

**PRECIPITATION SENSOR****BACKGROUND OF THE INVENTION**

Precipitation sensors having a pair of tilting buckets are known which alternately receive precipitation from a collecting funnel, and are tilted when a predetermined amount of precipitation has accumulated in either bucket. During the tilting movement, the precipitation is not reliably guided into one or the other bucket, which influences the accuracy of the measured amount of precipitation. Furthermore, the buckets are open which causes evaporation of the accumulated precipitation from the buckets whereby the accuracy of the measurement is impaired particularly during periods when little precipitation falls.

**SUMMARY OF THE INVENTION**

It is an object of the invention to overcome the disadvantages of tilting bucket sensors according to the prior art, and to provide a precipitation sensor which accurately measures the amount of precipitation.

Another object of the invention is to provide a precipitation sensor of the tilting bucket type in which precipitation is accumulated alternately in two buckets, collected during the tilting movement of the buckets, and discharged into one or the other bucket when the same are in an end position.

Another object of the invention is to prevent evaporation of accumulated precipitation from the buckets.

Another object is to count the tilting movements of the buckets by magnetic switch means without substantially increasing the mass of the tilting parts of the apparatus.

Another object of the invention is to prevent bouncing of the buckets when stopped in end positions.

With these objects in view, a precipitation sensor according to the invention comprises supporting means, preferably including a housing; precipitation collecting and distributing means mounted on the supporting means having an inlet and an outlet for precipitation, and including valve means, preferably a check valve, in the outlet; first and second buckets secured to each other mounted on the supporting means for tilting movement together between a first position in which the inlet portion of the first bucket is located under the outlet, and a second position in which the inlet portion of the second bucket is located under the outlet; valve actuating means, preferably including two actuators respectively secured to the first and second buckets for opening the valve means in the first and second positions of the buckets, and for effecting closing of the valve means during the tilting movement of the buckets; and counting means, preferably a magnetic pulse generator, operated by the buckets during each tilting movement.

In the first position, precipitation is accumulated in the first bucket, while the second bucket discharges accumulated precipitation through a spout. In the second position, precipitation is accumulated in the second bucket, while the first bucket discharges accumulated precipitation.

Precipitation flows through the outlet of the collecting and distributing means into one or the other bucket, depending on in which end position the buckets are located. In an intermediate position of the buckets as-

sumed during tilting of the same, the actuating means do not engage the valve member so that the valve closes and any precipitation occurring during this time, is collected until the valve opens again and the collected precipitation can flow into one of the buckets.

The buckets are preferably closed by evaporation retarding covers which have small cutouts respectively located under the valve controlled outlet in the two end positions of the buckets. The two actuators are secured to the buckets, respectively, and project out of the inlet cutouts of the covers into the region of the valve means.

In the preferred embodiment of the invention, the tilting buckets are connected by a shaft with a shielding plate provided with a cutout which permits the flux of a permanent magnet to actuate a magnetic switch when the buckets assume an intermediate position during the tilting movement.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

**BRIEF DESCRIPTION OF THE DRAWING**

FIG. 1 is a perspective front view, partly broken off, and illustrating an embodiment of the invention;

FIG. 2 is a fragmentary perspective front view illustrating a magnetic switch device used in the embodiment of FIG. 1;

FIG. 3 is a fragmentary front view illustrating the magnetic switch device in an operative condition;

FIG. 4 is a fragmentary side elevation of the switch device; and

FIG. 5 is a fragmentary front elevation illustrating a detail of the embodiment of FIG. 1.

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring now to the drawing, a supporting base 22 is provided with a level vial 16 by which the horizontal position of its top plate can be ascertained. A circular recess 21 receives the lower end of a pot-shaped cover 3 which encloses a supporting housing 20 having a detachable top portion. An inlet funnel 1 is mounted by means of a fitting 2 on the top plate of the protective dust cover 3, and terminates in a valve assembly mounted on the top plate 19 of housing 20. As best seen in FIG. 5, the valve assembly includes a valve housing 4 with a circular seat on which a light ball 5 rests due to the action of the force of gravity, or due to the provision of a small spring, not shown. When the check valve 4, 5 is in the normal closed position, precipitation falling into funnel 1 is collected in the same, but when check valve 4, 5 is opened by lifting ball 5, the collected precipitation flows out of the outlet of the check valve into inlet cutouts 18 in top covers 7 of tilting buckets 8. Consequently, the assembly 1, 2, 4, 5 constitutes a means for collecting and distributing precipitation.

The buckets 8 are separated by a common wall 8a and have substantially slot-shaped spouts 17 at the