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RAIN WATER FILTER AND AUTOMATIC CUT-OFF,
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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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RAIN-WATER FILTER AND AUTOMATIC CUT-OFF.


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To all whom it may concern:

Be it known that I, John A. Peter, a citizen of the United States, residing at Fostoria, in the county of Seneca and State of Ohio, have invented a new and useful Rain-Water Filter and Automatic Cut-Off, of which the following is a specification.

This invention has reference to rain water filters and automatic cut-offs, and its object is to provide a device which may be installed in a down pipe between the roof from which the rain water is to be collected and the cistern into which the rain water is to be deposited, whereby the first collected portion of the rain water is allowed to waste, carrying with it accumulations of dust and dirt which may occur on the roof, and then the clean rain water is directed into the cistern, while at the same time the rain water is cleansed by filtration.

This is accomplished by a structure provided with an overbalanced water-diverting rockable member normally positioned to direct the water first reaching it away from the cistern and so proportioned and adjusted that by the time the roof has been washed by the rain water the rockable member is turned on its axis to an extent to divert the rain water toward the cistern. The device furthermore includes a receptacle for filtering material, such as charcoal or the like, through which the rain water is directed to the cistern, thus purifying the rain water. Provision is made whereby the device may be rendered automatic in position, or may be fixed in position either to direct all the water toward a waste outlet or all the water into the cistern, and in the latter case the filtering material may or may not be employed.

Since such a structure is exposed to weather conditions there is liability of freezing in winter time, wherefore the container for charcoal or other filtering material is made tapering toward the outlet end, thus providing for expansion in case of freezing, whereby injury or distortion of the device by freezing is avoided.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming part of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings but may be changed and modified so long as such changes and modifications come within the scope of the appended claims.

In the drawings:

Fig. 1 is a vertical section about midway of the width of the device and lengthwise of the cut-off means showing the latter in the normal position, and in the dotted lines in the position for diverting rain water to the cistern.

Fig. 2 is a front elevation of the device shown in Fig. 1, some parts being broken away and in section to disclose more distant parts.

Fig. 3 is a top plan view of the device with the cover removed.

Fig. 4 is a detail section on the line 4-4 of Fig. 1.

Fig. 5 is a detail front elevation of a portion of the device showing latch means in position to hold the structure fixedly to divert the water away from the cistern.

Fig. 6 is a view similar to Fig. 5 but showing the latch means in position to fixedly hold the device so as to at all times divert the water into the cistern.

Referring to the drawings there is shown a casing 1 which in operative position is upright. The lower portion 2 of the casing tapers toward a discharge end 3 which may be shaped to receive a pipe 4 for conducting water to the cistern. The top portion of the casing is shown as of substantially rectangular cross-section, although such particular shape is not obligatory. This rectangular portion incloses a chamber 5 containing working devices for causing diversion of the water to the waste or to the cistern, as the case may be.

About the top of the casing is an outstanding flange 6 and adapted to slide on to the casing and to be held thereto by the flange are two cover members 7, 8, coactively related to completely cover the top of the casing, except that in the cover member 7 there is a passage containing a pipe nipple 9 capable of ready removal from the cover 7 and having at what constitutes its upper end an outstanding supporting flange 10. The pipe 9 is of a size to receive a rain spout 11.

Both members 7 and 8 of the cover are removable oppositely from the body of the casing, the cover member 8 having a lip 12 capable of underriding a corresponding end of the cover member 7, so that even if the cover member 8 be moved away from...
the cover member 7 the two members will still join so long as the separating movement is short. Such movement serves a purpose which will hereinafter appear.

Near the bottom, or near at the end of the tapering portion 2 of the casing there is lodged a screen 18 which may be and preferably of wire mesh, although of course, perforated metal may be employed if desired. At a higher point adjacent to the wide end of the tapered portion 2 is another screen 14 preferably of wire mesh, and between these two screens there is or may be lodged a mass 15 of charcoal or other suitable filtering material of such nature as to be held by the screen 13 from escape. Leading from one end of the chamber 5 is an escape or waste spout 16 having a flange in the form of a shelf 17 located within the chamber 5.

