# United States Patent [19]

**Newell**

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[45] **Mar. 11, 1975**


[54] **PORTABLE PEDESTAL MOUNTED TOWER IRRIGATOR**


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[73] Assignee: **Alco Standard Corporation,** Valley Forge, Pa.



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[21] Appl. No.: **425,523**

[52] **U.S. Cl.** ..... **239/177,** 239/172, 239/159

[51] **Int. Cl.** ..... **B05b 3/02,** B05b 1/20

[58] **Field of Search** ..... 239/177, 254, 264, 178, 239/159–163, 172



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*Primary Examiner*—Robert S. Ward, Jr.

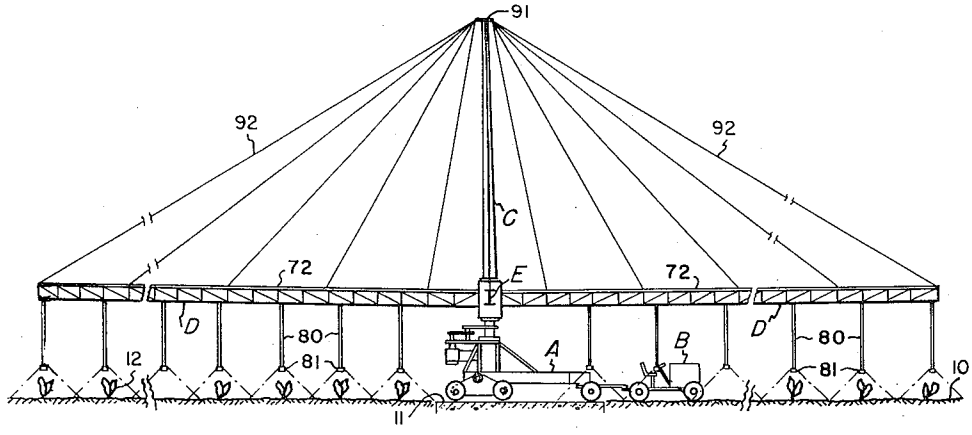
*Attorney, Agent, or Firm*—Parmelee, Miller, Welsh & Kratz



[57] **ABSTRACT**

A portable, rotatable, pedestal or column supported irrigating or liquid dispensing apparatus having a pair of oppositely balanced and cable tensioned and supported, horizontally extending, truss arm spray assemblies is mounted on a support base which is carried by a wheeled truck or car. The car is adapted to be moved from one operating location to another as required after an overlapping spray pattern has been effected at one area. The lower part of the construction includes a connector pipe member that is fixedly mounted within a triangular-shaped lower support frame and provided with coupling means for connection to fluid inlet piping. A pipe member extends centrally vertically upwardly from the lower pipe member, along and within the lower support frame and an upper rotatable support frame. The upper pipe member is rotatably carried and driven and serves as a through-extending support for the upper frame and its truss assemblies.


