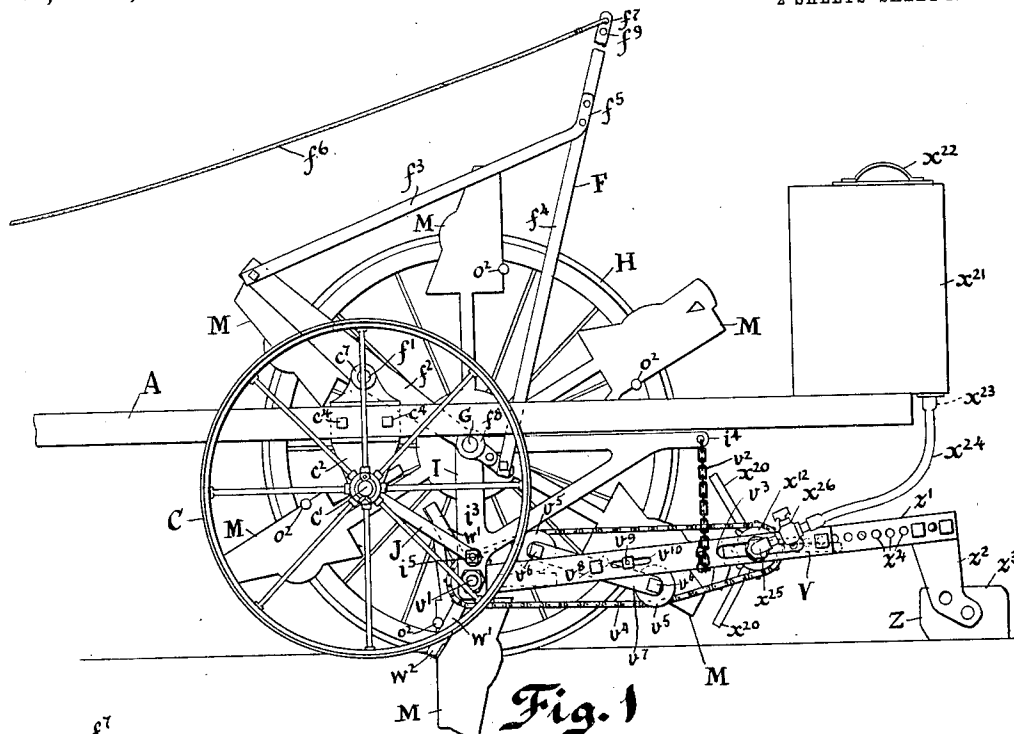
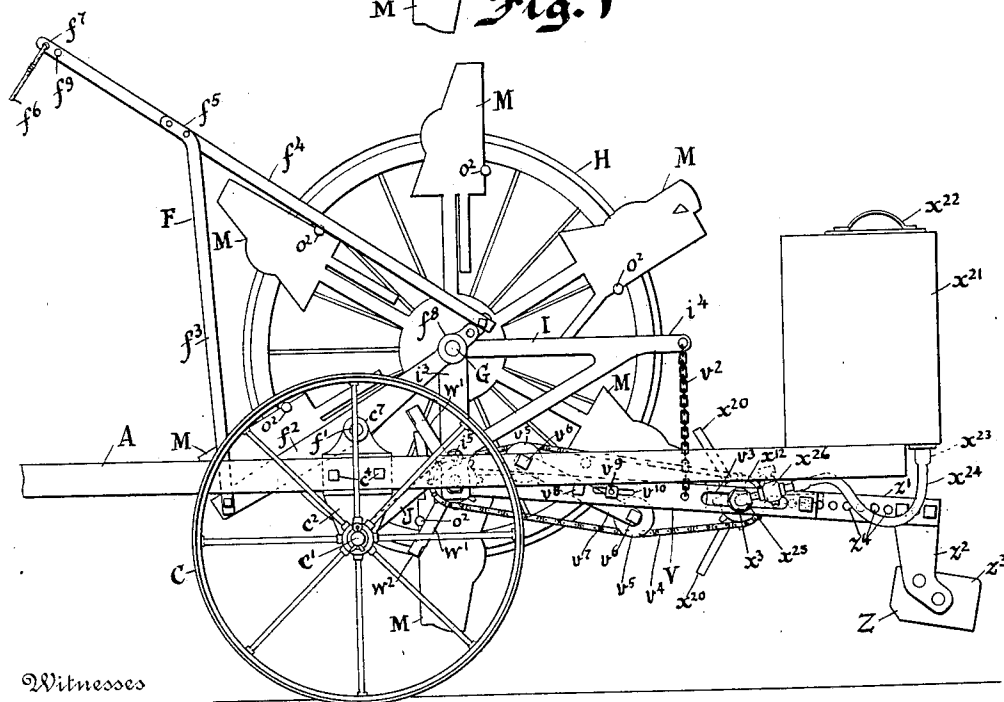