Mounted on a pivot rod 18 or otherwise pivotally supported within the chamber 5 is a rockable deflector or guide trough 19 having at one end a weight 20, or the guide trough is otherwise overbalanced or biased to cause it to normally tend toward the shelf 17 and be thereby supported in an inclined position with the end resting on the shelf 17 lowermost. The other end of the rockable trough 19 is in the form of a relatively shallow extension 21, with side webs 21s from which rise end and side walls formed of screens 22 so disposed as to be in underriding relation to the pipe 9. The strips 21s reach from the rear end of the extension 21 to a point a short distance in front of the pivot 18. The side walls of the rockable trough 19 expand from the weighted end toward the end provided with the screen 22, and the bottom portion of the extension 21 adjacent to the end remote from the heavy end of the trough has perforations 23 through it emptying into a pocket 24 carried by the trough 19 below the bottom thereof; and preferably in inclined relation thereto, so as to be more or less pendently positioned with respect to the trough. The pocket 24 is closed except that it is provided near the lower end with a leak passage 25 of less capacity than the combined capacity of the perforations 23. The arrangement is such that when water enters the trough 19 through the pipe 9, it is normally directed from the trough to the waste spout 16, so that for a short time after the beginning of a rainfall, the water will go to waste, thus carrying with it any accumulations of dirt or the like which may have occurred on the roof connected with the pipe 11.

Some of the water, however, flows through the perforations 23 and accumulates in the pocket 24 in which there is always a slight leakage through the passage 25, but not sufficient to contaminate water in the cistern, since all water entering the cistern must first pass through the purifying material 15. Ultimately, however, the pocket 24 becomes filled with water because the inflow is more rapid than the outflow and the capacity of the pocket is such as to overbalance the weight 20, whereupon the trough 19 rocks upon its pivot support until the weighted end is high and the screen end is low. Now, water reaching the rockable trough from the drain pipe connected to the roof flows through the screen 22 and ultimately to the cistern. The weighted end of the trough is always lower than the top of the screen 22, so that even when tilted, leaves or the like cannot escape from the trough except through the spout 16. All water accumulating from heavy dews and the first flush from rains reach that section of the trough represented by the extension 21 with its side strips 21s and such water, usually contaminated by soot and dust, is directed to the spout 16 and is prevented from reaching the cistern. In any event the water flowing to the cistern is not only preserved from contamination but is purified by being directed through the charcoal or other material 15.

When a rain ceases, the water accumulated in the pocket 24 ultimately drains away until the counter-weight 20 overbalances the trough 19 and the latter is automatically returned to its first position.

When water first enters the trough 19 at the beginning of a rain there may be some accumulations of dirt or the like on the screens 22 left there from water previously directed through the screens. The first flow of water striking the inner walls of the screens 22 will wash such accumulations therefrom, and these accumulations are caught by the webs or strips 21s and directed toward the waste spout, so that such accumulations cannot reach the perforations 23 to possibly pass through or clog them.

Connected to the overbalanced or normally lower end of the trough 19 is a rod 26, the connection between the rod and trough being a loose one. The rod 26 is continued through a slot 27 in what constitutes the front wall of the casing, and outside of the casing is formed into a crank extension 28 terminating in an angle extremity 29. The crank extension 28 may be turned on an axis in the slot 27, thereby elevating or lowering the weighted end of the trough 19. In one position the crank 28 is movable under a tongue 30 fast to the outer wall of the casing 1, and in another position the angle extremity 29, which constitutes a convenient hand-hold, may be moved under an edge portion 31 of the cover member 8, this edge portion being so bent as to otherwise receive the flange 6. The cover member 7 is similarly bent, as indicated at 32, to receive the flange 6.

When it is desirable that the structure be...
set to direct all the collected rainwater away from the cistern, the angle portion 29 of the crank 28 is engaged under the bent portion 31 of the cover 8, which latter may be moved sufficiently for the purpose, thus locking the trough 19 fixedly in an inclined position, whereby the water is at all times directed through the spout 16. When it is desirable that all the water should be directed from the roof into the cistern, then the weighted end of the trough 19 is elevated and there locked by means of the crank 28, which is then engaged under the tongue 30, which can be a spring tongue preventing accidental escape of the crank 28.

When the device is to operate automatically, the crank 28 is allowed to remain loose.

The taper form of the portion of the casing containing the charcoal or other filtering material prevents harmful effects from freezing, because the material therein if it should be wet and then frozen has ample opportunity for expansion without bringing undue strain upon the walls of the casing.

The pipe 9 is purposely free from fastening to the cover member 7, so that in the event that it is either necessary or desirable to have access to the interior of the casing the pipe 11 may be removed and following it the pipe 9, whereupon the cover member 7 is free to be slid from the casing, thus uncovering the chamber 5 and access to parts below the chamber 5 then is possible.

Sometimes it is desirable to take out the rockable deflector which may be done by first sliding the cover members 7, 8, back out of the way. To permit the bodily removal of the rockable deflector the shaft 18 is seated in forked or open bearings 16 on the sides of the casing within the chamber 5.