**13 Claims, 25 Drawing Figures**



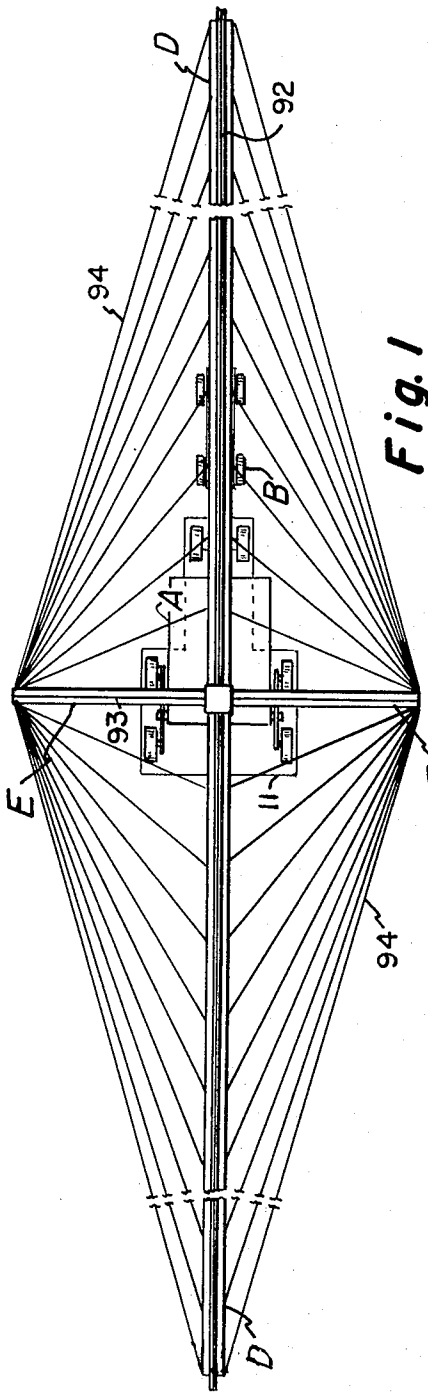



Fig. 1

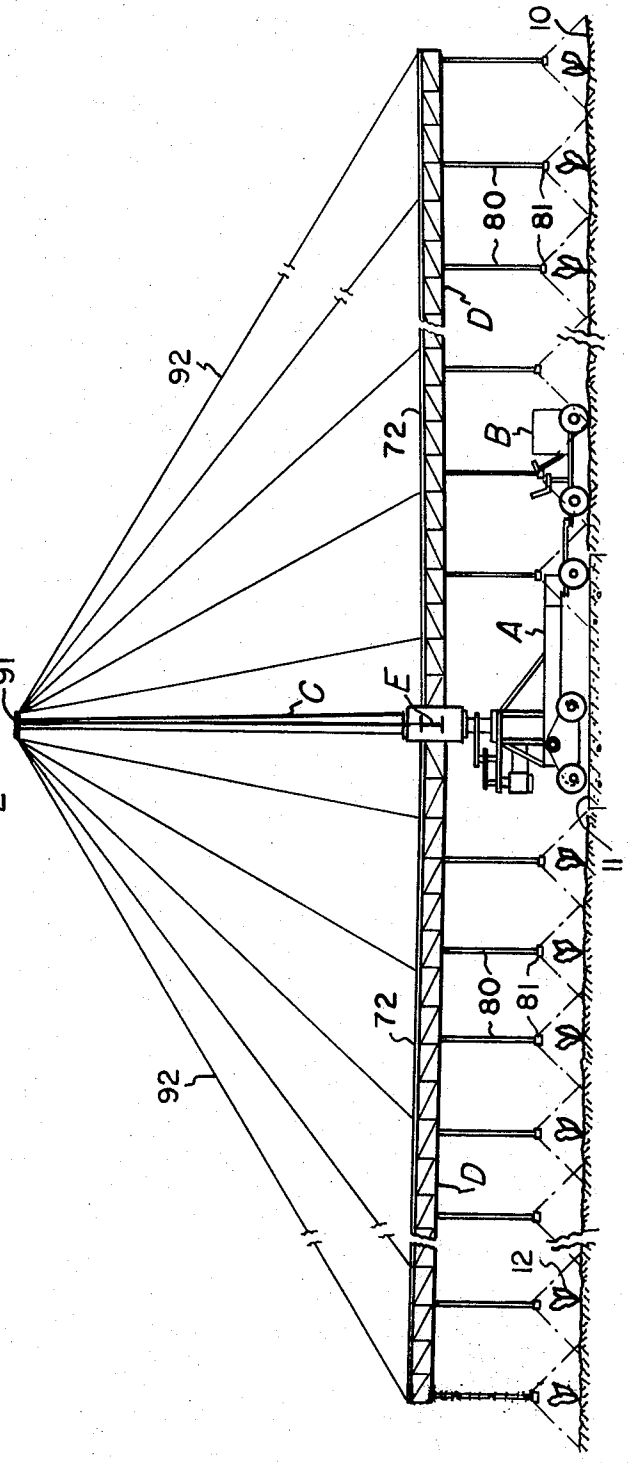



Fig. 2

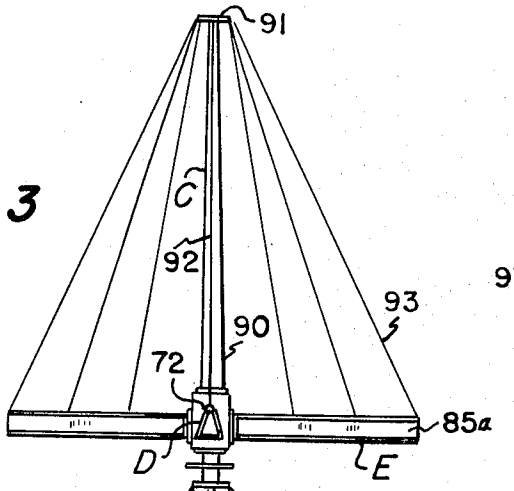



Fig. 3

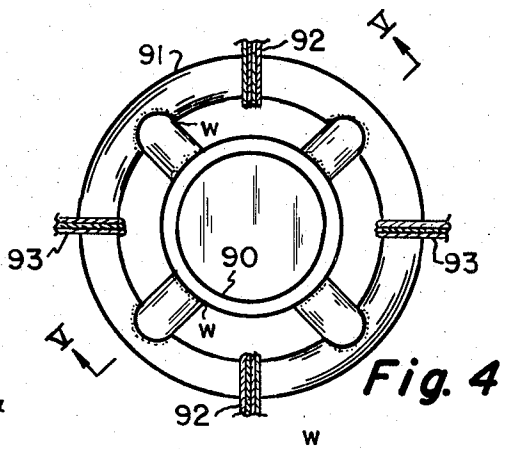



Fig. 4

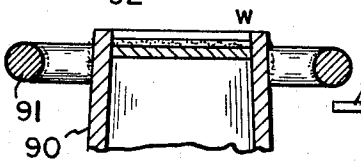



Fig. 5

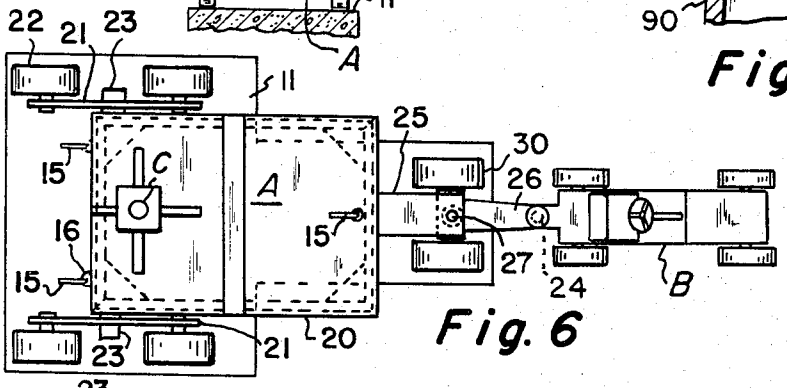



Fig. 6

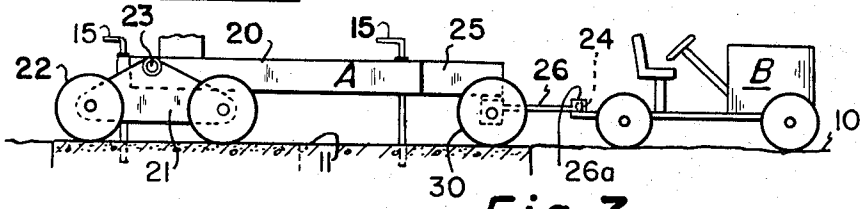



Fig. 7

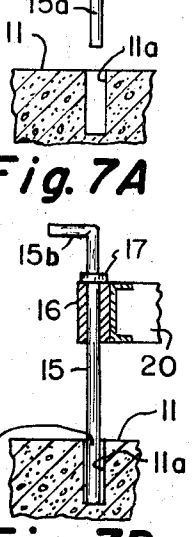



Fig. 7A




Fig. 7B

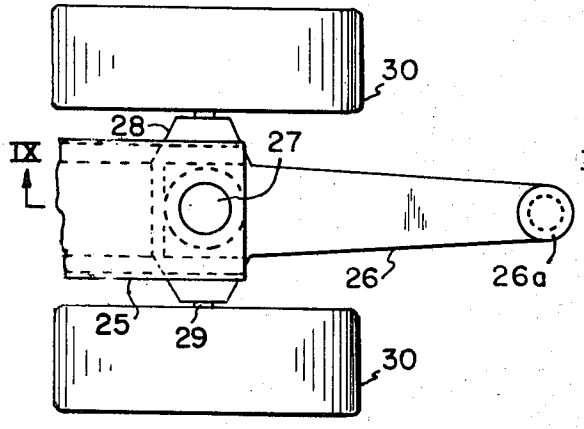



Fig. 8

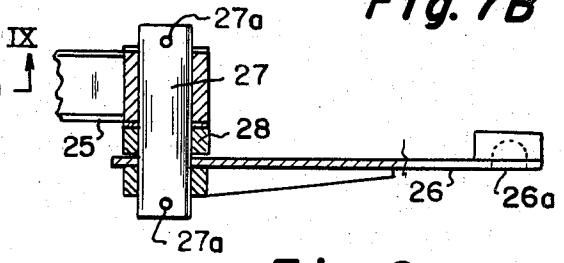



Fig. 9

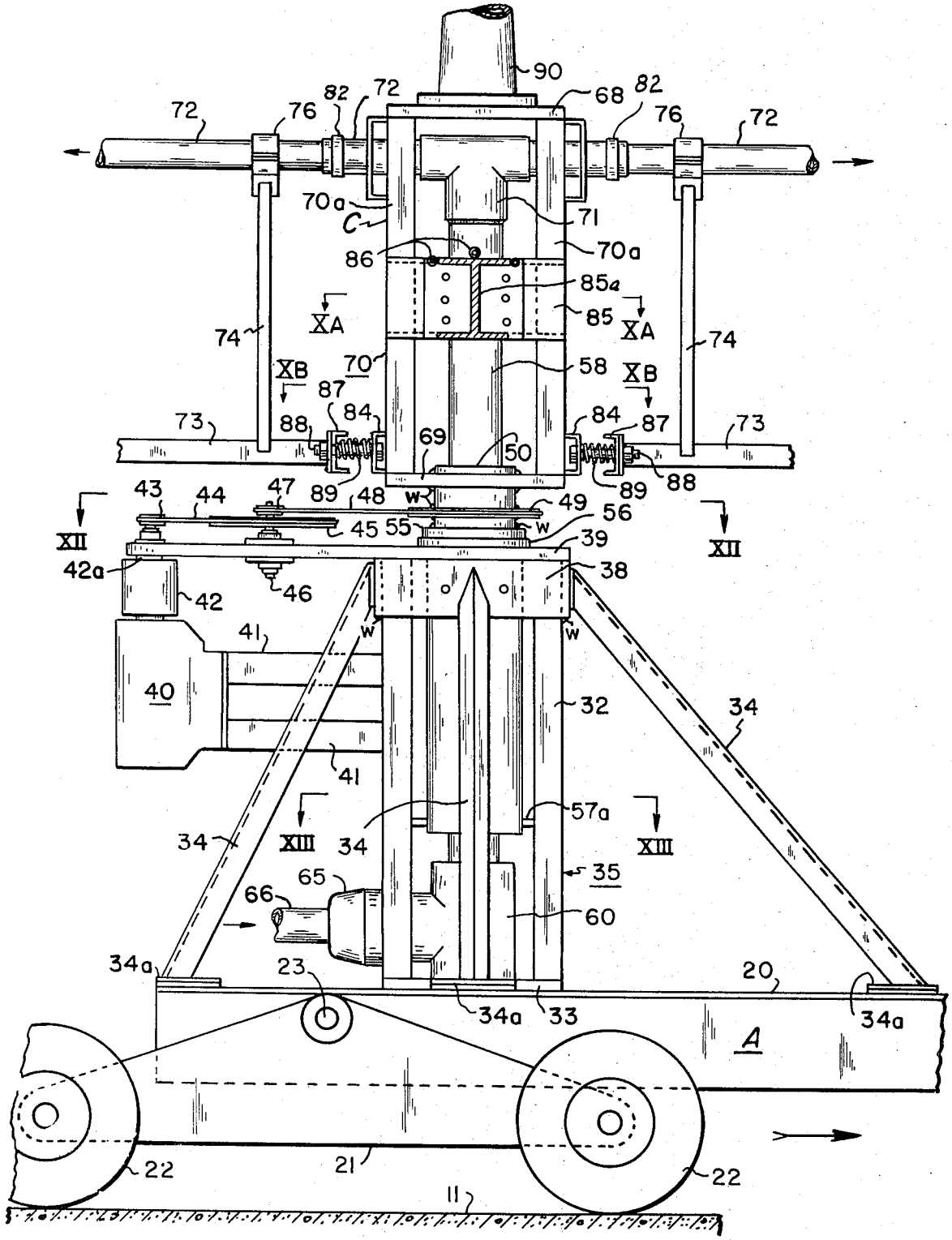

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Fig. 10

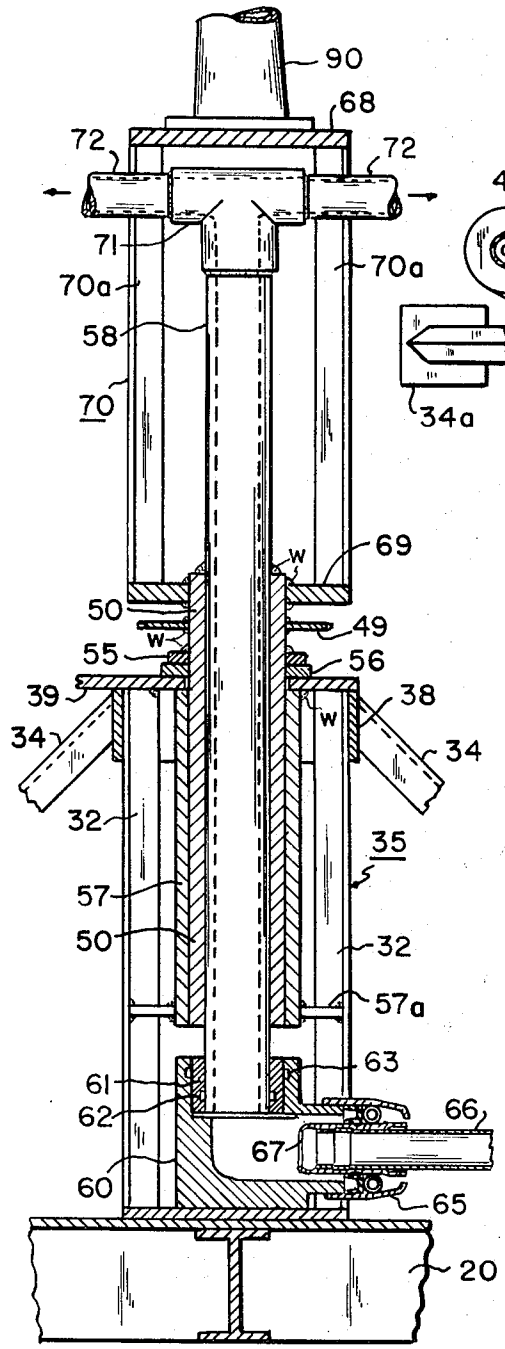



Fig. 11

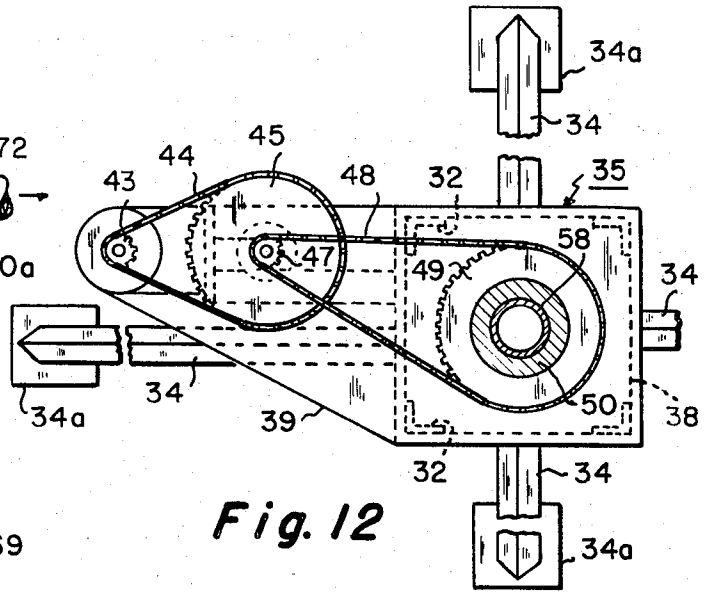



Fig. 12

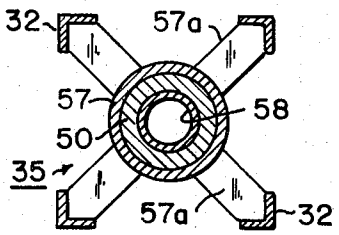



Fig. 13

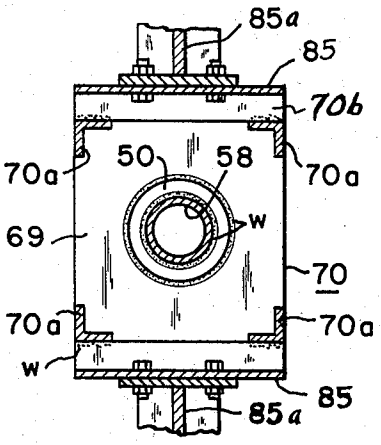



Fig. 10A

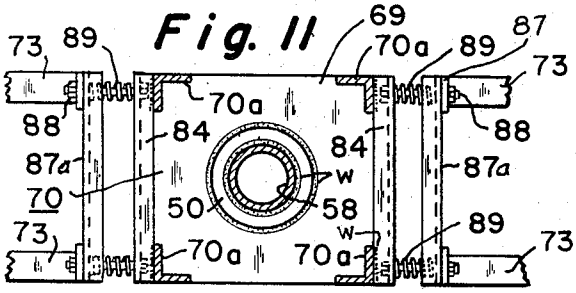



Fig. 10B

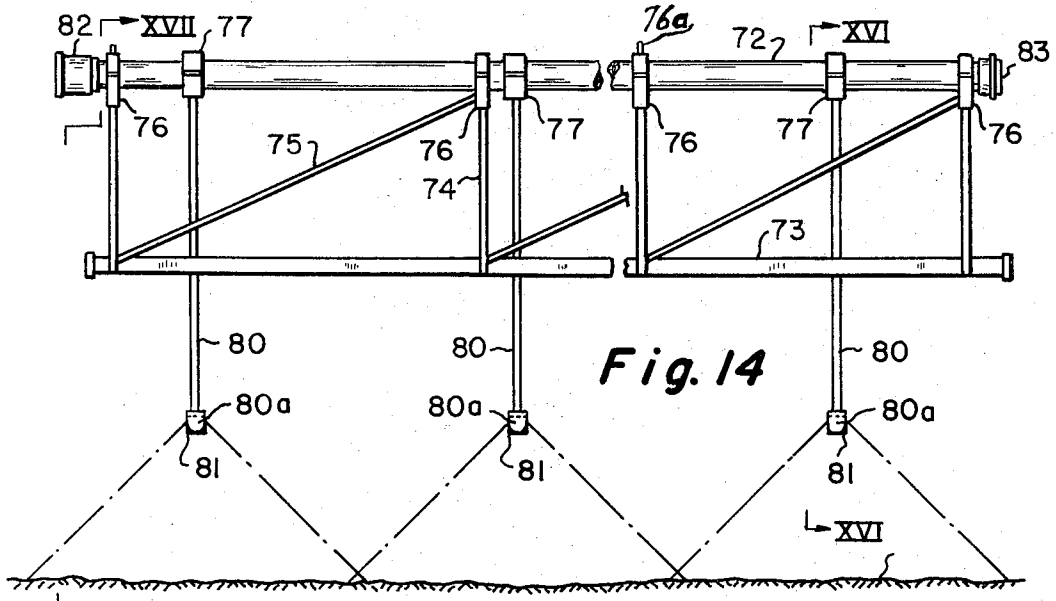



Fig. 14

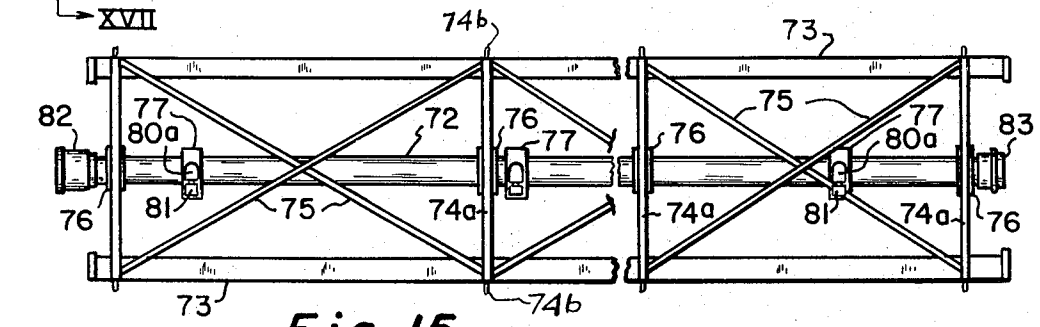



Fig. 15

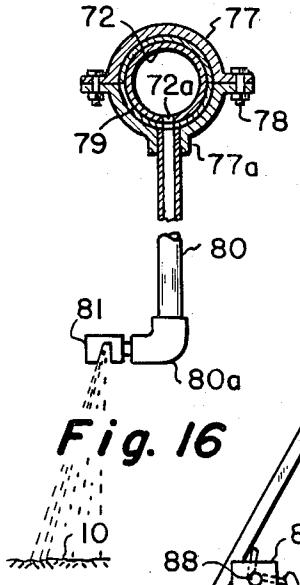



Fig. 16

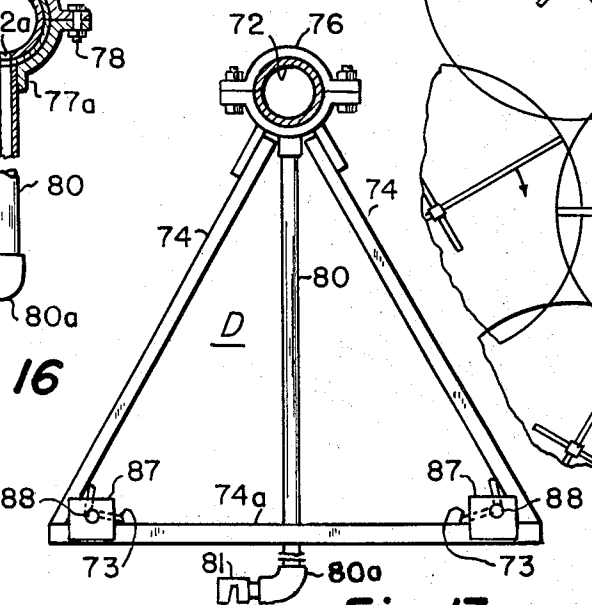



Fig. 17

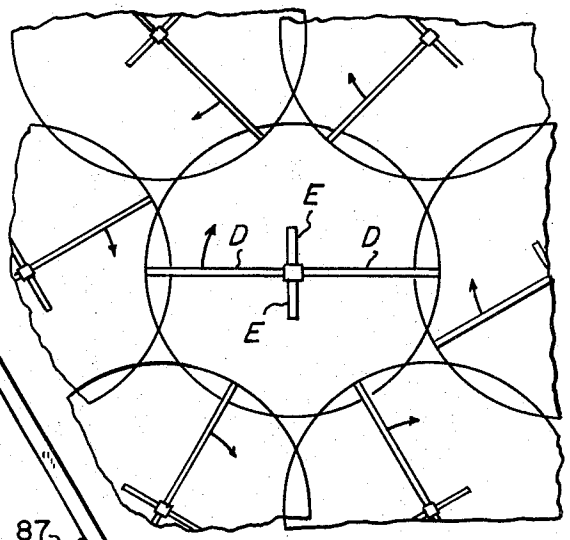



Fig. 18

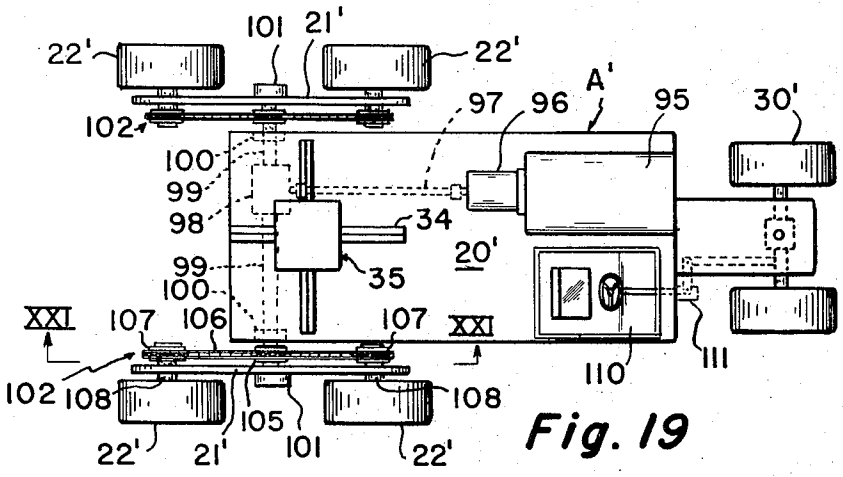



Fig. 19

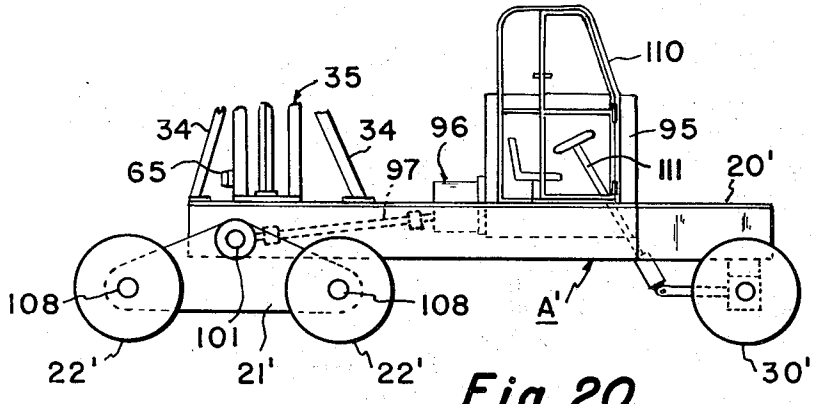



Fig. 20

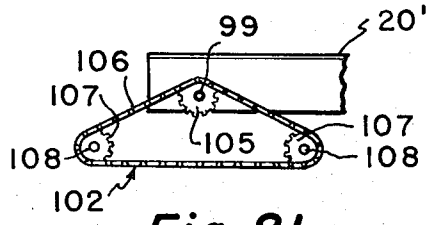



Fig. 21

# PORTABLE PEDESTAL MOUNTED TOWER IRRIGATOR

## BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to a portable, rotating pedestal type of fluid dispensing structure and particularly, to one that will be stable in utilization and capable of transportation from one location to another. A phase of the invention deals with an improved form of mounting construction for a portable irrigator having liquid-dispensing, tensioned, truss arm assemblies.

2. Description of the Prior Art