J. RIEMENSCHNEIDER.
WATER MEASURING DEVICE FOR PLANT SETTING MACHINES.
APPLICATION FILED MAR. 24, 1913.

1,085,223.

Patented Jan. 27, 1914.

2 SHEETS-SHEET 1.



Witnesses

RL Brecken,
Eleanor Rink

Fig. 2

Julius Riemenschneider, Inventor

By *George W. Moore* Attorney

J. RIEMENSCHNEIDER.
 WATER MEASURING DEVICE FOR PLANT SETTING MACHINES.
 APPLICATION FILED MAR. 24, 1913.

1,085,223.

Patented Jan. 27, 1914.

2 SHEETS—SHEET 2.

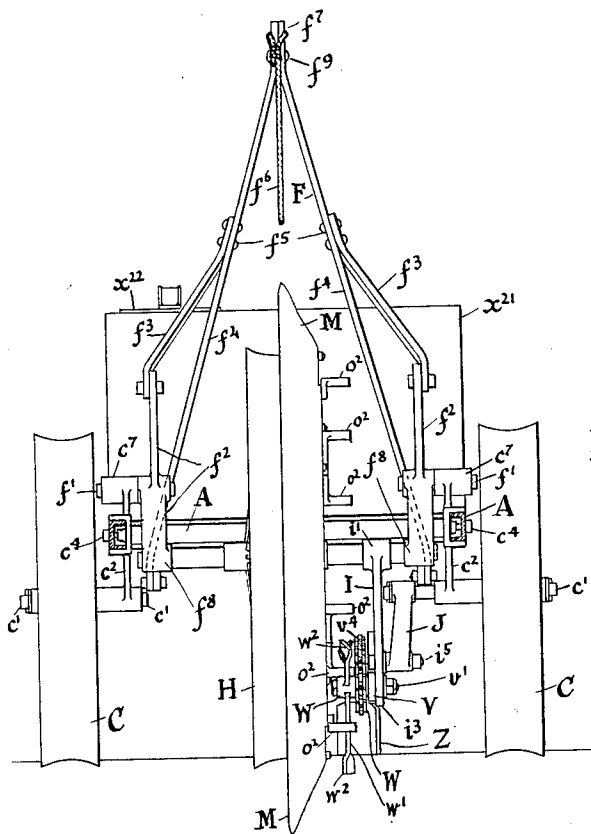


Fig. 3

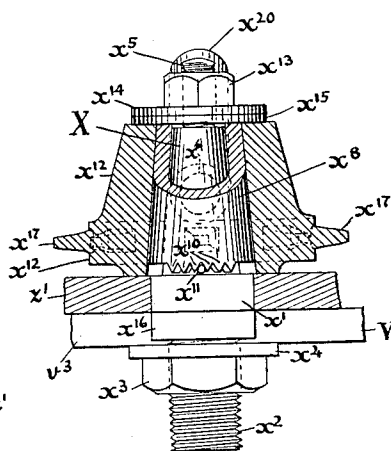


Fig. 6

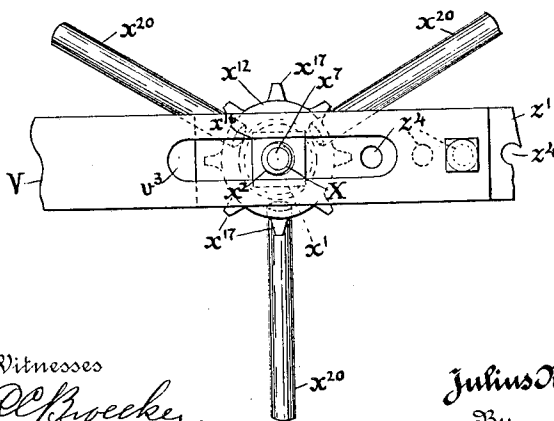


Fig. 4

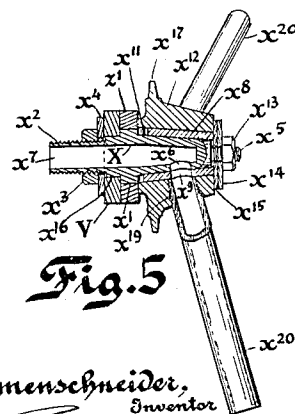


Fig. 5

Witnesses

Al Broecker

Cleanor Pink

Julius Riemschneider,
 Inventor

By

George W. Moore

Attorney

UNITED STATES PATENT OFFICE.

JULIUS RIEMENSCHNEIDER, OF MILWAUKEE, WISCONSIN.

WATER-MEASURING DEVICE FOR PLANT-SETTING MACHINES.

1,085,223.

Specification of Letters Patent.

Patented Jan. 27, 1914.

Application filed March 24, 1913. Serial No. 756,410.

To all whom it may concern:

Be it known that I, JULIUS RIEMENSCHNEIDER, of Milwaukee, Wisconsin, have invented a Water-Measuring Device for Plant-Setting Machines, of which the following is a specification.

This invention relates to plant-setting machines and more particularly to water-measuring devices for such machines. The present invention was originally disclosed in my copending applications No. 323831 (in part) filed June 28, 1906 and No. 677377 filed February 13, 1912, and is a division of the latter application in accordance with the requirements of the Patent Office.

The present invention consists of a watering-device acting in conjunction with a plant-setting wheel to deliver a limited and predetermined dosage of water on each plant after it is set; and in the most improved form of my machine the quantity delivered is made adjustable. I also provide a covering-device for acting in conjunction with the watering-device, and the whole is made to be raised and lowered along with the wheel when that is raised and lowered.

The arrangements which constitute my invention will best be understood from a consideration of the following description of my preferred embodiment thereof, reference being had to the accompanying drawings, wherein—

