Dec. 9, 1947. H. W. GORE 2,432,309

POWER SPRAYER

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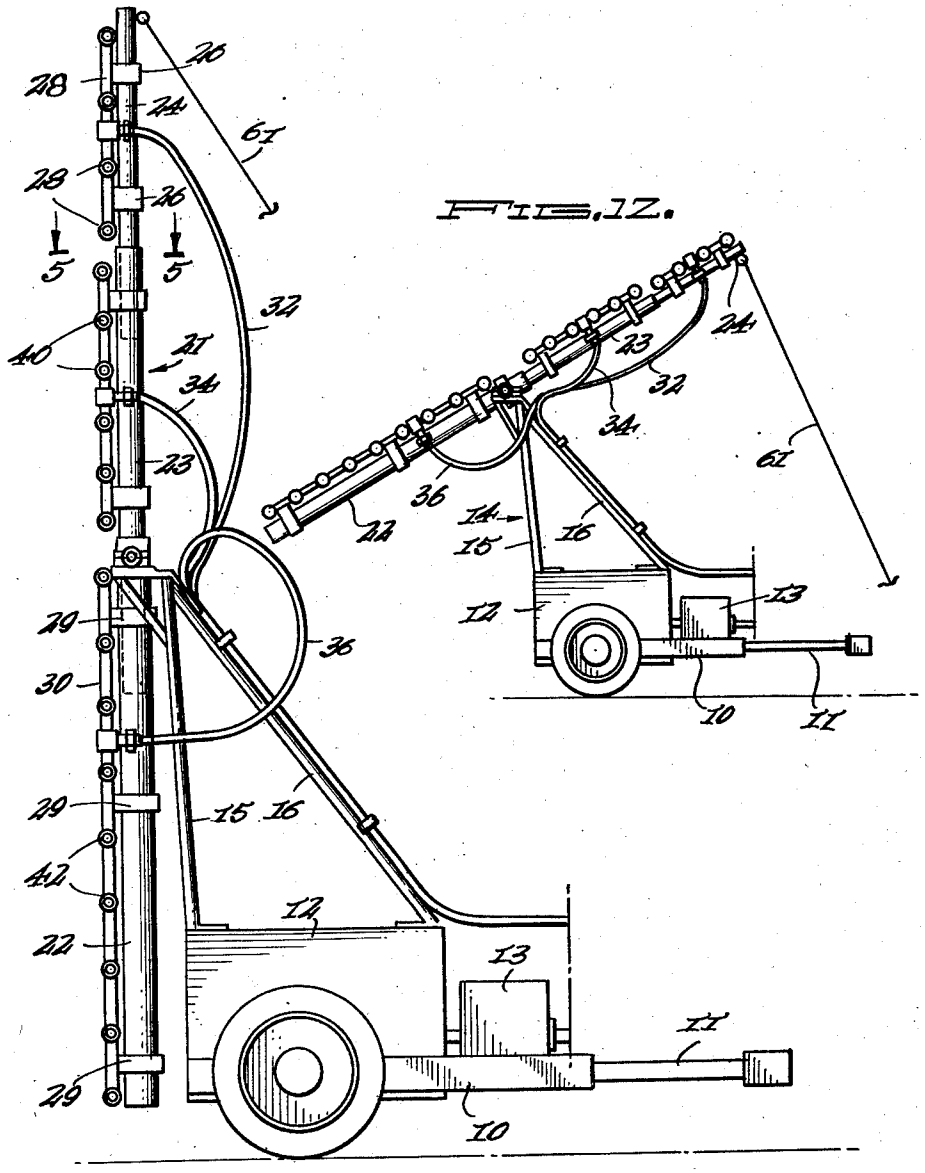


FIG. 2.

FIG. 1.

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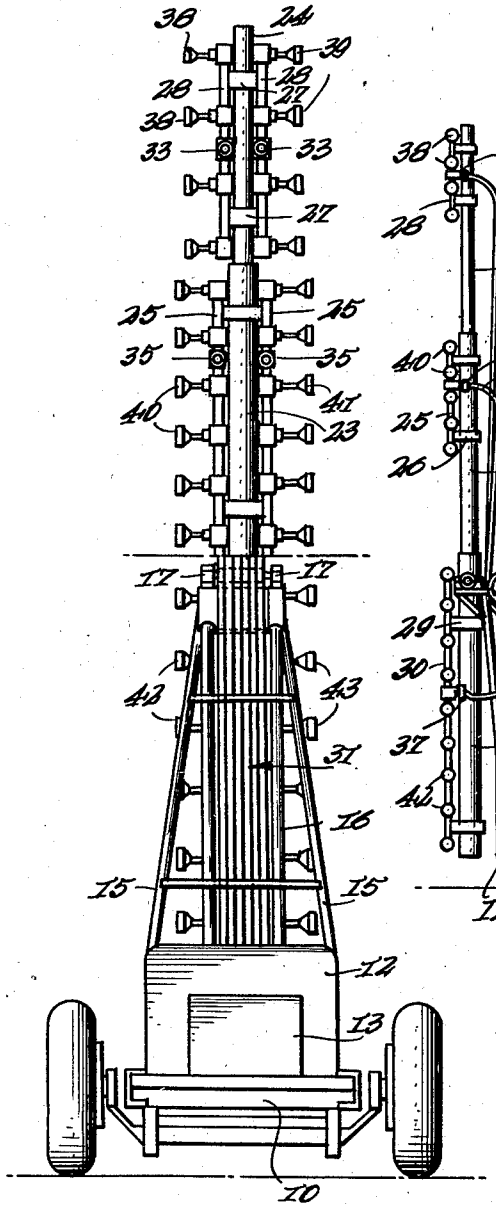


FIG. 2.

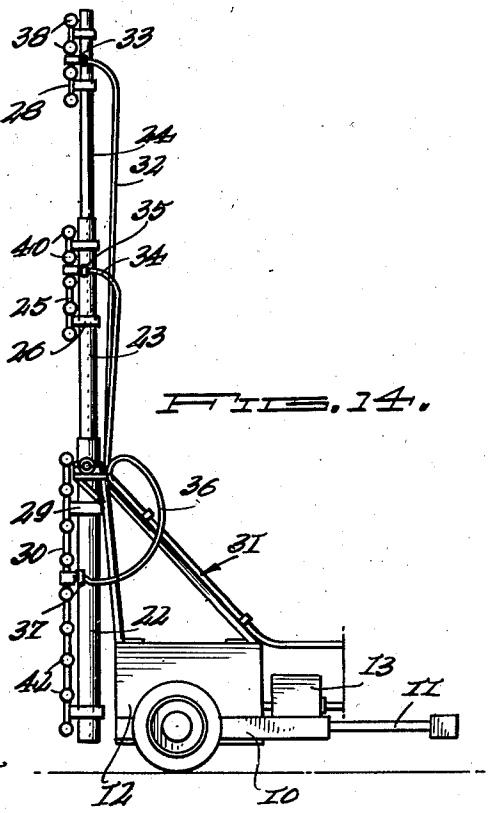


FIG. 1.

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FIG. 3.

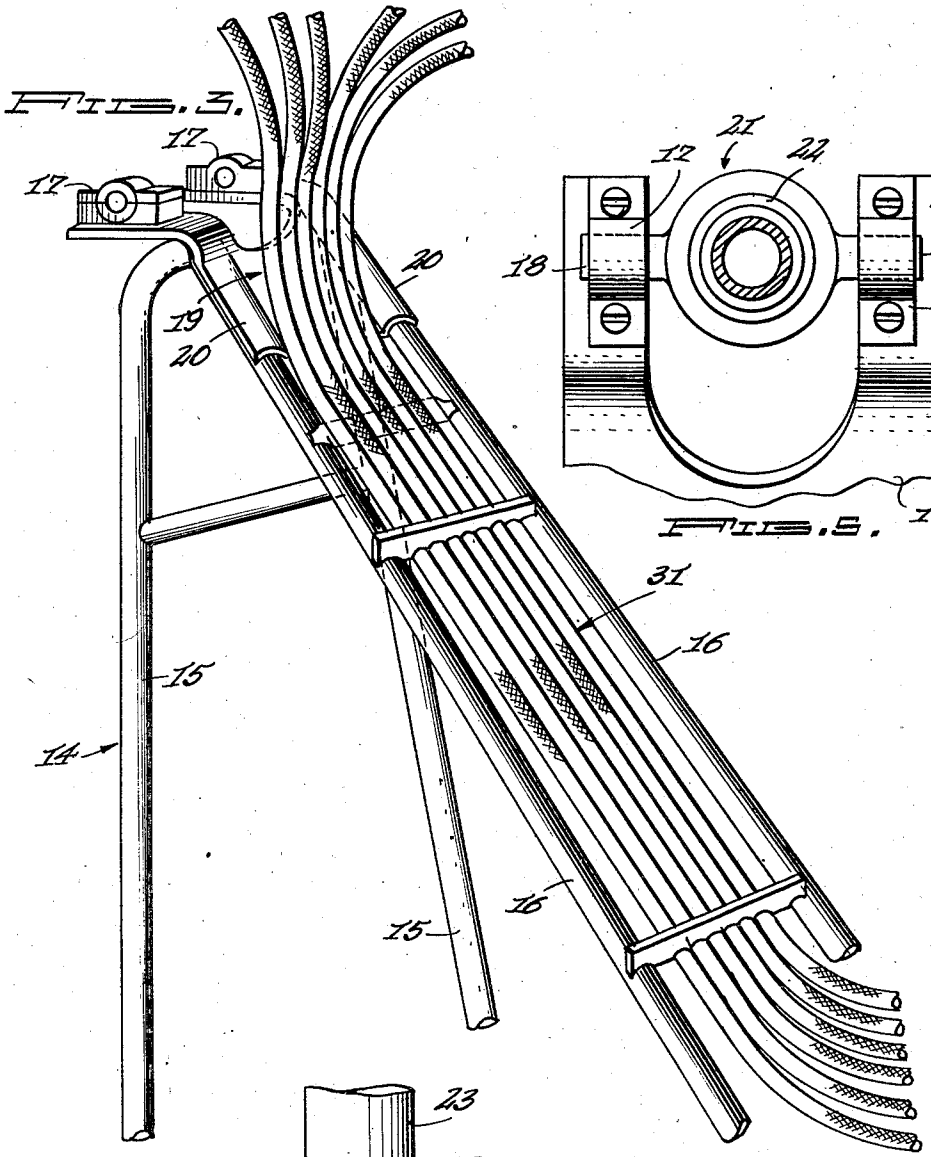


FIG. 5.

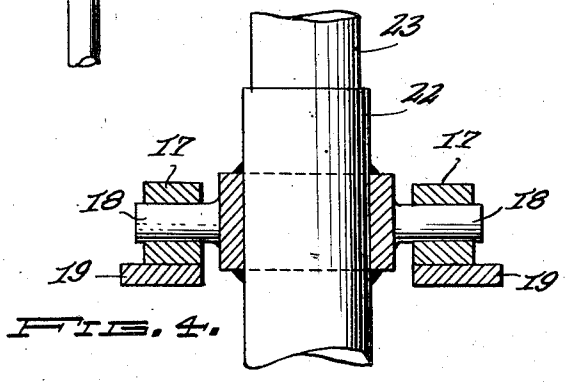


FIG. 4.

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Fig. 6.

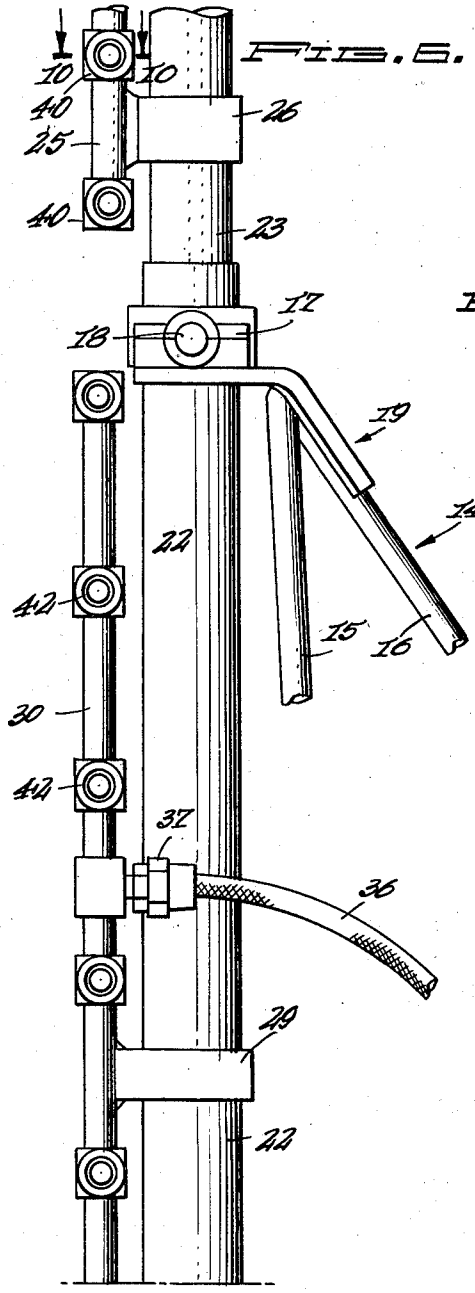


Fig. 7.

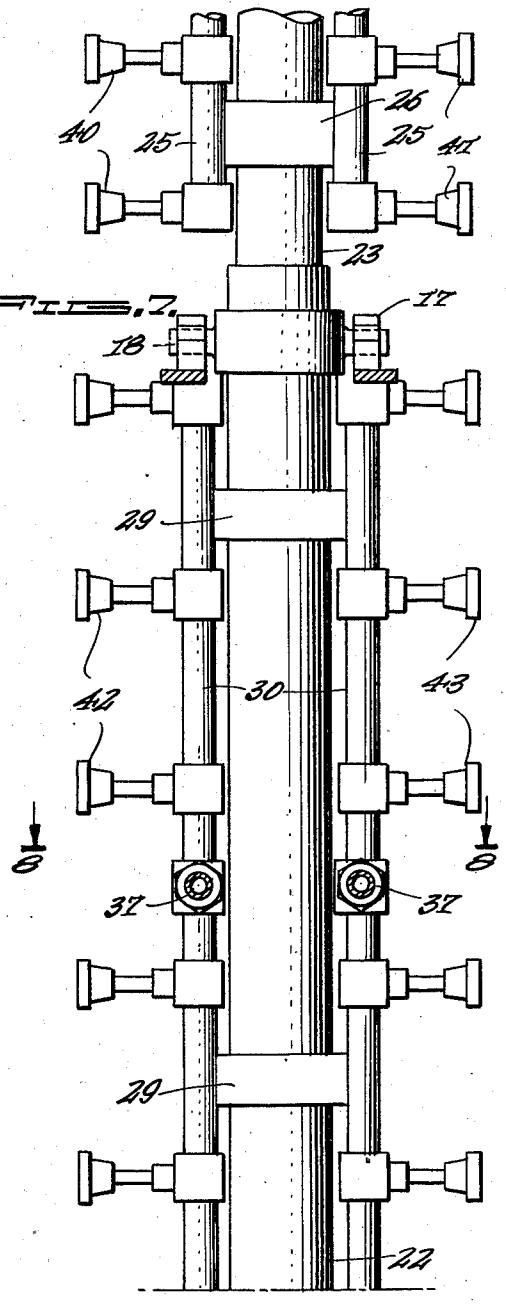
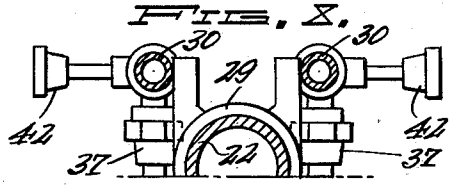


Fig. 8.



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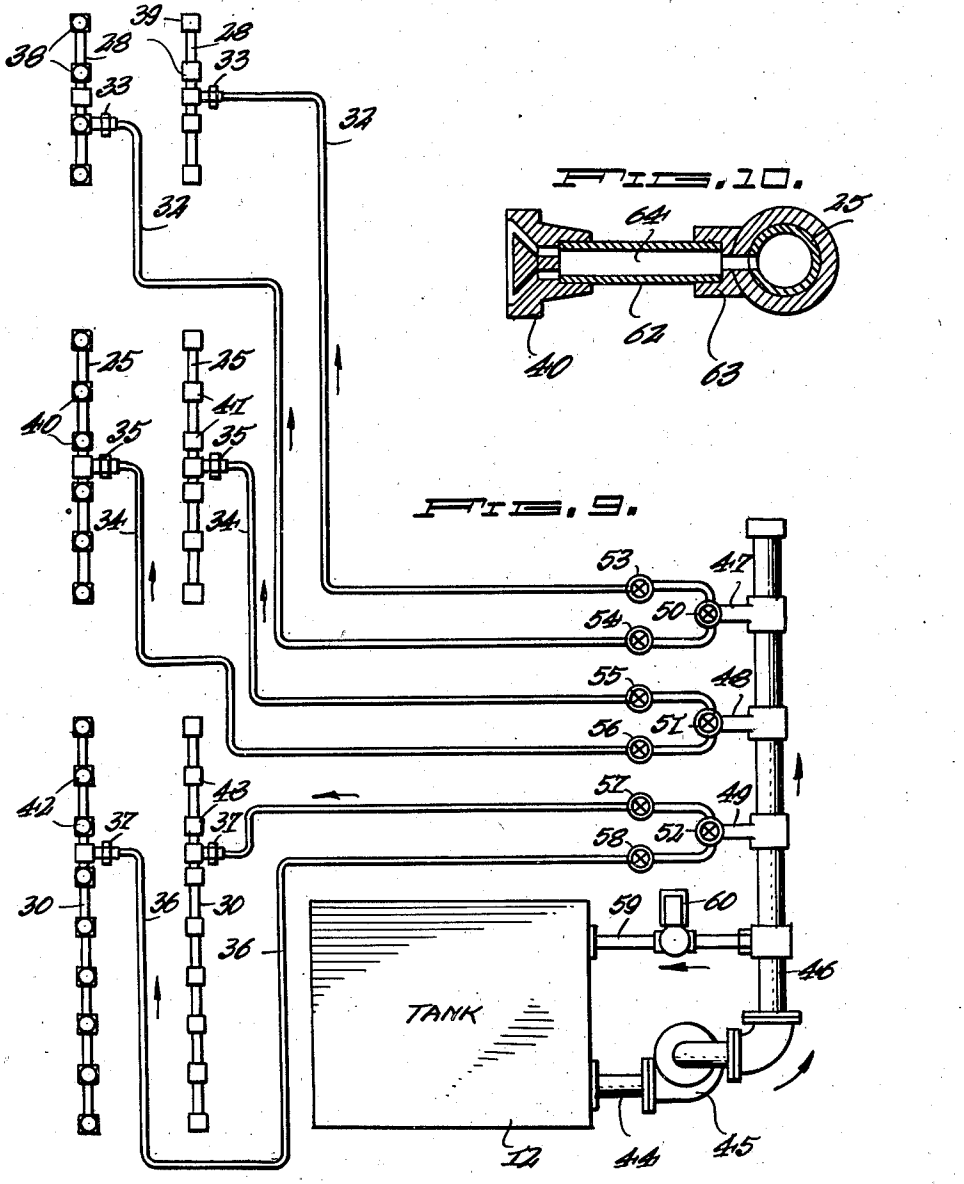
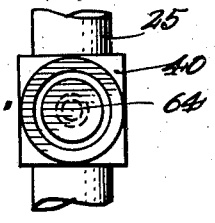


FIG. 10.

FIG. 9.

FIG. 11.



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UNITED STATES PATENT OFFICE

2,432,309

POWER SPRAYER

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Application December 8, 1945, Serial No. 633,602

2 Claims. (Cl. 299—41)

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This invention relates to power sprayers, and aims to provide in combination with a power liquid sprayer, a mast the height of which depends upon the user's needs and which is provided with nozzles grouped in sections adapted to carry the spray horizontally. The mast is balanced on a horizontal pivot and balanced vertically at all times, but it is adapted to be tilted at an angle to the vertical primarily to enable the machine to pass under low telephone and electric wires although the spraying may also, naturally, be done if desired or necessary with the mast thus tilted. The mast is adapted to be raised or lowered as desired or needed, as well as tilted, the control therefor being located at any suitable place such as, for instance, at the tractor seat. The nozzles are grouped to meet the needs of low or high trees. The whole device is mounted on the rear of the spray unit in any suitable manner, such as, for instance, by means of two major bearings, and held in place by four legs bolted to the spray unit.

The above as well as other and additional objects will become apparent in the following description, wherein characters of reference refer to like-numbered parts in the accompanying drawings. It is to be noted that the drawings are intended for the purpose of illustration only, and that it is neither desired nor intended to limit the invention necessarily to any or all of the specific details of construction shown, excepting insofar as they may be deemed essential to the invention.

Referring briefly to the drawings,

Fig. 1 is a side elevational view of the sprayer, in normal position.

Fig. 2 is a rear elevational view of the same.

Fig. 3 is a fragmentary perspective view of the frame of the device and of the nozzle feed pipes or lines, showing also the mast pivot bearings.

Fig. 4 is a fragmentary enlarged front elevational view of the mast and its supports.

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 1 but omitting all parts except the mast, a fragment of the said frame, and the pivotal supports of the mast in the frame.

Fig. 6 is an enlarged fragmentary side elevational view of the mast.

Fig. 7 is a front view of Fig. 6.

Fig. 8 is a fragmentary cross-sectional view taken on the line 8—8 of Fig. 7.

Fig. 9 is a schematic diagram showing the supply tank for the liquid and the supply pipes therefrom to the groups of nozzles as well as the control or valve means therefor.

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Fig. 10 is a sectional view through one of the nozzles and its supporting supply tube, taken on the line 10—10 of Fig. 6.

Fig. 11 is an end view of one of the nozzles.

Fig. 12 is a side elevational view of the device, showing the mast in tilted position.

Referring in detail to the drawings, the numeral 10 indicates the chassis, the numeral 11 the hitch by means of which the chassis may be hitched to a tractor, not shown, of a conventional power spray unit having the liquid supply tank 12 and the pump 13 mounted thereon. The pump is driven by any suitable means, not shown, to put the liquid in the tank 12 under pressure.

A frame 14 consisting of a pair of front legs 15 and a pair of inclined rear legs 16, is mounted on the chassis or on the tank 12 by bolting the lower extremities of the legs, or otherwise securing them, thereto. The frame 14, as seen in Fig. 3, is of unitary construction, and projecting forward from its upper extremity are a pair of spaced horizontal bearings 17 which receive the ends of a pivot bar 18, or, better, receive the aligned pivot pins 18. The bearings 17 are supported on a sheath 19 having beaded edges 20 which fit over the upper ends of the legs 16 and are secured thereto in any desired manner.

A mast 21, composed of three telescopic sections 22, 23, and 24, of which the section 22 is the lowest, is mounted in the projecting bearings 17 by the simple provision of having the pivot pins 18 project from the upper end thereof. A pair of spaced vertical tubes 25 are secured to the section 23, at the sides and forward thereof, by vertically spaced sleeves or collars 26 secured to the section 23. Likewise, spaced collars 27 secure similar spaced tubes 28 to the section 24, and spaced collars 29 secure similar tubes 30 to the lowest section 22. The mast sections 22, 23, and 24 are frictionally telescopic so that the height of the mast may be varied. Limit stops to prevent withdrawal of the sections from each other would be provided but are not shown.

A plurality of feed lines, pipes or hoses is shown at 31 extending upward between and supported by the legs 16. Two of these pipes or hoses, shown at 32, are attached by unions 33 to the two vertical tubes 28 of the top section 24; two others, shown at 34, are joined by unions 35 to the vertical tubes 25 of the section 23; and another two hoses 36 are joined by unions 37 to the vertical tubes 30 of the section 22. From the tubes 28, horizontal nozzles project from one side of the tube 28 on that side, shown at 38, and similar nozzles 39 project from the other tube

28 in the opposite direction. Likewise, nozzles 40 project from one side of one tube 25 in the same direction as the nozzles 38 and nozzles 41 project in the opposite direction from the other tube 25; and nozzles 42 project from one tube 30 in the same direction as the nozzles 38 and 40 and nozzles 43 project from the other tube 30 in the opposite direction. All of the nozzles mentioned lie in a common plane.

The outlet 44 from the tank 12 leads through a coupling 45 to a manifold 46 having taps 47, 48, and 49 terminated by valves 50, 51, and 52, respectively. The two hoses 32 lead from the valve 50 through their own control valves 53 and 54; likewise, the two hoses 34 lead from the valve 51 through their control valves 55 and 56; and the two hoses 36 lead from the valve 52 through their control valves 57 and 58. An overflow return tap 59 leads through a valve 60 from the manifold 46 back to the tank 12.

With all valves closed and pressure up in the tank, if it is desired to spray from all the nozzles on the left-hand side of the mast, Fig. 2, valves 50, 51, and 52 are first opened, and then valves 54, 56, and 58. Conversely, the spray may be readily controlled to pass from the right-hand side, as is obvious. If it is desired to spray only from one side of the top section tubes 28, the valve 53 or 54 is turned on, or for spraying from both sides simultaneously, both valves 53 and 54 are on. Similarly, the tube sections 25 and 30 may be utilized in the same manner, and obviously any desired combination of sections may be used to spray from as desired.

In the case of large trees, the mast may be elongated in an obvious manner through the frictional withdrawal of the upper mast sections to the desired positions, where they are maintained by friction. A guy wire or the like 61, secured to the top of the mast, is used to tilt the mast into any position between the vertical and the horizontal as, for instance, into the position shown in Fig. 12. The lower end of the wire 61 would be located at or near the seat of the tractor, not shown, for convenience of handling, and it would of course be anchored in some way, not shown. The mast is so balanced that it is retained normally by gravity in the upright position shown in Fig. 1.

The nozzles may of course be of any desired construction or form, but the nozzles illustrated are generally of the form having an elongated tubular body or stem 62 coupled to the nozzle tube by a coupling 63, having the through passage 64 extending into the nozzle tube, as shown in Fig. 10.

Among the advantages of the invention which may be mentioned are, that it works perfectly on

hills as well as on flat land and regardless of the size and variety of tree or fruit; it has been used successfully with any width of row and height of tree; it is labor saving, and solves the labor problem, in that but one man is needed to operate it; it can be readily taken off and remounted on another spray unit; its capacity is high; it is economical in use of hose, in a minimum loss of spray, and in a minimum loss of spraying time. The cost of construction can be offset by one season's use on any fruit farm of a thousand trees or more.

The materials used in the construction of the apparatus may be any that are found or believed to be suitable for the purpose or purposes, but they should naturally be chosen with a view to maximum efficiency and utility at minimum cost.

Obviously, modifications in form and structure may be made without departing from the spirit and scope of the invention.

I claim:

1. A chassis having a pressure tank thereon adapted to contain liquid under pressure, a frame mounted on the chassis and extending above the level of said tank, a pair of spaced horizontal aligned bearings supported on said frame at the top thereof, a normally upright mast comprising a plurality of telescoping sections, the lowermost of said sections having diametrically opposed pins extending from the sides thereof near its upper end, said pins registering in said bearings, each of said sections having a vertical tube secured to the side thereof, each of said tubes having a plurality of nozzles connected at right angles thereto in spaced relationship along the length of the tube, said tank having an outlet, a manifold connected to said outlet, said manifold having a plurality of taps, liquid conducting tubes joining said taps with said first-named tubes, and valve means in said outlet and in said last-named tubes.

2. The device set forth in claim 1, having means for tilting said mast comprising a cable secured to the topmost of said sections and extending forward and downward and adapted to be grasped by the operator.

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