Tower irrigators or liquid dispensing devices have been provided with opposed and balanced liquid dispensing truss arm assemblies. Also substantially fixed position types of single arm counterweighted and dual arm balanced units have been developed in which at least one, horizontally outwardly projecting, liquid dispensing truss arm assembly enables liquid or fluid dispersion within a substantially circular path, as accomplished by rotation of the apparatus about a substantially fixed base. There has been a need for an improved pedestal type of dispenser that will enable it to be constructed in sections and easy disassembly, but may be of smaller size than the fixed-position type and will be portable as well as rotatable to enable covering a full area of growing crops. In this connection, there is a need for a unit which will be sufficiently stable for set-up and transfer from one location to another and which may be carried on a wheeled car for self-propelled, pulled or pushed movement from place to place, and which will, at the same time, provide not only for quick and easy connection of fluid piping thereto, but will provide a stressed, flexible structure that will withstand vicissitudes of the weather.

## SUMMARY OF THE INVENTION

It has thus been an object of the invention to develop an improved pedestal type of effluent-dispensing unit or spraying device which will meet the need for a rotatable, dual horizontal spray arm construction that may be used in a continuous area covering pattern by moving it from one watering or dispensing location to another.

Another object has been to devise an effluent-dispensing unit that will have an improved supporting-operating structure.

A further object has been to provide a practical and efficient, relatively small, rotary, pedestal-supported effluent dispensing unit or irrigator that can be easily moved from one station to another and quickly placed in operation at each station to enable the coverage of a large ground or field area.

A still further object of the invention has been to provide an improved type of rotatable supporting and fluid dispensing means which employs overhead, horizontally extending, spray arms having longitudinally spaced-apart head supplying and supporting down pipe members.