Figure 1 is a side elevation of the watering-device, with so much of the plant-setting machine as is necessary to the understanding thereof, the watering-device being shown in lowered or operative position; Fig. 2 is a similar view of the same parts, the plant wheel and watering-device being raised to the out-of-use position as when transporting the machine from one point to another; Fig. 3 is a rear elevation from the left of Fig. 1 of the parts in the position of that figure, showing the means by which the watering-device is operated from the plant-wheel; Fig. 4 is a fragmentary side-view on an enlarged scale of the water-measuring and delivering device; Fig. 5 is a vertical axial section of the same in the position of Fig. 4 through the axis thereof; and Fig. 6 is an axial section of the same on a still larger scale, the valve-adjusting sleeve being shown in partial elevation, this view being on a horizontal axial plane with respect to Fig. 4.

The reference letters refer each to the same part in all the figures of the drawings.

The parts of the machine which are shown in the drawing are the rectangular machine-frame A, which is supported at front and rear by wheels, but as only the rear part of the machine is shown, the front wheels are beyond the scope of the drawing. The rear wheels C are mounted to turn on axles c' which are carried by pedestals c^2 secured to the frame A by means of bolts c^4 or in any other suitable manner, said pedestals having upwardly extending arms carrying sockets c^1 for a pair of short shafts f' mounted in pivot-bearings formed on a pair of swing-bars f^2 , these bars forming part of a double triangular frame F, each side of which is composed of the swing-bars f^2 and two other bars f^3 and f^4 united to the ends of the bars f^2 and the bars f^3 being united by their ends to the bars f^4 at an intermediate point f^5 of the latter. The bars f^4 extend upwardly a sufficient distance to enable them to come together over the plant-wheel H and to give the necessary leverage for raising the apparatus off the ground by means of a rope 80 or cord f^6 , which is fastened to their ends at f^7 where they are united by a rivet f^9 . It will be understood that the weight upon the frame F is on the rear side of its pivotal axis so as to cause it to swing toward the rear when released and to occupy the position in which the plant-wheel and water-measuring device are on the ground.

