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W. E. O'CONNER.

AUTOMATIC CUT-OFF FOR CISTERNS.

(Application filed Apr. 27, 1901.)

(No Model.)

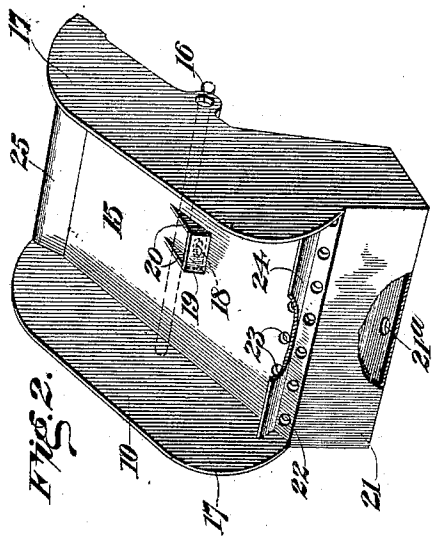


Fig. 2.

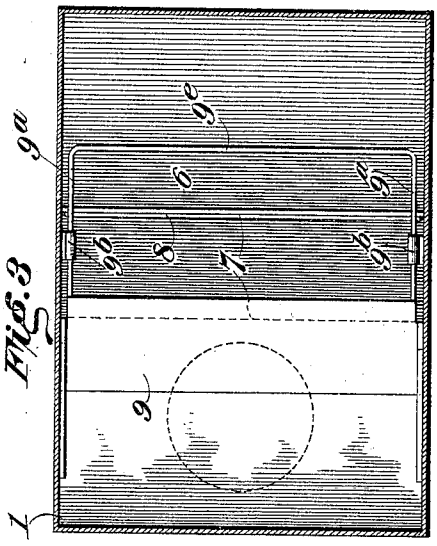


Fig. 3.

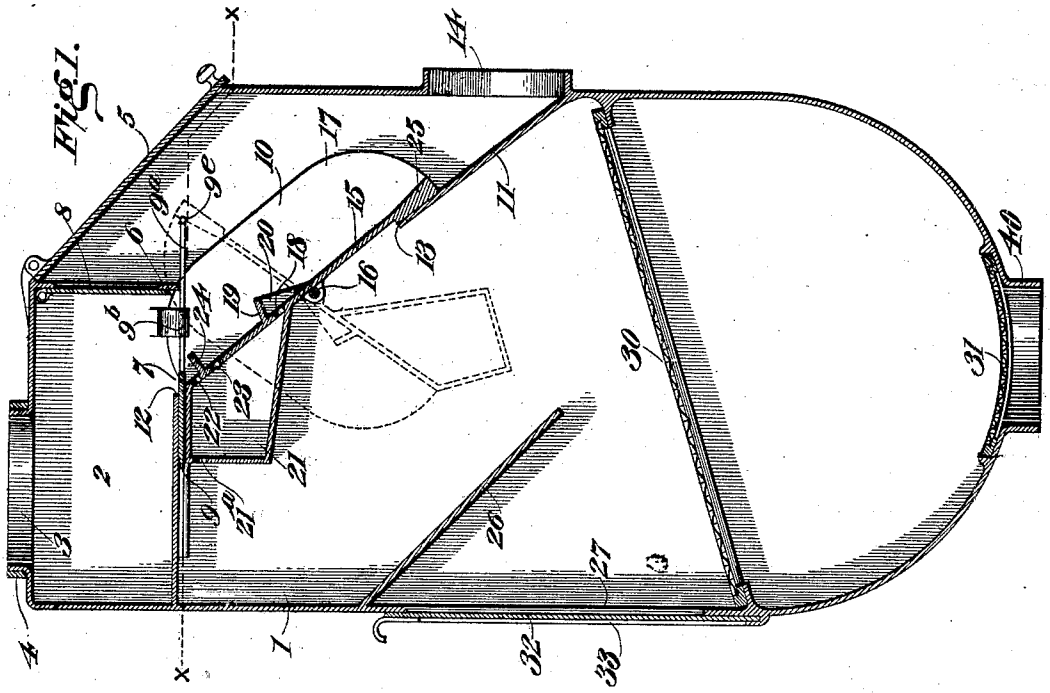


Fig. 1.