These and other objects will appear to those skilled in the art from the illustrated embodiments and the claims.

## BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, FIG. 1 is a top plan view of an apparatus of the invention which may be employed to provide a progressive, intersecting path of fluid dispersion;



FIG. 2 is a side view in elevation on the scale of and of the apparatus shown in FIG. 1;

FIG. 3 is an end view in elevation on the scale of FIGS. 1 and 2 and of the apparatus there shown;

FIG. 4 is a greatly enlarged top plan detail of a cable tieing collar for the upper end of a mast part of the apparatus shown, for example, in FIG. 3;

FIG. 5 is a fragmental section on the scale of and taken along the line V—V of FIG. 4;

FIG. 6 is a top plan view and FIG. 7 is a side view in elevation, both on the same scale and disclosing a wheeled car as coupled to a small tractor for moving it from one location to another; these views also illustrate latching means for holding the car in position on, for example, a concrete base located at the ground level;

FIG. 7A is an enlarged fragmental side view in partial section illustrating the construction and utilization of position latching means for the car of FIGS. 6 and 7; this figure shows cooperating latching parts in an unlatched position that may be manually accomplished when the car is to be moved from one station location to another;

FIG. 7B is a view on the same scale as and of the structure of FIG. 7A, but illustrating the cooperating parts in a fully latched position with respect to each other at which time the irrigator may be in operation at a particular field station location;

FIG. 8 is an enlarged top plan fragment illustrating details of the construction of the front end of the car of FIGS. 6 and 7;

FIG. 9 is a view in fragmental section on the same scale as and taken along line IX—IX of FIG. 8;

FIG. 10 is a side view in elevation on an enlarged scale with respect to FIGS. 7 and 8, particularly illustrating central support frome structure and the construction and mounting of means for actuating an upper rotary part of the structure of the overall column which includes a mast;

