This invention relates to an automatic cut-off constituting a means for controlling flow of water from the drain spout of a roof gutter into a cistern or a sewer or other place of disposal.

One object of the invention is to provide a device of this character which is so constructed that the directional flow of water from the drain spout into the sewer or the cistern may be automatically controlled and thus the water allowed to flow from the roofing gutter into the sewer until dirt, leaves and other trash have been carried away and clean water then directed into the cistern for use.

It is another object of the invention to provide a device of this character including a valve having actuating means including a weight which normally holds the valve in position to prevent flow of water into the cistern and a container which will be gradually filled with water until its weight overcomes the first weight and causes the valve to be moved into position to cut off flow of water to the sewer and permit flow of water into the cistern.

It is another object of the invention to provide the valve with operating means of such construction that, although sufficient water will be directed into the bucket or other receptacle while rain is still falling, the water will drain out of the bucket after rain fall has stopped and the valve then returned to its initial position in which flow of water will be cut off from the cistern and flow of water to the sewer re-established.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of the improved cut-off,

Figure 2 is a sectional view taken vertically through the cut-off, and

Figure 3 is a sectional view taken horizontally through Figure 2 along the line 3–3.

This improved automatic cut-off is to be installed in a drain pipe leading from a gutter of the roof of a building and serve as means for controlling flow of rain water from the drainage pipe into a cistern in which the rain water is stored for use. During dry weather dust, leaves, bird droppings and other dirt accumulate upon the roof of a building and in the gutter through which rain water flows to a drainage pipe and unless some means is provided for preventing this dirt will be carried into a cistern and spoil the water in the cistern. In order to prevent this dirt from being carried into the cistern, the automatic cut-off constituting the subject-matter of this invention has been perfected, the basic idea of the invention being to allow the initial flow of rain water to be directed to a sewer or other place of disposal and then cause the water to be directed into the cistern after a sufficient flow of rain water has taken place to clear the roof and gutter of dirt.

This improved cut-off has a housing 2 which may be formed of metal and is mounted in a vertical position with the lower end of the drain pipe 1 extending into the open upper end of the housing. A discharge spout or neck 4 extends downwardly from the bottom of the housing about an outlet opening 5 formed therein, and this neck 4 is engaged in the upper end of a pipe 16 which may be referred to as an extension of the drain pipe 1 and leads to a sewer or other place of disposal for the initial flow of rain water and dirt carried thereby. At one side the housing is formed with a second discharge spout 7 which fits into a pipe 8 leading to a cistern, and upon referring to Figure 2, it will be seen that the spout 7 is located some distance above the bottom of the housing. Therefore, a quantity of water must accumulate in the bottom of the housing before it can flow through the spout 7 and through the downwardly inclined pipe 8 to the cistern. In order to prevent leaves, sticks and the like from accumulating in the housing, there has been provided a screen 9 which extends between the wall formed with the openings 3 and the wall from which the spout 7 leads and is of such width that it fills the entire upper end portion of the housing. The lower end of the screen extends through the openings 3 and the metal frame of the screen is cut to form a depending lip or flange 10 which engages the turned edge 11 at the bottom of the opening 3. Therefore, the screen may be set in place with the flange 10 resting upon the turned edge 11 along the bottom of the opening 3 and the upper end portion of the screen may then be forced into the housing where it will fit snugly and maintain itself in place. In view of the fact that the screen extends at an incline, sticks and leaves passing downwardly through the drain pipe 1 will flow along this screen and through the opening 3 and drop upon the ground. It will thus be seen that the leaves and the like will be prevented from accumulating in the housing and forming an obstruction which would prevent proper operation of the cut-off.

In order to control directional flow of water from the housing through the neck 4 or the neck 7, there has been provided a valve or cut-
off mechanism having a shaft 12 which extends transversely through the housing adjacent the bottom thereof and is rotatably mounted in bearings 13 and 14. The bearing 14 extends entirely through the wall carrying the same and at its outer end is provided with a packing gland 15 which, when tightened, will prevent water from leaking outwardly around the shaft. An arm 16 extends radially from the shaft within the housing and this arm is of such length that, when in the vertical position shown in full lines in Figure 2, it extends partially across the outlet of the opening from which the neck 7 leads while, when it is in the lowered or horizontal position indicated by dotted lines in this view, it will extend partially across the outlet opening 5 from which the neck 4 extends. A stem or bolt 17 passes through the free end portion of the arm 16 and at one end carries a valve disk 18 while its other end portion carries a valve disk 19. These valve disks are of duplicate construction and each preferably consists of a thick sheet of rust-proofed between reinforcing disks 20 formed of metal. Springs 21 are disposed about the stem between the valve disk and opposite side faces of the arm 16 and serve to place the two valves under tension and permit them to be firmly held in a closed position when in use.

