

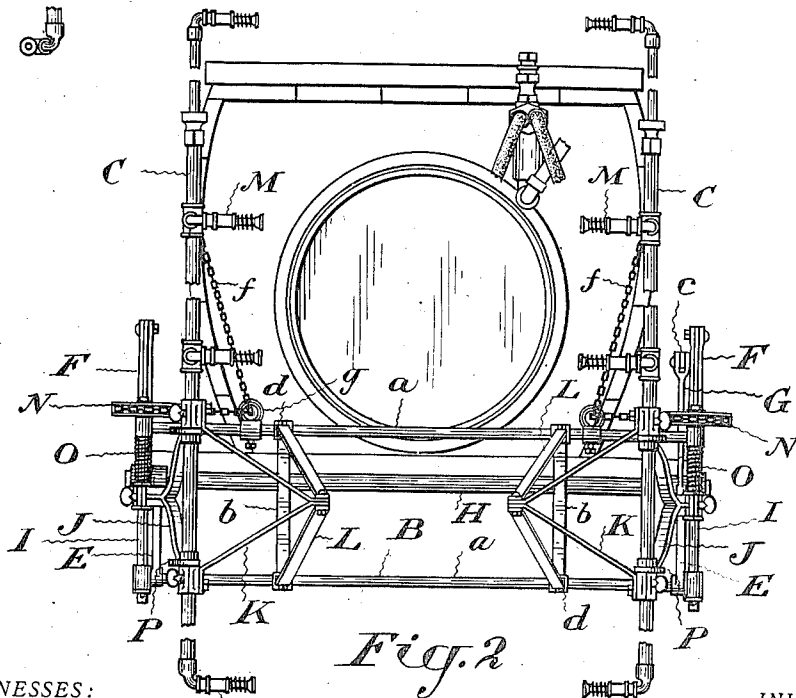
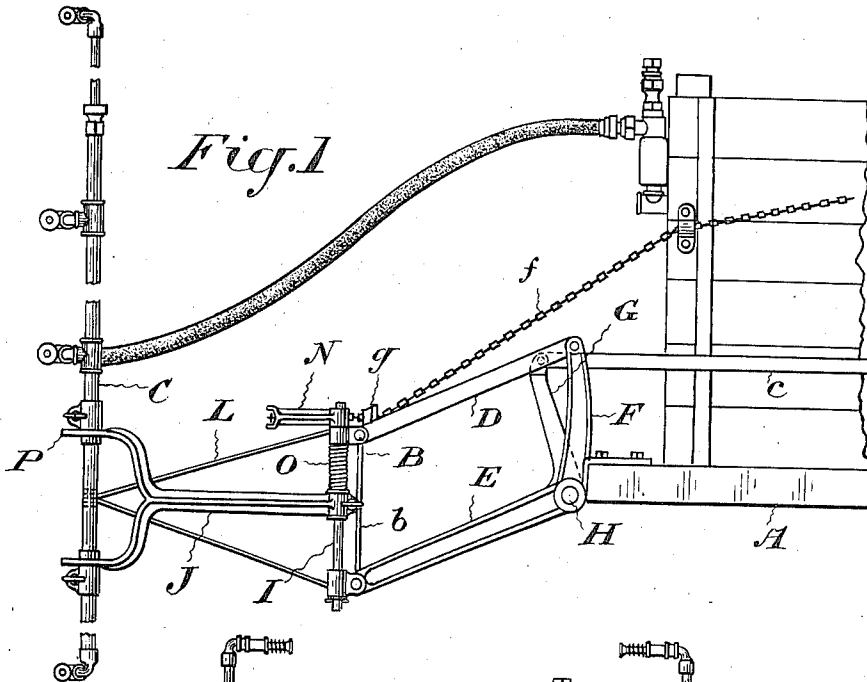
W. H. HEARD.
 SPRAYING APPARATUS.

APPLICATION FILED JULY 26, 1909. RENEWED MAR. 2, 1912.

1,043,929.

Patented Nov. 12, 1912.

2 SHEETS—SHEET 1.



WITNESSES:
 Wm. G. McMullan
 J. M. Hendrick

INVENTOR.
 William H. Heard
 BY Ridout & Maybee
 ATTORNEYS.