The axle G of the plant-wheel H is mounted in sockets f^8 near the rear ends of the bars f^2 and the plant-wheel H is rotatably mounted on this axle as shown. The construction of this plant-wheel is not herein further shown and described except to indicate the positions of the plant-carrying boxes M thereon, the nature and action of which is described in my aforesaid copending application No. 677377, but is not necessary to the understanding of the water-measuring device, nor is said specific construction necessary to the operation of the latter.

Upon the axle G is mounted a frame I which has a bearing i' at the upper front corner of the frame embracing the axle. At a point on the frame I directly below the axle G, and at the same distance from it as the axle c' from the shaft f' , is another pivot i^5 which is connected by a link J to the inner end of the axle c' as shown, said link J being of the same length between the centers of its two turning-points as the dis-

tance from the shaft f' to the axle G. This constitutes a parallelogram-frame so that the frame I moves up and down in parallel position. It is not necessary however that the bar J should have exactly the length aforesaid, as it may be found desirable or satisfactory to give it a less or greater length under some circumstances, which would effect a correspondingly less or greater movement of the free end of the bracket-arm i^4 of said frame, thus increasing or diminishing the lift exerted upon the water-measuring bar V hereinafter described.

The watering and covering-in devices are placed at the rear of the plant-wheel H. At the lower end of the upright bar i^3 of the frame I is mounted a stub-shaft v' , which forms a pivot for the front end of an arm V, adapted to turn freely about said pivot through a limited angle. The horizontal arm i^4 of the frame I is a bracket for supporting the arm V and raising it when the rest of the apparatus is raised, by means of a flexible connection such as a chain v^2 . The stub-shaft v' is also the pivot for a sprocket-wheel W, and the hub of this sprocket-wheel W carries a series of radial arms w' , these being as herein shown three in number.

At a point on the arm V at some distance from the rear of the plant-wheel is formed a slot v^3 , in which is adjustably mounted the water-supply nozzle X, this nozzle being hollow internally and having a square collar x' , which bears against the inner side of the arm V and has on the outer side a screw-thread x^2 with which engages a nut x^3 , which presses a washer x^4 against the outer side of the arm V and thus clamps the nozzle in place in the slot v^3 . The neck of the member X which lies within the slot v^3 is provided with a rectangular lug x^{16} which prevents it from rotating in said slot. On the opposite side of the collar x' the nozzle is tapered and closed at the end, carrying a threaded stud x^5 . An aperture x^6 connects the internal passageway x^7 with the exterior near the closed end thereof, said aperture being on the lower side, and upon the tapered end is fitted a tapered sleeve x^8 having a corresponding aperture x^9 . The sleeve x^8 , shown partly in plan in Fig. 6, has on its edge which is adjacent to the collar x' a series of notches x^{10} , any of which is adapted to engage with a transverse pin x^{11} , or any lateral projection at the base of the tapered portion of the member X; so that the effective freeway for the passage of water through the aperture x^6 — x^9 will be altered and adjusted at will by engaging different notches x^{10} with the pin or projection x^{11} . Over and upon the sleeve x^8 is mounted in turn the rotary valve-member x^{12} of the water-measuring device, which makes a neat joint with the sleeve so as to prevent the escape of water, and this is held in place and

leakage prevented by means of a nut x^{13} engaging the screw-stud x^5 , a metal washer x^{14} under said nut, and a gasket x^{15} of flexible material such as rubber under the washer. The opposite end of the valve-member x^{12} abuts upon a bar z' , which has a square hole in it in which the collar x' fits, as shown, said bar serving a purpose hereinafter described. The rotary member x^{12} has formed thereon sprocket-teeth x^{17} whereby it is mechanically connected through the medium of a sprocket-chain v^4 with the sprocket-wheel W, and the chain is kept taut for the varying positions of the member X by a pair of idlers or tightening pulleys v^5 which are mounted on stub-shafts v^6 on the end of a bar v^7 , this latter bar being mounted to swing upon a pivot v^8 and being confined to its proper position by a bolt v^9 adjustable in a slot v^{10} .