FIGS. 10A and 10B are somewhat fragmental horizontal sections on the scale of and respectively taken along the lines XA and XB of FIG. 10;

FIG. 11 is a vertical section on the scale of and further illustrating the support structure of FIG. 10;

FIG. 12 is a horizontal section on the scale of FIGS. 10 and 11 and taken along the line XII—XII of FIG. 10;

FIG. 13 is a horizontal section on the scale of and taken along the line XIII—XIII of FIG. 10;

FIG. 14 is a broken-away side view in elevation on a reduced scale with respect to FIG. 10, and particularly illustrating the construction of a truss arm assembly and the mounting of down pipe supported fluid spray means;

FIG. 15 is a bottom plan view on the same scale as and of the truss shown in FIG. 14;

FIG. 16 is an enlarged elevational section taken along the line XVI—XVI of FIG. 14, but only showing the fluid spray means;

FIG. 17 is an end section on an enlarged scale taken along the line XVII—XVII of FIG. 14;

FIG. 18 is a fragmental schematic plan view illustrating how a unit of the invention may be utilized to provide intersecting spray paths by starting with a central area and then moving the unit from one peripheral position to another;

FIG. 19 is a top plan view and FIG. 20 is a side view in elevation on the same scale as FIG. 19, illustrating a self-propelled car for the unit of the invention;

And, FIG. 21 is a side detail view on the same scale as and taken along the line XXI-XXI of FIG. 19 and illustrating drive means for the wheels.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring particularly to FIGS. 1, 2 and 10 of the drawings, a truck, carriage or car A is provided for supporting and for enabling movement of the improved irrigating or effluent dispensing unit of the invention from one station or field location to another. In FIGS. 1 and 2, a motor driven tractor B is shown for coupling to the car A for pulling it. In FIGS. 19 to 21, a self-propelled engine driven truck or car A' is shown.