Witnesses
M. Fowler
Osgood Howell

Inventor
William Edward O'Conner
By Julius C. Howell
His Attorney

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UNITED STATES PATENT OFFICE.

WILLIAM EDWARD O'CONNER, OF LOUDON, TENNESSEE.

AUTOMATIC CUT-OFF FOR CISTERNS.

SPECIFICATION forming part of Letters Patent No. 682,420, dated September 10, 1901.

Application filed April 27, 1901. Serial No. 57,785. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EDWARD O'CONNER, a citizen of the United States, residing at Loudon, in the county of Loudon and State of Tennessee, have invented certain new and useful Improvements in Automatic Cut-Offs for Cisterns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automatic cut-offs; and it consists, substantially, in the improvements hereinafter more particularly described, and pointed out in the claims.

This invention is applicable to a great many different purposes, but is intended more particularly as a cut-off for automatically controlling communication between a cistern and a water pipe or spout leading from the roof of a house or other source of water-supply.

The principal object of the invention is to simplify the construction and arrangement of the device as compared with others hitherto employed and to reduce the cost of manufacture of the device, as well as to enable ready access to be had to the several parts or elements thereof either for the purpose of clearing, repair, or replacement thereof.

A further object is to dispense with the use of extra or attached buckets and weights and their auxiliary suspensory devices and to give to the cut-off itself the characteristics of construction which render it effective and reliable in operation under all conditions.

A still further object is to provide means by which the cut-off is prevented at will from opening communication to the cistern for a longer or shorter period of time after the water begins to flow or be supplied thereto from the rain-spout, and also to provide a device of the character referred to which is not liable to become clogged up or easily broken or disarranged.

The above and additional objects I attain by the means substantially as are illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my improved cut-off device, the closed position of the cut-off proper being indicated in full lines, while the open position thereof is indicated in dotted lines. Fig. 2 is a view in perspective of the cut-off detached by which to more clearly indicate the construction thereof. Fig. 3 is a horizontal sectional view on line $x\,x$, Fig. 1, to more clearly indicate the construction and operation of the slide or means for regulating the supply of water to the chamber or receptacle of the cut-off.

Before proceeding with a more detailed description it may be stated that my improved cut-off device is operatively arranged or mounted within a suitable tank or casing having communication, preferably, with a rain pipe or spout leading from the roof of a house, said tank or casing having a waste-outlet to a sewer or other place of discharge and a suitable connection with a cistern which is to be kept filled or supplied with water in the manner usual in many sections or localities. The first washings from the roof of the house are very apt to be mixed with dirt and other impurities, which of course should be prevented from passing to the cistern, and for this purpose I so construct the cut-off that the same will not operate to open communication to the cistern for a length of time at least sufficient for the dirt and other accumulations to be carried off to the sewer or other place of deposit therefor. I also provide suitable means, hereinafter specifically described, by which the said cut-off can be made to so operate in a longer or shorter space of time, accordingly as may be desired in use, said means also serving when desired to direct the passage of all the water to the sewer indefinitely, as will be understood. Preferably, though not essentially, I also employ a suitable arrangement of filtering devices for the water preceding its entrance to the cistern, suitable means being provided for access to these elements, as well as the others referred to, by which they may be taken out for any purpose desired and again replaced.

Specific reference being had to the accompanying drawings, 1 represents a suitable tank or casing of proper dimensions, having at the upper part thereof a box or compartment 2, provided at the top with a suitable connection 3, adapted to fit or receive the lower end of a suitable discharge spout or pipe 4, supposed to be leading from the roof of a house (not shown) or other suitable place. The box or compartment 2 is preferably some-