The rotary hub-member x^{12} of the water-measuring device is provided with a plurality of radial screw-threaded apertures x^{19} adapted to register with the aperture x^6 — x^9 , and screwed thereinto are radial tubular delivery-pipes x^{20} . It should be observed that the number of delivery pipes x^{20} is the same as that of the arms w' , and the diameter of the sprocket-wheel W is the same as that of the sprocket-teeth x^{17} .

At suitable points around the wheel H, corresponding to the positions of the plant-boxes M, there are arranged trip-fingers o^2 projecting horizontally toward the sprocket-wheel W so as to engage the arms w' as they pass. As the plant-wheel rotates and a trip-finger o^2 comes opposite one of the arms w' it rotates the sprocket-wheel W through an angle corresponding to the angle between two adjacent arms, in this case one third of a complete revolution; and as the sprocket-wheel W is connected to the hub-member x^{12} , the latter is rotated through a corresponding distance, and for each box therefore one of the delivery-pipes x^{20} is brought into a position adjacent to the plant previously planted and water delivered thereupon, the amount of water so delivered being gaged by regulating the aperture x^6 , x^9 .

The water-supply is provided by a tank x^{21} mounted on the rear-end of the frame, said tank having a cover x^{22} closing the filling aperture, and said tank having further a nozzle x^{23} at the bottom to which is attached a rubber hose x^{24} . On the screw-threaded end x^2 of the member X is placed an elbow x^{25} , to which is connected the end of the hose 24, a regulating-cock x^{26} being preferably interposed which serves for the further regulation of the dosage.

On the end of the arm V is secured in the manner previously described the extension z' thereof, which serves to support a covering-device Z, this latter consisting of a standard

5 z^2 carrying an obliquely set plate z^3 . The bar z^1 is provided with a plurality of holes z^4 by which it may be secured in various positions to the bar V. Coöperating with the covering-device Z are spatulated-ends w^2 which are formed on the arms w^1 and are adapted to extend a slight distance into the ground and loosen and raise the earth at one side of the plant, so that this loosened earth is subsequently gathered by the covering-device Z and thrown in upon the plant to cover the same, and as this covering operation is performed after the plant is watered, the watered ground will be covered by dry earth and the water protected from evaporation.

10 It will be understood of course that the distance of the water-device from the plant-wheel will vary according to the number of plant-boxes on the wheel, this distance being effectively the same as the spacing of the plants, so that the delivery-pipes x^{20} will direct their streams of water upon the plant immediately in the rear, or second in the rear, of the one that is being set.

15 From the above description it will be readily seen that my invention is not limited to special forms and mechanical constructions such as I have hereinabove shown by way of illustration, but that the principles thereof are expressible in a variety of ways as will be well understood by those skilled in the art; therefore the scope of my claims is to be interpreted in view of such alternative constructions.

20 Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a plant-setting machine, the combination of a wheel, a plant-holding device mounted on the periphery thereof, a multiple-armed rotary water-distributor turning on an independent axis, and means attached to the wheel for turning said distributor through a given arc at each revolution of said wheel whereby a certain quantity of water is distributed thereby to the plant.

2. In a plant-setting machine, a water-distributor comprising a hollow spindle having a side-opening on one side only and a member rotating thereon having a plurality of arms each having an interior passageway open at the lower end and a hub having internal passages, one for each arm, adapted severally to register with said side-opening at a point in the revolution of the member, in combination with means for rotating said distributor intermittently.

3. In a plant-setting machine, the combination of means for successively setting plants in a row in the ground, a watering-device separate from and disposed at the rear of said plant-setting means, and means for causing a dosage of water to be delivered upon each plant as said watering-device passes it.

4. In a plant-setting machine, the combination of means for successively setting plants in a row in the ground, a watering-device separate from and disposed at the rear of said plant-setting means, and means operated by said plant-setting means for causing a dosage of water to be delivered by said watering-device upon each plant successively.

5. In a plant-setting machine, the combination of plant-setting means adapted to set plants successively at equal distances in a row, a watering-device disposed at the rear of said plant-setting means substantially a distance equal to the distance between two plants behind the position at which the plants are set, and means operated by said plant-setting means at the setting of each plant to deliver a dosage of water from said watering-device upon the plant previously set.

