No. 756,109. PATENTED MAR. 29, 1904.

J. P. FRIEZ.

RAIN GAGE.

APPLICATION FILED NOV. 6, 1903.

NO MODEL.

Fig. 4.

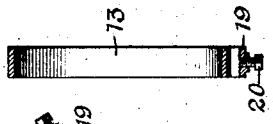


Fig. 3.

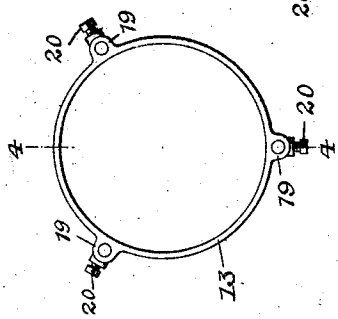


Fig. 6.

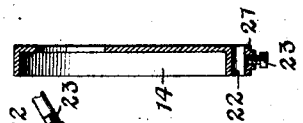


Fig. 5.

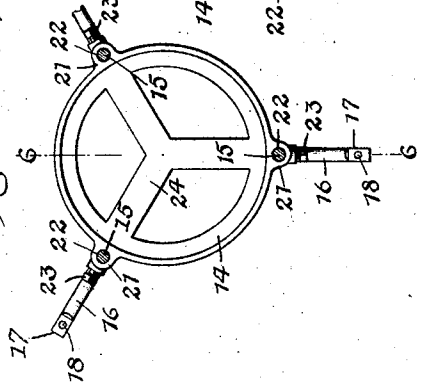


Fig. 2.

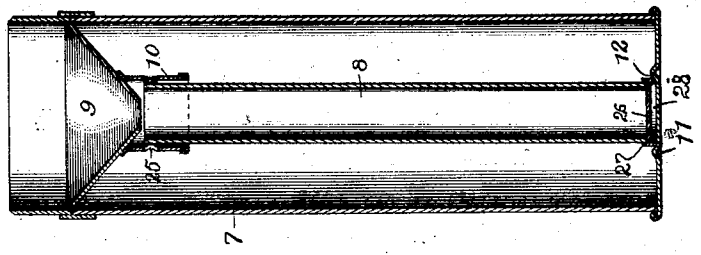
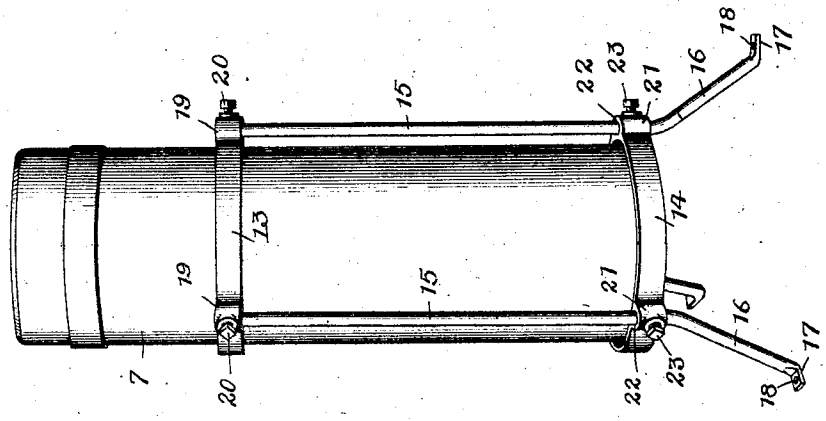


Fig. 1.



Witnesses

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No. 756,109. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

JULIEN P. FRIEZ, OF BALTIMORE, MARYLAND.

RAIN-GAGE.

SPECIFICATION forming part of Letters Patent No. 756,109, dated March 29, 1904.

Application filed November 6, 1903. Serial No. 180,055. (No model.)

To all whom it may concern:

Be it known that I, JULIEN P. FRIEZ, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Rain-Gages, of which the following is a specification.

This invention relates to devices for gathering and measuring rainfall, commonly known as "rain-gages." In such devices there are usually embodied a supporting-stand, a receiver, an overflow-cylinder, and a measuring-tube, and the correct operation of the device depends largely upon the manner in which these parts are constructed and connected together.

The object of this invention is to improve the construction of some of the parts whereby they may be quickly and easily set with great accuracy in their operative positions and retained therein and whereby the parts will be strengthened and generally improved.

With this object in view the invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically claimed.

In the accompanying drawings, which illustrate an embodiment of my invention, Figure 1 represents a view thereof in perspective. Fig. 2 represents a central vertical sectional view with the supporting-stand omitted; Fig. 3, a plan view of the upper ring removed from the stand; Fig. 4, a transverse sectional view on the line 4 4 of Fig. 3; Fig. 5, a top plan view of the lower portion of the stand, the upright rods being shown in section; and Fig. 6, a sectional view on the line 6 6 of Fig. 5.

Like reference characters indicate the same parts in all of the figures of the drawings.