A central tower, column, pedestal or boom C is supported and securely positioned on the car A or A' to extend vertically upwardly therefrom and to, in turn, carry a pair of opposite, horizontally extending, fluid-dispensing, truss arm assemblies D and a pair of right-angular positioned, balanced and opposite, horizontally extending, fluid-dispensing, truss arm assemblies D and a pair of right-angular positioned, balanced and opposite, horizontally extending, support arm assemblies E. Each fluid dispensing truss arm assembly D employs a main overhead support and header made up of a plurality of intercoupled or connected pipe members 72 which extend longitudinally from the column C and which have downwardly depending, spray head carrying, down pipe members 80 (see FIGS. 14, 16 and 17) in a longitudinally spaced-apart relation therealong.

As shown particularly in FIG. 2, down pipes 80 have a sufficient extension such that an associated individual spray head 81 will have a position that is somewhat close to the ground level, but above the upper extent of the crops, to provide a maximum efficiency of fluid distribution. This minimizes loss of moisture to the atmosphere due to humidification, and maximizes the effectiveness of spray application of each spray head 81 on the ground level or particularly to a growing crop 12. Each spray head 81 (see also FIGS. 14, 16 and 18) is shown carried on a horizontal plane by an elbow 80*a* to provide a preferable, fanlike, spray pattern that may slightly overlap the spray pattern of the next adjacent spray head (see FIGS. 14 and 16) and that when the column C is rotated about its vertical axis, will provide a full circular area of coverage as, for example, shown by the centrally disposed circular area of FIG. 18. In FIG. 2, 10 represents a ground level at which a suitable crop 12 has been planted, and 11 represents a concrete base or plateform on the substantially same plane or level as the ground 10. The base 11, although not essential, may be employed to provide a positive and level support for the car A.

Referring particularly to FIGS. 6 to 7B, inclusive, a base member platform or bed 20 serves as the main support for the column C and may constitute the bed of the truck A or A'. To positively retain the truck A temporarily in a suitable stationary positioning on the concrete base 11, the base may be provided with at least a pair of vertical latching slot or detent portions 11*a* to receive a latching foot portion 15*a* of a rod-like latching element or member 15. As shown, the latching member 15 may be in the form of a vertically removable and insertable pin that is quidably adapted to be carried by a mount 16 which is secured to the frame of platform 20. The elements 15 are insertable manually and may be vertically lifted out of position from within an associated mount 16 and laid on the platform 20 when the unit is being moved from one location to another. FIG. 7A shows a pin 15 in a preliminary inserted position within its associated mount 16, and FIG. 7B shows it in a fully "down" or latching position within a vertical latching slot portion 11a of the base 11. In this position, a stop limit collar or shoulder 17 of the pin 15 is in abutment with an upper face of the mount 16.

A side frame (shown in dotted lines in FIG. 6) which is an integral part of the platform 20, serves as a mounting for a pair of oppositely positioned, triangular-shaped, side cradle brackets 21. A pair of wheels 22 is rotatably mounted at opposite lower end portions or ears of each cradle bracket 21, and the bracket is pivotally carried at its upper apex end portion or ear on a pin 23 that projects outwardly from a side portion of the car frame. In FIGS. 6 and 7, three latching member assemblies are shown, with two being mounted on the back end of the car frame, and the third being mounted centrally at an inner front end of the frame.

The forward end of the car A has a tongue 25 provided with a pair of wheels 30 mounted on its forward end portion through the agency of stud shafts 29 and a cross-extending saddle and spacer member 28 (see FIG. 8). A vertical pivot pin 27 (see FIG. 9) connects the forward end of the tongue 25 with a hitch or swing arm 26 through the agency of the shaft carrying saddle and spacer 28 and a pair of cotter pins 27*a*. The hitch 26 is detachably connected at its front end to the rear end of the tractor B by suitable coupling means, such as a connector knob 24 on the tail end of the tractor B and a knob-receiving mounting mouth portion 26a on the forward end of the hitch 26.

Referring to FIGS. 10, 11 and 12, an inverted, V-shaped lower stationary support frame 35 is secured by its inclined or outwardly diverging leg members 34 and by its purely vertical, central, cage-defining leg members 32 on the platform or table 20. The legs 34 have mounting feet 34*a* and the legs 32 have mounting feet 33 at their lower ends that are shown secured to the platform 20 at its outer reaches. Upper ends of the inclined legs 34 and of the group of centrally disposed, square cage defining, straight, angle-shaped upright legs 32 (see also FIG. 13) are also secured as by welding to an encircling collar or continuous rectangular ring 38. An upper, secondary platform or table 39 is secured on its underside to the collar 38 to project horizontally from one side thereof and provide a mounting table means for a motor drive mechanism.

As particularly shown in FIGS. 10 and 12, a driving or actuating, electric, fully moisture-proofed, motor 40 is secured on a side projecting arm structure 41 that extends from the support frame 35 underneath the table 39. The shaft of the motor 40 extends upwardly into gear reduction unit 42 which, in turn, has a shaft 42*a* that is journaled to extend upwardly through an outer end portion of the upper table 39. A small diameter chain sprocket 43 is secured on the upper end of the shaft 42*a* to cooperate with a drive chain 44 for actuating a somewhat centrally disposed, vertical shaft 46 through the agency of a large diameter speed reduction sprocket 45. The shaft 46 is journaled on the secondary table 39 and at its uppermost end carries a smaller di-

ameter chain sprocket **47** which cooperates with a chain **48** to drive a second larger diameter, speed reducing, chain sprocket **49** that is secured by weld metal *w* about and to a vertical collar or sleeve **50.** The collar **50** is mounted in a secure relation on a main, vertical pipe member **58.** It will be noted that the pipe member **58** extends upwardly (see also FIG. **11**) from and rotatably with respect to and is in a connected relation with a lower, fixed-positioned pipe member **60,** centrally along the lower stationary support frame **35,** and centrally along and up through an upper rotatable support frame **70.**

The drive collar or sleeve **50** of the column C (see particularly FIGS. **10A, 10B** and **11**) forms a reinforcing part for the vertically upwardly extending fluid supply pipe member **58** and is journaled within a friction-resisting sleeve **57,** such as of Meehanite, which is secured centrally to extend along the inside of the cage portion of the lower support frame **35.** A cross-extending member **57***a* is shown welded between opposed legs **32** and sleeve **57** to anchor its lower end and stiffen its mounting. It will also be noted that the sleeve **50** extends upwardly across the spacing between the lower and upper support frames **35** and **70** and is secured within lower, closing-off end plate member **69** of the upper rotatable support frame **70.** A Meehanite end-thrust bearing **56** is shown positioned about the reinforcing collar **50** to receive and cooperate with a thrust **55** which is secured by weld metal *w* to the collar **50.** This provides endwise resisting bearing means for the rotatable support of the upper portion of the column C, such as to minimize wear and tear and to provide a reinforced, efficient rotating upper frame and pipe structure.