6. In a plant-setting machine, the combination of a rotary device carrying plant-setting appliances radially disposed thereon, a watering-device disposed at the rear of said rotary device, said watering-device having a measuring-appliance, and means carried by said rotary device for actuating said measuring-appliance to deliver a dosage of water on each set plant successively as said watering-device passes it.

7. In a plant-setting machine, a water-measuring device comprising a hollow head the internal chamber of which is connected with a water-supply and has a lateral aperture, a rotary valve-member mounted on said head and having an aperture adapted to register with said first-named aperture in one angular position of said member, and means for rotating said member.

8. In a plant-setting machine, a water-measuring device comprising a hollow head the internal chamber of which is connected with a water-supply and has a lateral aperture, a rotary valve-member mounted on said head and having an aperture adapted to register with said first-named aperture in one angular position of said member, means for rotating said member, and a sleeve intercalated between said head and said rotary member and having an aperture therein adapted to register with the aperture in the latter in one angular position of said sleeve, said sleeve having various positions of engagement with said head whereby the effective area of opening in the latter is increased or diminished.

9. In a plant-setting machine, a water-measuring device comprising a hollow head the internal chamber of which is connected with a water-supply and has a lateral aperture, a rotary valve-member mounted to turn on said head and having a plurality of equidistant radial apertures each of which is adapted in one angular position of said

rotary member to register with said lateral aperture in the head, and delivery-tubes mounted on said rotary-member and extending radially therefrom.

5 10. In a plant-setting machine, a water-measuring device comprising a head having an internal chamber closed at one end, means for connecting said chamber at the other end with a source of water-supply, said
10 closed end having a lateral aperture, a tubular sleeve fitting over the end of said head and having a lateral aperture adapted to register in one angular position of said sleeve with said lateral aperture, interen-
15 gaging elements between said head and sleeve whereby the latter may be fixed in various relative positions with respect to the former in which the two apertures are more or less out of registration thereby ad-
20 justing the effective area of opening, a rotary valve-member rotatably mounted on said sleeve and carrying one or more equably spaced radial delivery-tubes the inner end of each of which is adapted to register with
25 the aperture in said sleeve in one angular position of said rotary valve-member, and means for rotating said rotary valve-member.

11. In a plant-setting machine, a water-
30 measuring device comprising a head having an internal chamber closed at one end, means for connecting said chamber at the other end with a source of water-supply, said closed end having a lateral aperture, a tubu-
35 lar sleeve fitting over the end of said head and having a lateral aperture adapted to register in one angular position of said sleeve with said lateral aperture, interen-
40 gaging elements between said head and sleeve whereby the latter may be fixed in various relative positions with respect to the former in which the two apertures are more or less out of registration, thereby ad-
45 justing the effective area of opening, a rotary valve-member rotatably mounted on said sleeve and carrying one or more equably spaced radial delivery-pipes the inner end of each of which is adapted to register with the aperture in said sleeve in one angular
50 position of said rotary valve-member, a plant-setting device, and means carried by said plant-setting device for intermittently rotating said rotary valve-member through an angle equal to the angle between two of
55 said delivery pipes at the setting of each plant.

12. In a plant-setting machine, a water-measuring device comprising a head having an internal chamber closed at one end, means
50 for connecting said chamber at the other end with a source of water-supply, said closed end having a lateral aperture, a tubular sleeve fitting over the end of said head and having a lateral aperture adapted to regis-
65 ter in one angular position of said sleeve

with said lateral aperture, interengaging elements between said head and sleeve whereby the latter may be fixed in various relative positions with respect to the former in which the two apertures are more or less out of registration, thereby adjusting the effective area of opening, a rotary valve-member rotatably mounted on said sleeve and carrying one or more equably spaced radial delivery pipes the inner end of each of which is adapted to register with the aperture in said sleeve in one angular position of said rotary valve-member, a frame on which said water-measuring device is mounted, a plant-setting device mounted on said frame in advance of said water-measuring device, and means connecting said plant-setting device with said rotary valve-member and adapted to rotate the latter intermittently through an angle equal to the angle between two deliver-pipes at the setting of each plant.