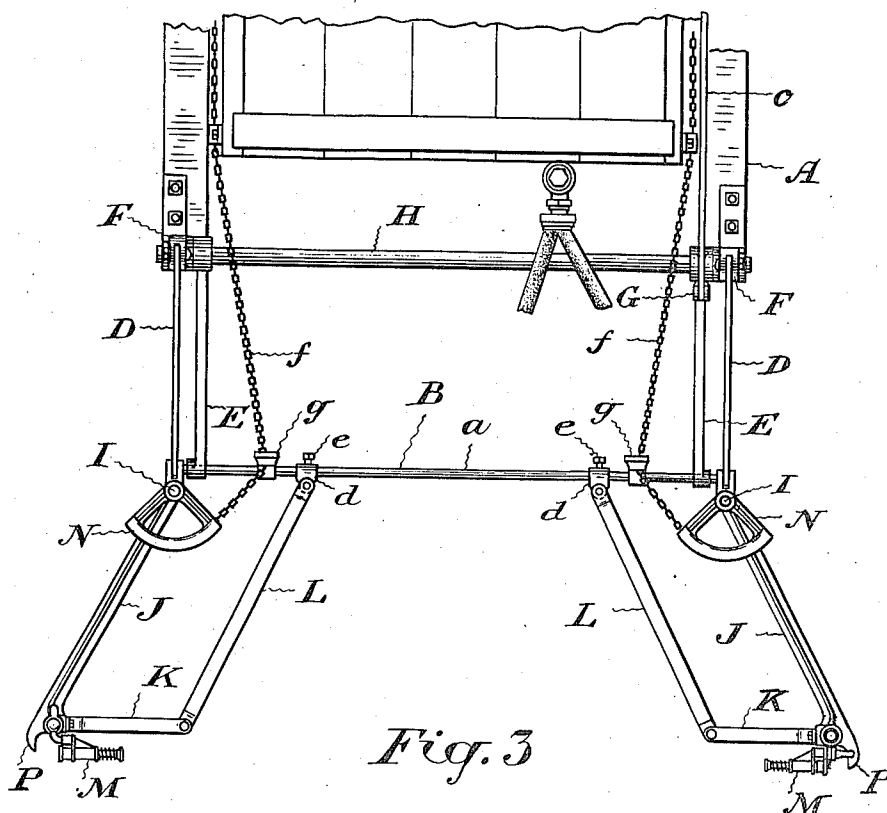
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UNITED STATES PATENT OFFICE.

WILLIAM H. HEARD, OF LONDON, ONTARIO, CANADA.

SPRAYING APPARATUS.

1,043,929.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed July 26, 1909, Serial No. 509,688. Renewed March 2, 1912. Serial No. 681,171.

To all whom it may concern:

Be it known that I, WILLIAM H. HEARD, of the city of London, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Spraying Apparatus, of which the following is a specification.

This invention relates to spraying apparatus in which vertical spray conduits are employed each carrying a plurality of spray nozzles and my object is to devise convenient means whereby the spray conduits may be laterally adjusted without altering the angle of the spray nozzles to their work.

A further object is to satisfactorily combine such laterally adjusting means with convenient means for vertically adjusting the spray conduits without tilting them from their vertical position. I attain my object by supporting the spray conduits by means of a horizontal parallel motion device from a frame which is supported from a vehicle and is vertically adjustable relative thereto by means of a vertical parallel motion device.

Figure 1 is a side elevation of part of a spraying machine provided with my improvements. Fig. 2 is a rear elevation of the same parts, and Fig. 3 is a plan view.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A represents part of a vehicle which will, of course, be provided with the usual spray pumps and operating means. From the vehicle is supported the frame B which carries the spray conduits C in a manner to be hereinafter described. The frame B comprises horizontal bars *a* substantially parallel and disposed in the same vertical plane. These bars are suitably connected by vertical bars *b*. The frame B is preferably given a vertical parallel movement by the following means: Pairs of parallel links D and E are pivotally connected with the bars *a* at each side of the apparatus. The forward ends of these links are pivotally connected to the brackets F suitably secured to the vehicle. An arm G is secured to the shaft H which is journaled in the brackets F and is secured at each end to the lower links E. This shaft thus forms the pivots for the

lower links and serves when rocked by the arm G to swing the links D and E on their pivots on the brackets and thus give a vertical parallel adjustment to the frame B. A connecting rod *c* is shown connected to the arm G by means of which the shaft may be rocked, as aforesaid. The spray conduits carried by the frame B will thus be given a vertical parallel movement so that the heights of the spray nozzles may be adjusted without tilting the spray conduits from their normal vertical position. It is necessary also to adjust the spray conduits vertically without rotating them on their axes. I therefore support them from the frame B in the following manner. On the frame B at each side is journaled a vertical spindle I. To this spindle is secured one end of a link J, the other end of which is preferably forked as shown. In the forks of the link J is journaled the spray conduit C.

Secured to the spray conduit and extending substantially parallel to the frame B is an arm K. A link L parallel to the link J is pivotally connected at one end to the arm K and at the other end to the frame B. The arm K is preferably formed of two parts diverging from their point of connection with the link L to their points of connection with the spray conduit C. The link L is preferably formed in two parts diverging from their point of connection with the arm K to their points of connection with the frame B. The bearings *d* for the forward ends of the links L are preferably laterally adjustable on the bars *a* and are provided with the set screws *e* by means of which they may be clamped as adjusted. These bearings being adjustable, means are thus provided whereby the parallel movement of the conduits horizontally may be adjusted as necessary. The conduits carry the spray nozzles M which may be of any ordinary type.

The following means are provided for moving the links J and L. To the upper end of each spindle I is secured a grooved quadrant N. A chain or cord *f* is secured to each quadrant and passes therefrom preferably through a guide *g* secured to the upper bar *a*. This chain leads to any convenient point and may be operated in any desired manner to rock the quadrant and swing in-

wardly the links J and L. To swing the links outwardly I place on each spindle I a coil spring O having its ends secured respectively to the frame B and the spindle I. The
 5 spring tends normally to swing the links J and L outwardly to their limit of movement and consequently, of course, the conduits C. If, however, any obstruction is encountered by the links they are free to swing inwardly
 10 until the obstruction is passed. I thus avoid the chance of injury to the apparatus which would always be present if the lateral adjustment of the spray conduits was positive.

I have already stated that obstructions
 15 may be encountered by the spray conduits and their supporting means. To prevent any such obstruction from catching the spray nozzles or other parts of the conduits I prefer to somewhat offset inwardly the
 20 spray conduits relative to the outer sides of the links J as shown particularly in Fig. 3. I also provide the rear end of each of the links J with a rearwardly directed inwardly curved finger P. Any obstacle encountered
 25 will as the vehicle moves slide along the outer side of the link and pass the finger without encountering any part of the spray conduit or parts carried thereby.

From the above description it will be seen
 30 that I have satisfactorily attained the objects of my invention, as hereinbefore set forth, and that no matter how the spray conduits may be adjusted either vertically or laterally the spray nozzles will discharge
 35 at exactly the same angle relative to the vines being sprayed.

What I claim as my invention is:—

1. In spraying apparatus the combination
 40 of a vehicle; a horizontally swinging link carried thereon; a substantially vertical spray conduit journaled in said link; an arm secured to the spray conduit; and a second swinging link substantially parallel
 45 to the first pivotally connected to the said arm and to the vehicle.

2. In spraying apparatus the combination
 of a vehicle; a vertical spray conduit; and means for vertically and horizontally adjusting said conduit comprising a vertical
 50 parallel movement device including a pair of horizontally pivoted links and a horizontal parallel movement device including a pair of vertically pivoted links.

3. In spraying apparatus the combination
 55 of a vehicle; a frame supported therefrom; means for vertically adjusting the frame; a horizontally swinging link pivoted at one end on said frame; a substantially vertical spray conduit journaled in said link; an
 60 arm secured to the spray conduit; and a second link pivotally connected at one end to the arm and at the other to the said frame.

4. In spraying apparatus the combination

of a vehicle; a frame supported therefrom; 65 a vertical spray conduit; swinging means connecting said frame and conduit whereby the latter may be moved laterally while maintaining its vertical position; and means
 70 co-acting with said conduit and said frame to maintain the discharge from the conduit at a constant angle to the direction of travel of the vehicle when the conduit is swung laterally.

5. In spraying apparatus the combination 75 of a vehicle; a frame supported therefrom; a vertical spindle journaled in said frame; a link secured to said spindle; a spray conduit journaled in said link; an arm secured to the spray conduit; and a second link sub- 80
 stantially parallel to the first pivotally connected to said arm and to said frame.

6. In spraying apparatus the combination
 of a vehicle; a frame supported therefrom; a vertical spindle journaled in said frame; a 85
 link secured to said spindle; a spray conduit journaled in said link; an arm secured to the spray conduit; a second link substantially parallel to the first pivotally connected
 90 to said arm and to said frame; means connected to said spindle whereby it may be manually rotated; and a spring tending to rotate said spindle to swing the spray conduit outwardly.

7. In spraying apparatus the combination 95 of a vehicle; a horizontally swinging link carried thereon; a substantially vertical spray conduit journaled in said link and offset inwardly to cause the outer side of the link to act as a guard; an arm secured
 100 to the spray conduit; and a second swinging link substantially parallel to the first pivotally connected to the said arm and to the vehicle.

8. In spraying apparatus the combina- 105
 tion of a vehicle; a horizontally swinging link carried thereon; a substantially vertical spray conduit journaled in said link; a rearwardly directed inwardly curved finger
 110 formed at the rearward end of said link; an arm secured to the spray conduit; and a second swinging link substantially parallel to the first pivotally connected to the said arm and to the vehicle.

9. In spraying apparatus the combination 115 of a vehicle; a horizontally swinging link carried thereon; a substantially vertical spray conduit journaled in said link and offset inwardly to cause the outer side of the link to act as a guard; a rearwardly directed
 120 inwardly curved finger formed as the rearward end of said link; an arm secured to the spray conduit; and a second swinging link substantially parallel to the first pivotally connected to the said arm and to the
 125 vehicle.

10. In spraying apparatus the combination of a vehicle; a frame supported there-

from; a vertical spindle journaled in said frame; a link secured to said spindle; a spray conduit journaled in said link; an arm secured to the spray conduit; a second
5 link substantially parallel to the first pivotally connected to the said arm; and a bearing laterally adjustable on the frame on

which bearing the said second link is pivoted.

Dated this 29th day of June, 1909.

WILLIAM H. HEARD.

Signed in the presence of—

R. E. WALKER,

W. J. WINNERTT.