The lower pipe member **60** is shown in the form of an elbow that is carried within the lower support frame **35,** and has one branch extending upwardly and carrying a sleeve bearing **61** therein which serves as a rotation promoting support for the lower end of the pipe member **50.** O-ring gaskets **62** and **63** serve to seal-off the joint between the lower pipe member **60** and the upper member **58.** The fluid or liquid to be dispensed from the unit may be supplied by a hose or pipe connection at each location. The pipe may be of sectioned length removably coupled together or may be a somewhat flexible hose that is carried on a pull-out winch. In any event, a coupling nose end **67** of a supply pipe line **66** will, as shown in FIG. **11,** be removably coupled with the lower pipe member **60.** The pipe member **60** is shown as having a horizontally extending, quick-release, automatic sealing coupling **65** which is adapted to receive a nose fitting or part **67** of an end of the supply pipe. The coupling may be typically of a detachable type such as illustrated in the Rickard U.S. Pat. No. 2,962,314.

Referring particularly to FIGS. **1, 2, 10, 11, 14** and **15,** the upper support frame **70** has purely vertically extending, angle-shaped, leg members **70***a* which define a square upper cage as connected between the lower end closure plate member **69** and an upper enclosure plate member **68.** The upper support frame **70,** like the lower frame **35,** has a group of four angle-shaped upright members **70a** which define a cage as closed-off at its ends by the upper and lower end plate members **68** and **69.**

The pair of opposite, substantially horizontally extending, fluid-dispensing truss arm assemblies D (see FIGS. **14, 15** and **17**) are made up of lengths or sections of coupled-together, fluid-supplying, pipe members **72,** framing members **73, 74, 74***a*, and reinforcing, diagonal, bracing members **75.** The frame is essentially of triangular shape and converges upwardly to an apex (as illustrated in FIG. **17**). The cross dimension of the frame is primarily defined by vertically upwardly converging and downwardly diverging, strap-like pieces or side members **74** and connecting cross-extending, strap-like pieces or bottom members **74***a*. Each pipe member length **72** has a nose **83** at one end which fits within a coupling housing **82** of an adjacent connected pipe member length. The coupling of **82, 83** may be of a similar quick-release type, such as the Rickard type previously mentioned or any conventional type, as desired.

As illustrated particularly in FIGS. **14, 15** and **17,** the side members **74** are at their upper ends connected by a two-part clamping collar **76** about the main overhead pipe member header assembly represented by the members **72.** As particularly shown in FIGS. **14, 15** and **16,** a two-part seal carrying clamping connector, saddle **77** having an inner sealing gasket **79,** and employing nut and bolt assemblies serves as a mount for each of a group of longitudinally spaced-apart down pipes **80** which supply the spray nozzles **81** through elbows **80a.** Each pipe member **72** has a bottom outlet opening **72a** for flowing the liquid or fluid downwardly into vertically projecting, down pipe members **80.** As shown particularly in FIG. **14,** each down pipe **80** extends well below the truss construction or structure such that there is a clear spray that may be utilized for irrigation purposes. As shown in FIG. **17,** each down pipe **80** projects centrally across and bisects the triangular shape of each section, extending below the lower brace member **74***a*. As shown in FIG. **18,** the nozzles **81** provide an overlapping spray for ground area coverage.

Instead of a pipe member supply line of coupling connected metal members, such as of aluminum, for supplying effluent to the pipe member **60** of FIG. **11,** a flexible hose may be used and its end provided with an adaptor nose corresponding to the nose **67.** A flexible hose is particularly suitable where a winch is being used to play the line in and out.

Referring particularly to FIGS. **10, 10A, 10B** and **11,** the innermost ends of lower, angle-shaped framing members **73** of the upper, rotatable support frame **70** (see also FIGS. **14, 15** and **17**) are shown provided with end pieces **87** that cooperate with cross-extending channel pieces **87** to tie innermost ends of the pair of lower framing members **73** together. The vertical frame members **70a** are shown tied-together at their lower ends by cross-extending channel pieces **84** and lower end plate **69.** To give flexibility to the truss arm assemblies D, it will be noted from FIGS. **10** and **10B** that they are connected, in effect, resiliently or flexibly to the upper support frame **70** by means of bolt and nut assemblies **89** that extend between the cross members **84** and **87** and that carry tension springs **89.** The couplings **82, 83** of a Rickard or Beyer type (see U.S. Pat. No. 2,259,453) that are used between upper pipe sections **72** of the header member or system, provide a flexible, fluid-tight seal. Thus, the truss arm assemblies D are flexibly suspended, and may move up and down vertically with respect to the upper support frame **70** without putting an excessive compression load on the

lower truss members. The construction acts like a shock absorber.

Side plates **85** are secured to cross pieces **70***b* that connect opposite pairs of the legs **70***a* of the upper frame **70** (see FIGS. **10** and **10**A) and I-beam members **85***a* are secured at their inner ends to the side plates **85** to provide the pair of balanced tension arm assemblies E. The arms **85***a* of the pair of tension or support arm assemblies E are shown extending from the upper support frame **70** at right angles with respect to the spray assemblies D and from a substantially central or mid position between upper and lower ends of the frame **70**, thus between upper and lower reaches of the spray arm assemblies D. As indicated in FIG. **10**, the tension arm assemblies E lie within or between upper and lower horizontal planes of truss arm assemblies D. Tie rings **86** are secured on each of the I-beam members **85***a* for receiving and tieing ends of a group of side tension cables **94** and a group of lift tension cables **93** thereto (see FIGS. **1**, **2** and **3**).

As previously indicated, the structure is of such a nature that it may be carried on a wheeled chassis or car A (see FIGS. **6** and **7**) which may be pulled by a conventional tractor B. Also, it may be moved from one location to another by a cable winch mechanism of a conventional type (not shown), or as illustrated in FIGS. **19**, **20** and **21**, may be directly powered by a suitable engine or motor means, such as a gasoline engine **95**. The car or chassis A′ is shown, by way of example, as provided with a framelike bed **20′** whose side members have end bearings **100** carrying an axle shaft **99**. The shaft **99** is energized by the engine **95** through the agency of a gear box **96**, a drive shaft **97**, and a transmission **98**. As, shown, the cross-positioned axle or transmission drive shaft **99** extends outwardly of the frame of the bed structure **20′** and has a pair of end mounts **101** to swingably retain a triangular-shaped, side mounting cradle bracket **21′** on each end thereof.

Each bracket **21′** carries a pair of drive wheels **22′** that, as shown, are driven through the agency of a pair of chain sprockets **105** that are secured on opposite end portions of the shaft **99** and that mesh with a continuous drive chain **106**. Each wheel **22′** is carried on an associated short length stud shaft **108** to one end of which a chain sprocket **107** is secured for actuating the wheel through the agency of the associated chain drive **106**. The car **20′** may be driven by an operator sitting in an enclosed cab **110** through the agency of a steering wheel assembly **111** and a pair of front wheels **30′**.