13. In a plant-setting machine, the combination of a rotary plant-setting device carrying a number of plant-holders and the same number of trips, a rotary head mounted opposite said plant-setting device and having a set of radial arms adapted to be successively encountered by said trips and turned through an angle equal to the angle between two of said arms, a water-measuring device having a rotary valve-member and a plurality of radial outlets equal to the number of said arms, said water-measuring device being adapted to deliver water from each of said outlets in turn through a given angle, and a connection between said rotary head and said rotary valve-member whereby they rotate concomitantly.

14. In a plant-setting machine, the combination with the frame of the machine of a member that can be raised and lowered with respect thereto, a bar connected at one end to said member and having a limited angular movement about it, said bar trailing rearwardly, a member carried on the rear end of said bar adapted to trail on the ground and support said rear-end, and a water-measuring device mounted on said bar.

15. In a plant-setting machine, the combination with the frame of the machine of a member that can be raised and lowered with respect thereto, a bar connected at one end to said member and having a limited angular movement about it, said bar trailing rearwardly, a member carried on the rear end of said bar adapted to trail on the ground and support said rear-end, and a water-measuring device mounted on said bar and adjustable toward and from said member.

16. In a plant-setting machine, the combination with the frame of the machine of a member that can be raised and lowered

with respect thereto, a bar connected at one end to said member and having a limited angular movement about it, said bar trailing rearwardly, a member carried on the rear end of said bar adapted to trail on the ground and support said rear end, and a water-measuring device mounted on said bar; said first-named member being connected to said bar in a manner to carry said bar with it after it has been elevated a short distance, thereby raising off the ground the trailing member at the rear of said bar.

17. In a plant-setting machine, the combination with the frame of the machine of a member that can be raised and lowered with respect thereto, a bar connected at one end to said member and having a limited angular movement about it, said bar trailing rearwardly, a member carried on the rear end of said bar adapted to trail on the ground and support said rear end, a water-measuring device mounted on said bar, said first-named member having a rearwardly extending arm, and a flexible connection connecting said arm with said bar.

18. In a plant-setting machine, the combination with the frame of an axle, means for raising and lowering said axle, a plant-wheel carried on said axle, a frame mounted on said axle and adapted to rise and fall therewith remaining substantially parallel to itself, a rearwardly extending bar, means on the end of said bar, for supporting it from the ground, a water-measuring device mounted on said bar, and a flexible connection between said bar and said arm.

19. In a plant-setting machine, the combination with the frame of an axle, means for raising and lowering said axle, a plant-wheel carried on said axle, a frame mounted on said axle and adapted to rise and fall therewith remaining substantially parallel to itself, a rearwardly extending bar, means on the end of said bar for supporting it from the ground, a water-measuring device

mounted on said bar, and means for operating said water-measuring device from said plant-wheel.

20. In a plant-setting machine, the combination with the frame of an axle, means for raising and lowering said axle, a plant-wheel carried on said axle, a frame mounted on said axle and adapted to rise and fall therewith remaining substantially parallel to itself, a rearwardly extending bar, means on the end of said bar for supporting it from the ground, a rotary water-measuring device mounted on said bar, a flexible connection between said bar and said arm, a rotary member turning on said frame at one side of said wheel, a mechanical connection between said rotary device and said water-measuring device to drive the latter from the former, equably spaced radially projecting arms on said rotary device, and a plurality of laterally projecting elements on said wheel adapted to successively strike said arms and thereby rotate said water-measuring device through a predetermined angle for each laterally projecting element.

21. The combination with a plant-wheel and means for setting plants carried thereby, of a rotary device mounted at one side of said plant-wheel near the ground and having laterally projecting arms provided with spatulated ends adapted to dig and turn up the ground as they rotate, means for driving said rotary device from said wheel, a water-measuring device at the rear of said wheel and means for driving it therefrom, and a covering-in device at the rear of said water-measuring device adapted to throw fresh earth over the watered soil thereby preventing evaporation.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JULIUS RIEMENSCHNEIDER.

Witnesses:

LOUIS BLUM,
ROSA WALLER.