what less in length than the greater width of the tank or casing, as shown, and the latter is preferably inclined at the upper part at the side adjacent the inner end of said box or compartment, and an outer door 5 is provided by which ready access to the interior of the tank is had for any desired purpose. The inner end of the box or compartment is closed by a partition 6, and an outlet or opening 7 is provided in the bottom of said box or compartment, extending, preferably, the full width of the latter, as well as of the tank or casing. A door 8 is also provided in the said partition 6, and working beneath the box or compartment 2 is a suitable slide or valve 9, which is for the purpose of regulating the rapidity with which the water is supplied to the cut-off 10, as will hereinafter appear. The said slide or valve 9 can be operated in a great many different ways; but preferably I provide the same with a wire or other suitable handle 9^a, (see Fig. 3,) the side portions of which work in suitable guides 9^b on the inner sides of the casing and the connecting portion 9^c of which can be conveniently grasped by the hand of the operator on simply releasing and opening the said door 5 referred to. From this construction and arrangement it will be seen that the said slide and its operating-handle are entirely inclosed within the casing, and by locking or otherwise securing the door 5 the slide may be prevented from being tampered with by mischievous or unauthorized persons. Of course it will be understood that I am not limited to the particular form of the slide or its handle herein shown.

Interiorly of the tank or casing at one side is a ledge or shelf 11, arranged or disposed at a suitable angle, so as to lie in substantially a direct line with the edge 12 of the opening or outlet 7 referred to. Said ledge or shelf preferably extends from side to side of the casing and is of restricted width, so as to leave a large space 13 between the upper edge thereof and the said edge 12 of the said opening 7. Immediately in front of the ledge or shelf the casing or tank 1 is formed or provided with the waste-outlet 14, leading to a sewer (not shown) or other place of discharge. Between the sides of the said casing or tank and working or operating in the space 13 is the said cut-off 10, which can be constructed in many different ways, but preferably comprising a flat plate or strip 15, loosely mounted or pivoted in any suitable way at 16 and formed or provided with suitable end pieces or guards 17, by which to better direct the flow or passage of the water either to the sewer or to the cistern beneath. Said end pieces or guards are of a height sufficient to close the outlet or opening 7 at the ends when the cut-off is in its normal position, and they may be formed either integral with or separable from the plate 15, as desired. The said plate is formed about centrally of the ends thereof and slightly above its axis with an opening 18, which is partially inclosed by a three-sided guard or collector 19, the end portions 20 of which are substantially triangular in shape or of gradually-increasing height from the surface of the plate, as shown. Said plate is also formed or provided on its under side, at or near the upper end thereof, with an integral chamber or pocket 21, having a drip-opening 21^a, and at near such upper end the plate is provided with a row of holes or openings 22 and a similar row of holes or openings 23, each row communicating with the interior of the said chamber or compartment 21. Arranged across the upper surface of the plate intermediate the said rows of openings 22 and 23 is a weir or gate 24 of suitable height and angle relative to the plate, and it should be here remarked that the said opening 18, near the axis of the plate, also leads to or communicates with the said chamber or pocket 21. It should be further remarked that the said plate is preferably weighted at 25, so as to be held in the normal or full-line position until operated to be tilted or thrown to the dotted-line position by the weight of the water accumulating in the pocket or chamber 21, as will be hereinafter explained.

Opposite to the inclined ledge or shelf 11 within the tank or casing is a similar ledge or shelf 26, onto which the water falls after the cut-off 10 has been operated automatically to open up communication with the cistern. The said tank or casing is formed at this side with an enlarged opening 27, by which access to the filtering-screens 30 and 31 is conveniently had, the said opening being closed, preferably, by a sliding door 32, working in suitable guides 33 therefor, on the outer side of the casing. The uppermost filter-screen 30 is preferably of coarser mesh than the lower screen 31 and is also inclined slightly to somewhat facilitate the passage therethrough of the water, which partially flows over the surface thereof before passing through the interstices of the wires. Both of said screens are preferably removable, and it will be noted that the lowermost one 31 is located directly over the opening or outlet 40, leading to the cistern. (Not shown.) I can vary the construction and arrangement of these filtering screens or devices, as is obvious, without in any manner departing from my invention. The connection with the cistern can be made or effected in any suitable way.