What is claimed is—

2. In an automatic rain water cut-off, a casing having an inlet and an outlet for water, and a rockable member in the path of water through the casing to divert the water in one direction, said rockable member being overbalanced at one end to impart a normal bias to hold the rockable member in an inclined position and at the other end having side and end screen walls and having a bottom extension with perforations therethrough and a pocket situated below the perforated portion and communicating therewith through the perforations, said pocket having a leak passage of smaller area than the effective area of the perforations.

3. In an automatic rain water cut-off, a casing having an inlet and an outlet for water, and a rockable member in the path of water through the casing to divert the water in one direction, said rockable member being overbalanced at one end to impart a normal bias to hold the rockable member in an inclined position and at the other end having side and end screen walls and having a bottom extension with perforations therethrough and a pocket situated below the perforated portion and communicating therewith through the perforations, said pocket having a leak passage of smaller area than the effective area of the perforations, said pocket being in angular or inclined relation to the length of the rockable member.

4. In an automatic rain water cut-off, a rockable deflector having an intermediate axis of rocking and movable about said axis to elevate either end above a horizontal plane or carry it below said plane, said rockable deflector having one end portion provided with side and end screens and with the other end normally biased to move below the said plane, means in operative relation to the normally biased end to convey water therefrom, and means at the screened end of the deflector for accumulating water directed into the deflector to overbalance the normally biased end of the latter.

5. In an automatic rain water deflector or cut-off, a casing having a tapering lower portion terminating in an outlet for connection to a cistern, said casing being provided with a waste spout through one side wall near the top and an inlet through the top near the other side of the casing from the waste spout, screening means at the top and bottom portion of the taper part of the casing for containing filtering material, and a pivoted trough in the upper part of the casing over the screening means above the filtering part of the casing, said trough being biased at one end to normally rest upon the waste spout and at the other end projecting beneath the inlet to the casing and there having side and end screens, and a pocket
communicating with the trough for receiving water therefrom and of a size to accumulate water to an amount to overbalance the biasing means at the other end of the trough.

8. In an automatic rain water cut-off, a casing, a normally biased rockable trough therein, a waste spout extending through one side of the casing near its upper end in the path of the corresponding end of the trough and the latter having the said end biased to move into engagement with the spout for support thereby, the casing having an inlet on a side of the axis of rocking of the trough remote from the waste spout, and the trough having water accumulating means and a screened discharge end located beneath the inlet to the casing, a rod extending through the casing and pivotally connected to the discharge end of the trough, and means exterior to the casing for engaging and holding the outer end of the rod in position to hold the trough at either limit of its rocking movement.

7. In an automatic rain water filter and cut-off, a casing tapering downwardly and there provided with a discharge opening, an inlet entering the top of the casing, a waste outlet for the casing extending through one side of the latter near the top of the casing, screens in the taper portion of the casing and defining a chamber for containing filtering material, and a rockable trough mounted in the upper part of the casing and overriding throughout its length the chamber for containing filtering material, said trough being normally biased toward the waste spout and at the other end under-riding the inlet to the casing and there having side and end screens, and a water-receiving pocket with a leak passage discharging toward the chamber for containing filtering material.

8. In a rain water cut-off, a casing, a two-part slideable cover therefor, a removable pipe in one section of the cover adapted to receive a rain conducting pipe, an automatic deflector within the casing below the cover, and controlling means for the deflector extending to the exterior of the casing and adapted to be engaged by one member of the cover for locking the deflector at one limit of its movement.

9. In a rain water cut-off, a casing, a two-part slideable cover therefor, a removable pipe in one section of the cover adapted to receive a rain conducting pipe, an automatic deflector within the casing below the cover, and controlling means for the deflector extending to the exterior of the casing and adapted to be engaged by one member of the cover for locking the deflector at one limit of its movement, said casing also having a catch member exterior thereto for engaging the holding means at the other limit of movement of the deflector.

10. In an automatic rain water cut-off, a rockable deflector biased to an inclined position for directing water in one direction, with the other end of the deflector provided with a water receiving member, and said last-named end of the deflector being provided with a strainer and having passages opening into the water receiving member, and also being provided with side webs to direct small streams of water away from the water receiving member.

11. In an automatic rain water cut-off, a rockable deflector biased in one direction to an inclined position and having a water receiving member at one end with screen sides and a screen end rising to a higher point than the water receiving member and also provided with side webs for directing small streams of water away from the water receiving member and the screen sides and end when the deflector is in the biased position.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN A. PETER.

Witnesses:

JNO. MYERS,

CHARLES MYERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."