During dry weather, the cut-off is to be disposed in the position shown in full lines in Figure 2 with the valve 18 closing the outlet from which the neck 7 leads but when it rains the cut-off is to be moved to the position indicated by dotted lines in Figure 2 after a certain quantity of rain has passed through the neck 4 and into the drain pipe 6. In order to do so, there has been provided a rocker arm 22 which fits upon the protruding end portion of the shaft 12 where it is firmly secured by a set screw 23. The rocker arm has triangular end portions, the apices of which face each other, as shown in Figure 1, and along opposite side faces of the enlarged end portions of the rocker arm are secured side strips 24 and 25 which project outwardly from these ends of the rocker arm and define channels for receiving flexible members, such as the chains 26 and 27, which are secured at their upper ends to pins 28 and 29 extending transversely through upper end portions of the channels. A weight 30 which may be formed of lead or any other desired material is suspended from the chain 27 and exerts a constant pull upon this end portion of the rocker arm whereas the chain 26 has a normally empty bucket 31 suspended from its lower end. In view of the fact that the empty bucket 31 weighs less than the weight 30, the rocker arm will be normally held in the position shown in full lines in Figure 1 and the arm 16 will be normally held in the vertical position shown in Figure 2 with the valve 19 closing the outlets from which the neck 7 extends. In view of the fact that the chains 26 and 27 are engaged between the strips 24 and 25, they will be prevented from shifting transversely of the ends of the rocker arm 22 and, since the chain extends downwardly from the lower end of the end edge face of the rocker arm which is uppermost, the pull of the weight or bucket will be spaced as far as possible from the axis of the shaft 12. Therefore, the greatest possible leverage will be secured for turning the shaft. This also causes the bucket to be held against transverse shifting and it will at all times be disposed properly under the small outlet pipe leading from the bottom of the housing 2.

During use of the automatic cut-off, the valve 18 is normally out of closing relation to the outlet opening 5 and when rain starts falling water flowing from the roof of a building into the gutter may flow through the drain pipe 1 into the housing where leaves and other large trash will be diverted by the screen 5 and directed outwardly through the opening 3. The rain water and the dirt passing through the screen flows through the opening 5 and neck 4 into the pipe 6 to the sewer or other place of disposal but a certain amount of the water will flow through a small pipe 32 leading from the bottom of the housing and since this pipe 32 terminates at the bucket 31 the bucket will be gradually filled with water. It takes some little time for the bucket to be filled with water as there is a small opening 33 formed in the bottom of the bucket and during this interval all of the dirt upon a roof will have passed through the housing 2 and out through the neck 4 into the drain pipe 6. As soon as the bucket 1 becomes filled with sufficient water to overcome the pull of the weight 30, the rocker arm will be swung to the position indicated by dotted lines in Figure 1 and the arm 16 will swing with the shaft 12 to the lowered horizontal position in which the valve 18 closes the outlet 5 and the valve 19 moves out of closing relation to the outlet from which the neck 7 extends. Rain water may then accumulate in the lower portion of the housing and flow through the neck 7 and the pipe 8 to the cistern. Water will continue to flow through the pipe 32 and into the bucket 31 to maintain the proper weight in the bucket. When rain stops falling, the water in the lower portion of the housing will continue to flow through the pipe 32 into the bucket and as soon as all of the water has passed out of the housing through the pipe 32, the weight of the water in the bucket will be gradually reduced by the water flowing out through the small opening 33 in the bottom of the bucket. The weight of the bucket will then be overcome by the weight 30 and the rocker arm will be returned to the position shown in full lines in Figure 1 and the valve 19 again moved into closing relation to the spout 7 so that, when rain again falls and a fresh supply of water flows from the roof and into the housing, the initial supply of water which is laden with dirt will be discharged from the housing through the pipe 6 and the water then diverted to the neck 7 and the pipe 8. It will thus be seen that the device works automatically and only clean water will be allowed to pass into the cistern.

Having thus described the invention, what is claimed as new is:

An automatic cut-off device comprising a chamber having an upper inlet and having its bottom formed with a main outlet and a side wall formed with an outlet spaced outwardly from the bottom, a drain pipe leading from the bottom and constituting an auxiliary outlet, a closure operable in said chamber and movable from a normal position in closing relation to the side outlet to a lowered position in closing relation to the main outlet of the bucket, said closure having a rocker shaft journaled through the chamber transversely thereof with one end portion projecting outwardly from one side of the chamber, a rocker arm securely intermediate its length to the outwardly projecting end of the rocker shaft and having vertically extending ends, plates secured against opposite side faces of ends of the rocker arm and defining vertical channels, flexible suspending
members secured at upper ends at tops of the channels and extending downwardly through the channels and below the arm, a weight carried by the lower end of one flexible member for normally holding the rocker bar tilted in a direction to maintain the closure in closing relation to the side outlet of the chamber, and a receptacle suspended from the lower end of the other flexible member in position to be filled with liquid flowing from the auxiliary outlet at the bottom of the chamber and gradually assume weight sufficient to overcome the weight and move the rocker bar in a direction to move the closure into closing relation to the main outlet in the bottom of the chamber, a drain being provided for the receptacle whereby liquid therein may escape and the weight restore the rocker arm to its initial position and return the closure into position to close the side outlet of the chamber.

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