As shown in FIG. **1**, a group of horizontal tension cables **94** are connected between each end of the support arm assemblies E and at spaced locations along the elongated extent of the truss arm assemblies D. Eyelets **74***b* (see FIG. **15**) are provided along sides of the frames D to which tension cables **94** are connected. As illustrated in FIG. **2**, a group of lift cables **92** are secured to top eyelets **76***a* (see FIG. **14**) at spaced locations along the opposite arm assemblies D and extend upwardly in an inwardly inclined relation towards a top of the column C, with the cables of each truss arm assembly D being connected at their upper ends to an opposite pair of areas of a quadrant defining tie collar **91** (see FIGS. **4** and **5**). The tie collar **91** is secured on the upper end portion of mast **90** and is shown divided into four tie areas. In a similar manner, a group of lift cables **93** are secured at their lower ends at spaced-apart locations along each of the opposite arm assemblies E and at their upper ends are secured in a coverging relation to opposite quadrants of the ring **91** (see also FIG. **3**). By way of example, the tension cables **94** from the support arms E may be connected to an associated truss arm assembly D at about 30 foot intervals therealong, and the lift cables **92** may be connected thereto at about 60 foot intervals.

I claim:

**1.** In an improved overhead rotary pedestal-supported effluent-dispensing unit, a support base, a primary cage-like support frame of vertically elongated shape secured on said support base, a secondary cage-like rotatable upper support frame of vertically elongated shape, a pipe connector member fixedly mounted within a lower end of said primary support frame on said support base and having a coupling at one end thereof for detachably receiving an effluent supply member and having an upwardly open end portion; a vertically elongated and positioned rotatable pipe member extending at its lower end into the upwardly open end portion of said connector pipe member and being journaled therein to extend upwardly within and along said primary support frame into within and along said secondary support frame; a reinforcing sleeve member secured over said vertical pipe member and extending from a position adjacent said pipe connector member centrally vertically upwardly along said primary support frame and at its upper end being secured to and supporting said secondary support frame in a spaced relation above said primary support frame, a bearing sleeve secured within and extending downwardly from an upper end portion of said primary support frame and along said reinforcing sleeve member for journaling said sleeve member along and within said primary support member, end thrust bearing means positioned within the spacing between said primary and secondary support frames and cooperating with said sleeve member for rotatably supporting said secondary frame on and with respect to said primary support frame, a mast extending centrally upwardly from and mounted on an upper end of said secondary support frame, a pair of opposite, substantially horizontally extending, fluid dispensing truss arm assemblies mounted on said secondary support frame to extend substantially horizontally outwardly therefrom, a pair of balanced tension arms extending substantially horizontally from said secondary support frame at right angles to said pair of truss arm assemblies, and cable means connecting said pair of truss arm assemblies and said pair of tension arms together and to an upper end portion of said mast.

**2.** In a unit as defined in claim **1**, each truss arm assembly of said pair having connected frame sections of substantially triangular shape therealong, the upper reach of each of said truss arm assemblies being defined by a longitudinally extending header comprising coupled-together pipe members, each said header at its innermost end being connected to receive effluent from said rotatable pipe member; and actuating means carried by said support base and having driving connections to said reinforcing sleeve member for rotating said pipe member and said secondary support frame, said pair of truss arm assemblies and said tension arms on and with respect to said primary suppport frame.

**3.** In a unit as defined in claim **2**, a collar secured to and extending about an upper end portion of said primary support frame, a group of leg members secured

to and extending in a spaced-apart and downwardly diverging relation with respect to each other from said collar, and said leg members being secured at their lower ends to said base member at outer reaches thereof.

**4.** In a unit as defined in claim **2,** said header having a series of connector saddles in a horizontally spaced-apart relation therealong, a down pipe carried by each said saddle to extend downwardly below its associated truss arm assembly to a spray area therebeneath, and a spray nozzle carried by the lower end portion of each of said down pipes for providing an overlapping spray area of ground coverage.

**5.** In a unit as defined in claim **2,** a drive element secured on said sleeve member in the spacing between said primary and secondary support frames, and said driving connections including said drive element.

**6.** In a unit as defined in claiim **2,** detachable coupling means connecting an inner end of said header to said rotatable pipe member, and means flexibly connecting innermost frame sections of said pair of truss arm assemblies to said secondary support frame.

**7.** In a unit as defined in claim **6,** said flexible connecting means comprising tension springs positioned on bolt-like elements extending between lower portions of said innermost frame sections and said secondary support frame.

**8.** In a unit as defined in cliam **1,** said support base is a wheeled truck, and drive means carried by said truck and operatively mounted to move said unit from one location to another.

**9.** In a unit as defined in claim **1,** said support base is a wheeled truck, a concrete base is provided to receive said wheeled truck and has a latching detent, and latching means carried by said wheeled truck and adapted to extend therefrom for movement into and out of a latching position within said detent for retaining said wheeled truck in a fixed position on said concrete base during operation of the unit.

**10.** In a unit as defined in claim **1,** a side support arm secured to project sideways from said primary support frame, a platform carried by an upper end portion of said primary support frame and projecting transversely therefrom in substantial alignment with said side support arm, motor means operatively positioned between said platform and said support arm; and actuating means connected to said motor, carried by said platform and operatively connected to said sleeve member in the spacing between said primary and secondary support frames.

**11.** In a unit as defined in cliam **2,** each truss arm assembly of said pair having a vertical extent substantially corresponding to the vertical extent of and being secured to said secondary support frame adjacent its upper and lower ends, and said pair of tension arms having a substantially lesser vertical extent than and being secured to said secondary support frame at a substantially central position between its upper and lower ends.

**12.** In a unit as defined in claim **1,** tie collar means mounted on an upper end portion of said mast, said cable means including, tension cable means connected between spaced length portions of said tension arms and of said truss arm assemblies, and lift cable means connected from spaced length portions of said tension arms to said tie collar means and from spaced length portions of said pairs of truss arm assemblies to said tie collar means.

**13.** In a unit as defined in claim **12,** the distance between spaced portions along said truss arm assemblies and along said tension arms to which said lift cable means are connected being about twice the distance between spaced portions along said truss arm assemblies and said tension arms to which said tension cable means are connected, said tie collar means being divided into quardant areas, upper ends of said lift cable means of each of said truss assemblies being connected to one set of opposite quardants of said tie collar, and upper ends of said lift cable means of each of said tension arms being connected to another set of opposite quadrants of said tie means that are at right angles with respect to the one set of quardrants.

* * * * *

# UNITED STATES PATENT OFFICE

# CERTIFICATE OF CORRECTION

PATENT NO. : **3,870,235**

DATED : **March 11, 1975**

INVENTOR(S) : **Stephen D. Newell**

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

**Column 10, line 35 as numbered, change "quardant" to --quadrant--.**

**Column 10, line 37 as numbered, change "quardants" to --quadrants--.**

**Column 10, line 41 as numbered, change "quardrants" to --quadrants--.**

**The above all apply to claim 13.**

Signed and sealed this 20th day of May 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks