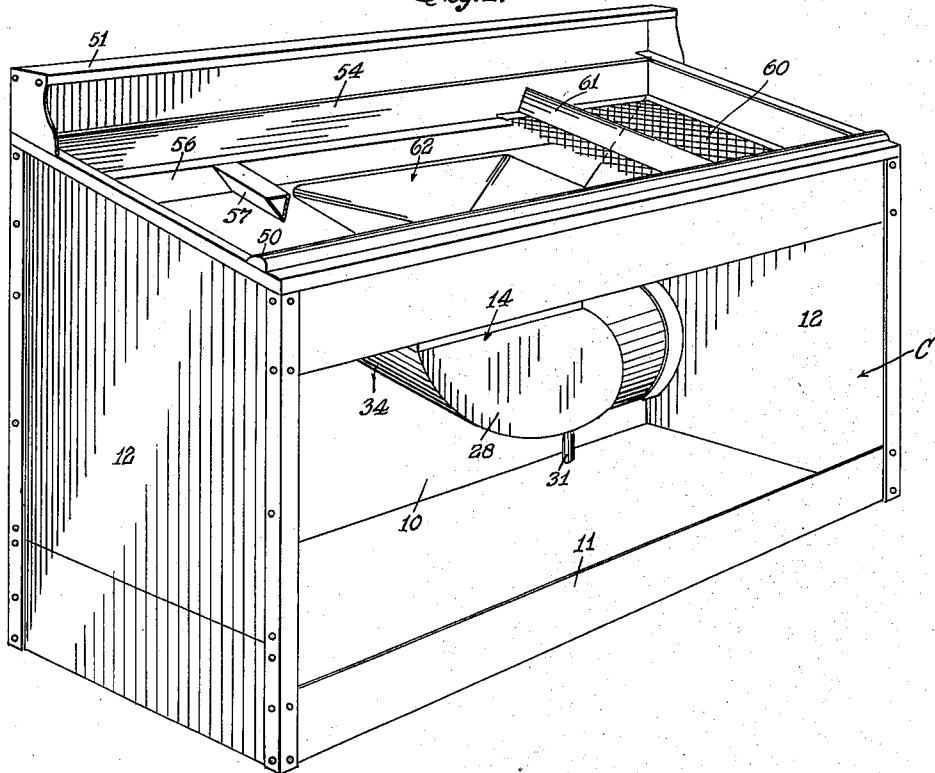
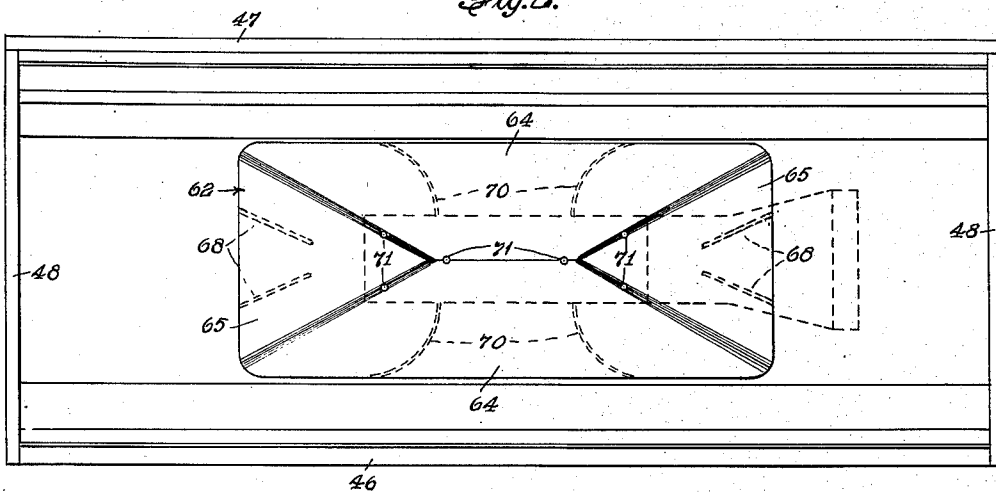


Fig. 2.



INVENTOR.
Albert J. Greene
BY William, Rick & Moore
Law ATTORNEYS

March 16, 1937.

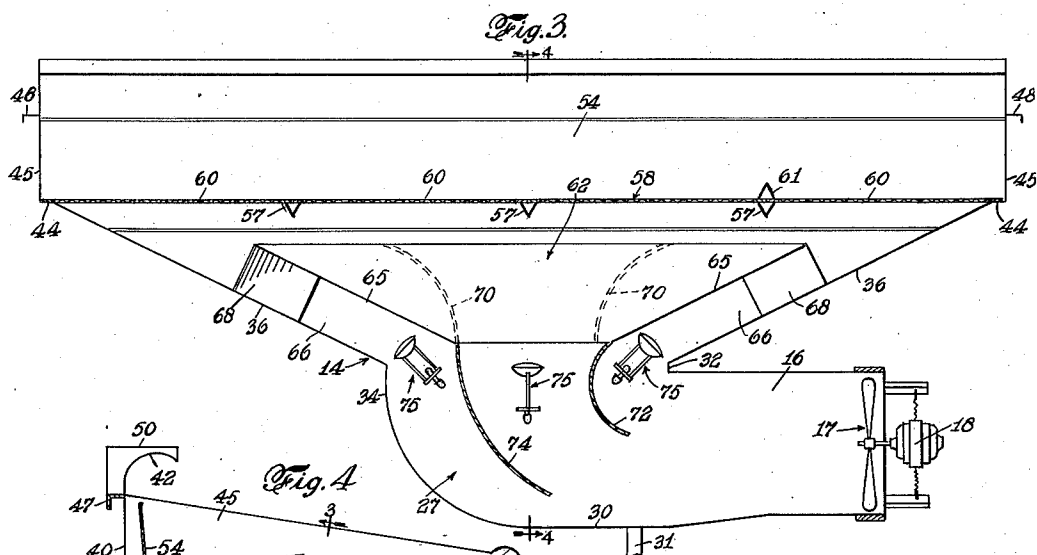
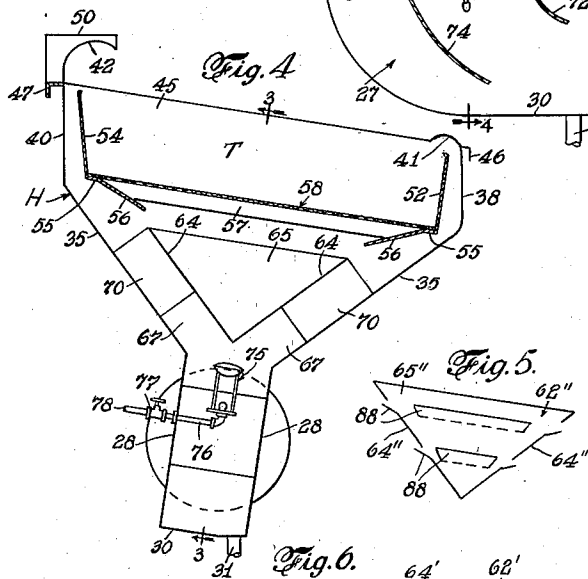
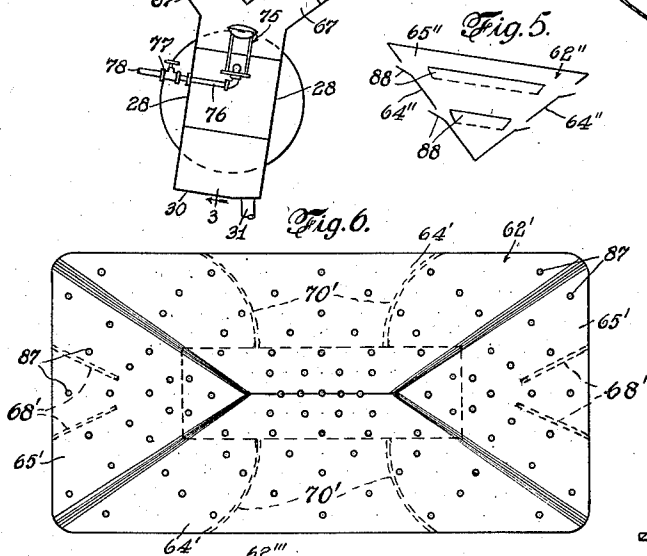
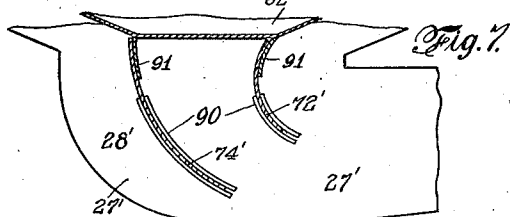
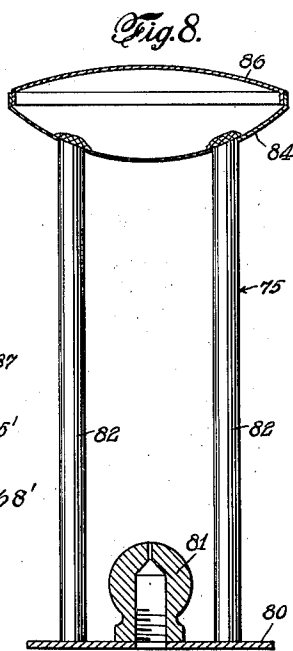
A. J. GREENE

2,074,178

DISPLAY STAND

Filed April 21, 1936

3 Sheets-Sheet 2



INVENTOR.
Albert J. Greene
BY *Williams, Rich & Moore*
ATTORNEYS

March 16, 1937.

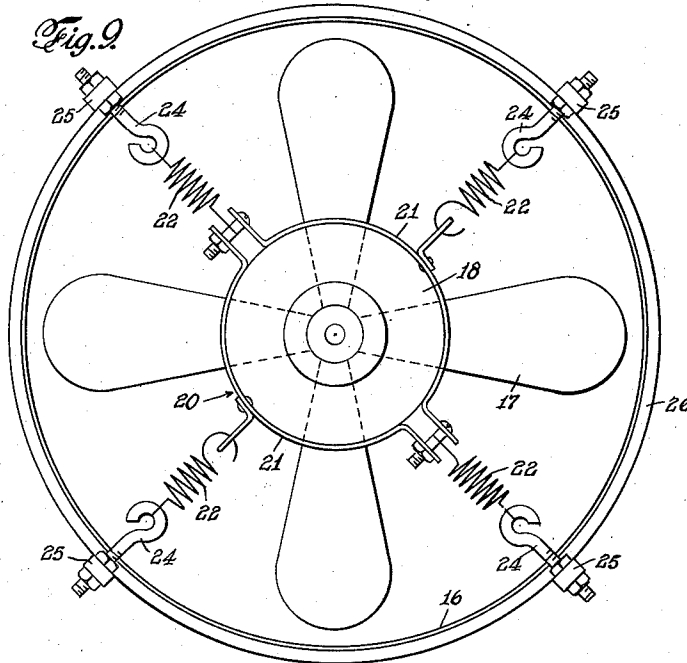
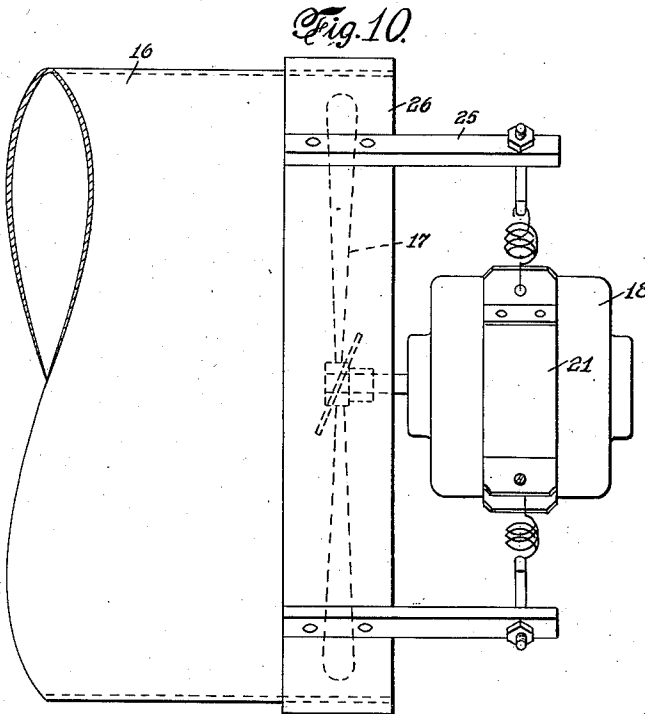
A. J. GREENE

2,074,178

DISPLAY STAND

Filed April 21, 1936

3 Sheets-Sheet 3



INVENTOR.
Albert J. Greene
BY *Williams, Oak & Moore*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,074,178

DISPLAY STAND

Albert J. Greene, Decatur, Ill., assignor, by mesne assignments, to Universal Manufacturing Co., Decatur, Ill., a corporation of Illinois

Application April 21, 1936, Serial No. 75,569

11 Claims. (Cl. 261—116)

This invention relates to display stands particularly adapted to be employed in the displaying of various perishable commodities such, for example, as lettuce, celery and similar produce.

5 An important object of the present invention is to provide a generally improved display stand on which various perishable commodities, especially those which are most susceptible to deterioration by reason of improper or unsuited atmospheric conditions, may be subjected to such treatment, while on display, as will maintain them fresh and preserve their natural characteristics.

10 To the above and other ends the invention contemplates, in a display stand, means for so directing currents of air through a plurality of finely divided sprays of water as to cause a suitable amount of moisture to be picked up by and carried along with the air currents, means for uniformly delivering such moisture to the displayed vegetables in the form of a mist, and means for insuring continuous movement of air currents not only directly above the vegetables but also directly beneath as well as generally between the same.

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

30 Fig. 1 is a perspective view of a display stand embodying the present invention; Fig. 2 is a plan view of the display stand; Fig. 3 is a longitudinal, sectional view taken on line 3—3 of Fig. 4; Fig. 4 is a transverse sectional view taken on line 4—4 of Fig. 3; Fig. 5 is a transverse, sectional view of a modified form of main baffle; Fig. 6 is a plan view of another modified form of main baffle; Fig. 7 is a fragmental, sectional view showing a pair of adjustable distributing baffles that may be employed in lieu of the fixed distributing baffles of Fig. 3; Fig. 8 is an enlarged view, partly in section and partly in elevation, showing the details of construction of the respective spray nozzle units, all of which appear in Fig. 3 and one of which is illustrated in Fig. 4; Fig. 9 is an enlarged view showing in end elevation the motor of Fig. 3 and illustrating the manner in which it is yieldably supported with relation to its associated air conduit, and Fig. 10 is a view in side elevation of the motor and its mounting as they appear from the left in Fig. 9.

55 Although the invention may be incorporated in display stands of various designs, it is herein illustrated as embodied in an apparatus comprising a cabinet C, which includes rear, front and

end wall sections 10, 11, and 12, respectively, and is adapted to accommodate in the lower part thereof a plurality of suitable receptacles, not shown, for the display of such commodities as are commonly known as "dry" vegetables, for example potatoes, turnips, squash and other similar produce.

Associated with the cabinet C, is an air humidifying unit 14, which is adapted to deliver moisture to the vegetables to be treated and to insure continuous movement of air not only directly above the vegetables, but also directly beneath as well as generally between the same. The humidifying unit 14 is so incorporated into the apparatus as a whole that it assumes an inclined or forwardly tilted position, as will be readily understood from an inspection of Fig. 4. As shown most clearly in Fig. 3, the humidifying unit 14 includes a horizontally disposed conduit 16, at the inlet end of which is mounted an electric fan unit 17, the motor 18 of which is yieldably supported by a resilient mounting 20.

Referring particularly to Figs. 9 and 10, it will be noted that the motor mounting 20 includes a pair of arcuate straps 21, which are clamped to the motor housing and to which are connected the inner ends of a plurality of tension springs 22. These springs are disposed radially with respect to the axis of the conduit 16 and are connected at their outer ends to a plurality of tensioning hooks 24, the screw-threaded and nut-carrying ends of which extend through a plurality of longitudinally disposed arms 25, secured to an annular band 26, which embraces and is suitably connected to the outer end of the conduit 16. It has been found that the relatively simple motor mounting just described not only serves as a convenient means for supporting the motor in a proper position with relation to the conduit 16, but also serves to satisfactorily obviate the transmittal of motor vibrations to the humidifying unit and its several associated parts.

Referring particularly to Figs. 1 to 4, it will be noted that the conduit 16 terminates in a distributing chamber 27, the inclined side walls 28 of which are disposed in a parallel relation and the inclined bottom wall 30 of which is provided with a drain pipe 31. Inasmuch as any surplus water which is supplied by the several spray nozzles, hereinafter described, gravitates into the distributing chamber 27, the drain pipe 31 is by preference connected to the lowermost or substantially the lowermost point of that chamber, 55

as shown in Fig. 4, so as to insure complete drainage thereof at all times.

As shown most clearly in Fig. 3, the distributing chamber 27 includes, in addition to its side walls 28 and its bottom wall 30, a pair of end walls 32 and 34, the former of which is straight and extends vertically from the wall of the conduit 16, and the latter of which is curved and extends upwardly from the bottom wall 30. The side walls 28 and the end walls 32 and 34 of the distributing chamber 27 terminate in substantially the same plane and are connected respectively at their upper ends to the upwardly and outwardly inclined side walls 35 and end walls 36 of a hopper-like header H. The side walls 35 of the header H terminate in vertically disposed front and rear wall sections 38 and 40 which are so curved or shaped at their upper ends as to afford front and rear down draft deflectors 41 and 42, whereas the end walls 36 of the header terminate in transversely extending ledges 44, with which are associated upwardly extending end wall sections 45. In order that the humidifying unit 14 thus far described may be conveniently supported by the cabinet C, there are provided a plurality of hanger lips 46, 47, and 48 which are carried by the header wall sections 38, 40, and 45, respectively, and are adapted to overhang the upper ends of the wall sections 10, 11, and 12 of the cabinet C, within which the humidifying unit is adapted to snugly fit. For the sake of appearance in the finished apparatus and in order to guard or protect the down draft deflectors 41 and 42 against accidental or unintentional blows or impacts which might tend to bend or otherwise unduly deform the same, they are housed within or partially enclosed by a pair of longitudinally disposed hoods 50 and 51 carried, respectively, at the front and the rear margins of the humidifying unit 14.

In order that the vegetables, to which moisture is to be supplied and in the immediate vicinity of which air currents are to be induced or otherwise set up, may be supported in display position, the humidifying unit 14 is so constructed as to afford an upwardly and rearwardly inclined tray T. This tray includes the end wall sections 45 of the header H, and a pair of longitudinally disposed side walls 52 and 54 which are suitably connected at their opposite ends to the end wall sections 45 and are spaced a substantial distance from the front and rear wall sections 38 and 40 of the header. The side walls 52 and 54 of the tray T are formed at their lower margins with inwardly extending ledges 55, which terminate in inwardly and downwardly extending deflector lips 56. In order to lend rigidity to the deflector lips 56, and incidentally reinforce their associated side walls 52 and 54, there are provided a plurality of tie members 57 which extend transversely of the tray T and are secured to the deflector lips in such positions that their upper or bearing surfaces are flush with the ledges 55, which, themselves, are flush with the ledges 44. It will be appreciated that inasmuch as the tie members 57, the ledges 55 and the ledges 44 are so disposed with relation to each other that their upper faces lie in the same or substantially the same plane, they are admirably adapted to support a bottom 58 for the tray T. The bottom 58, in order to afford unobstructed passage of air to the vegetables supported thereon and to permit free disposal of any excess moisture supplied to the vegetables while being subjected to treatment by the ap-

paratus embodying the invention, is of a highly pervious character and comprises a plurality of removable screen sections 60, which are disposed adjacent each other and are collectively supported by the tie members 57 and ledges 44 and 55. If desired, a plurality of removable separators, one of which is indicated in Fig. 1 and there indicated by the numeral 61, may be employed for maintaining adjacent groups of vegetables more or less separated from each other.

Disposed beneath the tray T and arranged centrally or substantially centrally of the header H and the rectangular opening leading into the header from the distributing chamber 27, is a main baffle 62 which is hopper-like in its character and presents in plan a rectangular outline. This baffle includes a pair of upwardly and outwardly extending side walls 64, connected to each other at their lower margins and there presenting a relatively sharp V-like juncture, which is common to the central longitudinal plane of the distributing chamber 27 and which in length is somewhat less than the rectangular opening leading from that chamber into the header H. As shown most clearly in Fig. 2, the end marginal edges of the side walls 64 are inclined upwardly and outwardly toward the sides of the header H as well as toward the ends thereof so that corresponding adjacent edges, to which are connected end walls 65, present, when projected, a V-shaped outline, the projected apex of which falls well within the projected outline of the passage leading from the distributing chamber 27 into the header. Taking into account the geometrical characteristics of the main baffle 62 (as determined by the relation of its side walls and end walls 64 and 65 to each other) and the relation of that baffle to the opening leading from the distributing chamber 27 to the header H, it will become apparent that the side walls necessarily overlie corresponding or like portions of that opening and that the same is also true with regard to the end walls.

As shown in Figs. 3 and 4, the main baffle 62 is so spaced from the inclined side walls 35 and end walls 36 of the header H as to form therewith a pair of end air ducts 66 and a similar number of side air ducts 67. In order to effect proper distribution of air passing through the ducts 66 and 67, there are provided a plurality of diversion baffles 68 and 70, which are disposed, respectively, beneath the side walls and end walls 64 and 65 of the main baffle and are utilized as main-baffle-supporting means. These diversion baffles 68 and 70 are preferably connected to, and are therefore removable with, the main baffle 62, but, if desired, they may be connected to the respective walls 35 and 36 of the header H. It will become apparent from an inspection of Figs. 2 and 4 that regardless of whether the diversion baffles 68 and 70 are connected to the main baffle 62 or to the header walls 35 and 36, they will properly center the main baffle with respect to the opening leading from the distributing chamber 27 into the header H and will maintain that baffle against undue displacement, but it is to be understood, of course, that any suitable fastening means of conventional type, not shown, may be employed, if desired, for anchoring the baffle in the position which it normally assumes when introduced into the header. Inasmuch as the main baffle 62 is located directly beneath the tray T and may, therefore, receive a certain amount of any excess moisture deliv-

ered to the vegetables undergoing treatment, it becomes desirable to provide the baffle with a plurality of perforations or drain openings 71, which are so located as to permit water collecting in the baffle to drain therefrom into the distributing chamber 27 from which it is relieved by the drain pipe 31 as previously described.

It is desirable that air passing through the conduit 16 under the action of the fan 17 be directed into the air ducts 66 and 67 in properly proportioned amounts, and to that end the curved end wall 34 of the distributing chamber 27 is utilized as a distributing baffle in association with a pair of downwardly projecting similarly curved distributing baffles 72 and 74 which are carried by the main baffle 62. The distributing baffles 72 and 74 occupy such positions with relation to each other and to the end wall 34 of the distributing chamber that the air which is deflected upwardly into the air conduits 66 and 67 by them and by the end wall is proportioned in accordance with the capacity of the respective air ducts. Taking into account the fact that the air entering the air ducts 66 and 67 is proportioned according to the respective air duct capacities and the fact that the diversion baffles 68 and 70 are so disposed as to cause the air streams peculiar to the air ducts to assume fan-like characteristics, it follows that there will be effected a uniform delivery of air to the tray T in the vicinity of its ends and sides.

In order that the air prior to its delivery to the vegetables may be supplied with moisture in a highly divided state, there are provided a plurality of spray nozzle units 75, one of which is located at the inlet end of each of the air ducts 66 and one of which is disposed directly beneath the main deflector 62 and in the vicinity of the junction of the air ducts 67. These spray nozzle units 75 are individually connected to suitably supported branch pipes 76, equipped with hand-operated control valves 77 and connected to a manifold 78, which is adapted to communicate with a source of water supply, not shown. Each of the nozzle units 75 is inclined with respect to one or another vertical plane, as will be readily understood from an inspection of Figs. 3 and 4, and includes a base plate 80, to which is connected a spray head 81, adapted for screw-thread connection with any one of the branch pipes 76. Suitably connected to the base plate 80, is a pair of supporting rods 82, to the upper ends of which is connected an impact or diffusing plate 84 which is so shaped as to present a curvilinear surface, against which is forcibly directed a fine stream of water issuing from the nozzle orifice or aperture 85. The diffusing plate 84 is provided with a cap-like closure 86, and, preferably, contains a suitable sound-damping material, such as lead which has been found to operate satisfactorily in preventing annoying vibrations from arising incident to the impingement of the stream of water against the diffusing plate. It is to be here observed that in order to obtain the most satisfactory diffusing action, the impact area (namely that area of the diffusing plate 84 against which the stream of water impinges) must be kept free of excess moisture, which would tend to collect on and cling to the diffusing plate surface. In the present instance the efficiency of each of the diffusing plates 84 is especially pronounced, inasmuch as any water tending to accumulate on the surface thereof is drained, due to the angular disposition of the re-

spective units, onto one of the supporting rods 82, down which it gravitates and from which it drips into the distributing chamber 27, to be thereafter carried away by the drain pipe 31.

Although the form of main baffle 62, shown in Figs. 1 to 4, has been found to effect a substantial flow of air in the immediate vicinity directly above the same and in a direction generally upwardly through the tray T, such flow may be somewhat altered to obtain a more nearly vertical movement of air upwardly through the tray in the vicinity immediately above the baffle by resorting to the form of main baffle 62' indicated in Fig. 6. This baffle is identical in all respects to the baffle 62, except that it is provided throughout or substantially throughout the extent of its side and end walls 64' and 65', respectively, with a plurality of perforations 87, which, as will be readily understood, permit a portion of the air which is directed into the air ducts 66 and 67 to pass and to be forcibly directed upwardly through the baffle and thence into and through the tray.

If for any reason a down draft through the tray T in the vicinity immediately above the main baffle is desired, the form of main baffle illustrated in Fig. 5 and there indicated by the numeral 62'' may be substituted for either of the main baffles above described. The baffle 62'' is identical with the baffle 62 except for the fact that its side and end walls 64'' and 65'', respectively, are provided with a plurality of louvers 88, the lips of which are adapted to occupy positions within the air ducts 66 and 67. It is obvious that as the air moves upwardly past the louver lips 88, there is effected an ejector action, as regards the interior of the baffle, which will cause a pronounced down draft through the tray in the vicinity immediately above the baffle.

Although the distributing baffles 72 and 74 shown in Fig. 3 have proved satisfactory, it may be well to mention that adjustable baffles of the type shown in Fig. 7 and there indicated by the numerals 72' and 74' may be employed, if desired. These baffles are frictionally held within suitable guides 90, carried by side walls 28' of the distributing chamber 27', and may be moved to various positions of adjustment in order to vary the proportions of air to be delivered to the several air ducts which are located beneath the main baffle 62''' and corresponding, of course, to the air ducts 66 and 67 hereinbefore described. As to the main baffle 62''', it may be identical with any one of the main baffles, namely, 62, 62', and 62'', hereinbefore described, except for a pair of guard wings 91 with which it is provided and which serve to maintain, in effect, continuity as between itself and the distributing baffles 72' and 74' regardless of the positions of adjustment to which they may be moved.

Aside from the modifications herein shown and described, it will be understood that various other changes may be made without departing from the spirit of the invention or the scope of the following claims.

What is claimed is:

1. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said moving column of air, a header disposed beneath said tray and communicating with said conduit, said header having a wall-like bottom, a main baffle disposed within said header and ar-

5 ranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle functioning to direct moving air derived from said conduit to the marginal area of said tray and to facilitate movement of air in the vicinity of that portion of the tray beneath which it is arranged, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

10 2. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said moving column of air, a hopper-like header communicating with said conduit, said header being disposed beneath said tray and having a bottom including upwardly and outwardly inclined walls, a hopper-like main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle including upwardly and outwardly inclined walls and functioning to direct moving air derived from said conduit to the marginal area of said tray and to facilitate movement of air in the vicinity of that portion of the tray beneath which it is arranged, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

3. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said moving column of air, a hopper-like header communicating with said conduit, said header being disposed beneath said tray and having a bottom including upwardly and outwardly inclined walls, a hopper-like main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle including upwardly and outwardly inclined walls and functioning to direct moving air derived from said conduit to the marginal area of said tray and to facilitate movement of air in the vicinity of that portion of the tray beneath which it is arranged, diversion baffles disposed intermediate the walls of said main baffle and the walls of said header and cooperating with said main baffle to insure uniform delivery of air to the marginal area of said tray, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

4. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said moving column of air, a header disposed beneath said tray and communicating with said conduit, said header having a wall-like bottom, a main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle being adapted to direct a portion of the moving air derived from said conduit to the marginal area of said tray and provided with openings through which another portion of such moving air is directed upwardly toward and into that portion of the tray beneath which said baffle is arranged, and down draft baffle means

functioning to direct air delivered to the marginal area of said tray downwardly through the same.

5. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said moving column of air, a hopper-like header communicating with said conduit, said header being disposed beneath said tray and having a bottom including upwardly and outwardly inclined walls, a hopper-like main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle including upwardly and outwardly inclined walls and functioning to direct a portion of the moving air derived from said conduit to the marginal area of said tray and provided with openings through which another portion of such moving air is directed upwardly toward and into that portion of the tray beneath which said baffle is arranged, diversion baffles disposed intermediate the walls of said main baffle and the walls of said header for insuring uniform delivery of air to the marginal area of said tray, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

6. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said column of air, a header disposed beneath said tray and communicating with said conduit, said header having a wall-like bottom, a main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle being adapted to direct moving air derived from said conduit to the marginal area of said tray, ejector means associated with said baffle and rendered operative under the action of moving air following along its path of travel from said conduit to the marginal area of said tray to induce a down draft within that portion of the tray beneath which said baffle is arranged, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

7. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air, means for supplying moisture to said column of air, a hopper-like header communicating with said conduit, said header being disposed beneath said tray and having a bottom including upwardly and outwardly inclined walls, a hopper-like main baffle disposed within said header and arranged beneath said tray in a spaced relation thereto and to the bottom of said header, said baffle including upwardly and outwardly inclined walls and functioning to direct moving air derived from said conduit to the marginal area of said tray, the walls of said baffle being provided with a plurality of louvers constituting ejector means adapted to function under the action of moving air following along its path of travel from said conduit to the marginal area of said tray to induce a down draft within that portion of the tray beneath which said baffle is arranged, and down

draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

8. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air and including a distributing chamber, means for supplying moisture to said moving column of air, a header disposed beneath said tray and communicating with said distributing chamber, said header having a wall-like bottom, a main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle forming with the bottom of said header a plurality of air ducts and functioning to divert moving air currents derived from said conduits to the marginal area of said tray and to facilitate movement of air in the vicinity of that portion of the tray beneath which it is arranged, distributing baffles associated with said main baffle and arranged within said distributing chamber to direct said moving column of air therefrom into said air ducts, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

9. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities, a conduit adapted to carry a moving column of air and including a distributing chamber, means for supplying moisture to said moving column of air, a header disposed beneath said tray and communicating with said distributing chamber, said header having a wall-like bottom, a main baffle disposed within said header and arranged beneath said tray in a spaced relation to the bottom thereof and to the bottom of said header, said baffle forming with the bottom of said header a plurality of air ducts and functioning to divert moving air currents derived from said conduits to the marginal area of said tray and to facilitate movement of air in the vicinity of that portion of the tray beneath which it is arranged, a plurality of distributing baffles associated with said main baffle and supported for individual adjustment within said distributing

chamber to divide said moving column of air into differently proportioned streams and direct them therefrom into said air ducts, and down draft baffle means functioning to direct air delivered to the marginal area of said tray downwardly through the same.

10. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities; a conduit adapted to carry a moving column of air; a spray nozzle unit for supplying moisture to said moving column of air and including a spray head, a supporting rod associated with said head, and a diffusing plate carried by said rod and presenting a curvilinear surface; means for supporting said unit in an inclined position to facilitate drainage of moisture from the immediate vicinity of the impact area of said plate; and combined baffle and deflector means for directing moving air derived from said conduit to the marginal area of said tray and for directing thus delivered air downwardly through said tray and for facilitating movement of air in the general vicinity of the central area of said tray.

11. A stand for the display of perishable commodities comprising a tray having a bottom pervious to air currents and adapted to support said commodities; a conduit adapted to carry a moving column of air; a spray nozzle unit for supplying moisture to said moving column of air and including a spray head, a supporting rod associated with said head, and a diffusing plate associated with said rod and presenting a curvilinear surface; means for supporting said unit in an inclined position to facilitate drainage of moisture from the immediate vicinity of the impact area of said plate; combined baffle and deflector means for directing moving air derived from said conduit to the marginal area of said tray and for directing thus delivered air downwardly through said tray and for facilitating movement of air in the general vicinity of the central area of said tray; water-collecting means forming a part of said conduit and arranged beneath said tray, said spray nozzle and said baffle and deflector means; and a drainage pipe leading from said water-collecting means.

ALBERT J. GREENE.