Referring specifically to the drawings, 7 indicates the outer or overflow cylinder, which may be made of any suitable material, 8 the inner or measuring tube, and 9 the receiver, which is made to fit in the upper end of the overflow-cylinder, the main body thereof being cylindrical and open at the top and the lower portion within the overflow-cylinder being funnel-shaped or in the form of an inverted cone which opens into the upper end of the measuring-tube, the latter being shorter than the overflow-cylinder and set vertically in the center thereof. At the lower end of the receiver is a sleeve 10, which slips over the upper end of the measuring-tube, and thus effectually centers its upper end.

It being very essential that the measuring-tube shall be exactly centered in the cylinder from top to bottom, I have provided in the bottom of the cylinder an annular inwardly-projecting ring 11, preferably stamped in the bottom itself during the manufacture thereof and having its inner sides inclined inwardly, as shown at 12, the inner diameter of the bottom of the ring being exactly that of the bottom of the measuring-tube. By this means a guide is furnished, by means of which the bottom of the tube is not only readily and quickly adjusted in its central position on the bottom of the overflow-cylinder, but it is also held there against accidental lateral movement, and the provision of the centering-ring in its present form very materially stiffens and strengthens the bottom of the overflow-cylinder. It is also very essential in this class of devices that the overflow-cylinder, which forms the main body of the device, shall also be properly and accurately supported in a vertical position, and for this purpose I provide a suitable supporting-stand comprising an upper ring 13, a lower ring 14, and three or more rods 15, which below the lower ring are spread or inclined outward, forming legs 16, with suitable feet 17, preferably provided with holes 18 to receive the screws or nails for securing the device in any desired position. The upper ring is provided with lugs 19, in number corresponding to the number of the upright rods, each of said lugs being provided with an opening in which the corresponding rod fits and in which it is secured when properly adjusted by means of set-screws 20. Similar lugs 21, having corresponding openings 22, are provided in the lower ring, and the rods 15 pass through these openings and are secured when properly adjusted by set-screws 23. The lower ring serves as a base to support the whole device and for this pur-

pose is constructed in the form of a spider, as clearly shown at 24. By means of this construction of the supporting-stand a wide base is provided, so that there is less danger of the whole device falling if the feet are not fastened down, and by means of the adjustment of the upright bars in the openings of the lugs the cylinder may be very accurately set and very securely held in position.

In order that the measuring-tube 8 shall always have a level base, I construct the bottom as shown in Fig. 2, in which the bottom proper, 26, is inclosed and secured in a short sleeve or ring 27, of which that part above the button 26 is engaged over and secured to the lower edge of the body, while that part below the bottom forms the support and rests on the ground or wherever the gage is set, leaving a space 28 below the bottom 26, as shown. This construction assures that the bottom 26 shall not rest upon the bottom of the overflow-cylinder, thus preventing oxidation, due to water retained within the centering-ring 11, and also that the rounding out or swelling of the bottom 26, which sometimes occurs when water freezes in the tube, shall in no wise affect the stability or steadiness of the tube, the lower edge of ring 27 always affording a level rest, taking all the wear, and rendering the centering of the tube in the ring 11 always easy and sure.

Having set up the device, the operation is as follows: The rain falling in the receiver passes down into the measuring-tube, which is much smaller in diameter than the receiver, and as a consequence the rain will rise in the receiver to a much greater height than it would in a tube of the same diameter as the receiver, the standard instruments of this class being constructed usually with the horizontal area of the measuring-tube one-tenth of that of the receiver, so that when one inch is indicated in the measuring-tube the rainfall will be computed at one-tenth of an inch. In the event that the rainfall is more than the capacity of the measuring-tube to receive it the surplus will flow through a small opening 25 in the sleeve 10 on a level with the top of the measuring-tube into the overflow-cylinder, from which it may be taken and measured either in the measuring-tube or by any other suitable means.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering-ring projecting inwardly from its bottom and having inclined inner sides, of an interior measuring-tube adapted to be centered and held in said ring, substantially as described.

2. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering and strengthening ring stamped in the metal of the bottom, of an interior measuring-tube adapted to be centered and held within said ring, substantially as described.

3. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering and strengthening ring in its bottom, of a short sleeve or ring adapted to be centered and to rest in said ring, a bottom secured in said sleeve above its lower edge, and a measuring-tube secured in the upper portion of said sleeve, substantially as described.

4. In a rain-gage, the combination of a measuring-tube comprising a short sleeve or ring forming the base thereof, a bottom secured in the sleeve at about its mid-height, and a cylindrical body resting and secured in the upper portion of said sleeve above the bottom, substantially as described.

5. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering-ring projecting inwardly from its bottom, of an interior measuring-tube seated on its bottom in said ring, a funnel-shaped receiver fitted into the upper end of the overflow-cylinder, and a sleeve projecting downward from the receiver around the top of the measuring-tube and centering it at its upper end, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JULIEN P. FRIEZ.

Witnesses:
A. O. BABENDRIER,
MURRAY HANSON.