Assuming my improved cut-off device to be properly located above a cistern and connected with the waterspout from a roof or other water-supply and also assuming the device to be in the full-line position indicated in Fig. 1, it follows that the water is first emptied into the box or compartment 2, from whence it flows through outlet or opening 7 onto and across the upper surface of the said device and out at the sewer outlet or discharge. During this action the weir or gate 24 serves to partially restrain or collect some of the water which drips or falls into the chamber or pocket 21 of the cut-off

through the holes 22 until, finally, when sufficient water has been collected in said chamber or pocket the weight thereof causes the said cut-off to be tilted over to the dotted-line position, whereupon the course of the incoming water is altered so as to be delivered to the lower part of the tank or casing, whence it passes to the cistern in an obvious manner. Inasmuch as at the time the cut-off is in its normal or full-line position the holes or openings 22 therein are directly beneath the slide or valve 9, it follows that by adjusting the said slide or valve outwardly more or less the rapidity with which water is caused to pass into pocket 21 through said openings 22 can be regulated or varied so that the contents of the said pocket will not become heavy enough to tilt the cut-off for a correspondingly longer or shorter period of time. In this way the operation of the said cut-off can be so regulated or determined as to absolutely insure the passage of the first washings and impurities from the roof to the sewer before communication is automatically established with the cistern. By drawing the slide or valve 9 out far enough to completely overlie the edge of the weir or gate 24 no water can pass through the said openings 22, and in this way the cut-off can be made to permanently retain its normal or full-line position to thus discharge to the sewer indefinitely. After the cut-off is tilted to direct the water to the cistern the water in the chamber or pocket 21 begins to leak out through the opening 21^a in said pocket; but at this time the said weir or gate 24 again serves to restrain or dam up some of the water in front of the other row of holes or openings 23, so that water still continues to flow into the pocket or chamber 21 through said openings 23 and also through the opening 18, being held up or restrained about the latter by means of the collector or guard 19, surrounding the same. It is of course apparent that as long as the water falls upon the cut-off faster than the contents of chamber or pocket 21 can escape through the opening 21^a the said cut-off will continue to remain in the position to deliver or convey water to the cistern. When, however, the rainfall or other supply of water ceases, the cut-off will only remain in this position until sufficient of the contents of chamber or pocket 21 has leaked out through opening 21^a to cause the weighted end of the said cut-off to overbalance the weight of said chamber or pocket and its remaining contents, whereupon the parts are automatically restored to the normal or full-line positions thereof in Fig. 1. Any water still remaining in the chamber or pocket will then leak out through the opening 18 and be carried away to the sewer.

The construction and operation of my improved cut-off has been thus fully and specifically explained, and it will be understood, of course, that I do not limit myself to the precise details herein shown and described. The parts can be constructed of any suitable material, and the several elements of the device can be so arranged or disposed as will best suit the exigencies of each particular case. The said cut-off is of course removable, and the upper box or chamber can also be made removable, if desired. Other immaterial changes can also be resorted to without departing from the scope and character of the invention.

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 device of the character described, a casing having a compartment at its upper part provided with an opening in the bottom thereof, a pivoted cut-off in the casing having an integral chamber or pocket provided with means for gradually admitting water thereto for automatically effecting the shifting of the cut-off to direct the water to a cistern, and means for closing said opening for regulating or cutting off such admission at will, substantially as shown and for the purpose set forth.

2. In a device of the character described, a casing adapted for connection with a pipe or spout, and having a waste-outlet to a sewer and an outlet to a cistern, said casing also having an upper compartment provided with an opening in the bottom thereof, a pivoted cut-off in said casing normally in position to direct the incoming water to said waste-outlet, and having an integral chamber or pocket provided with means for gradually admitting water thereto for automatically effecting the shifting of said cut-off to alter the course of the water from the waste-outlet to the outlet to the cistern, and means for closing said opening for regulating or cutting off such admission at will, as set forth.

3. In a device of the character described, the casing having an inlet for water and a sewer-outlet and an outlet to a cistern, and also having an upper compartment having an opening in its bottom for the passage of water, an automatic cut-off having an integral chamber or pocket provided with means for admitting water thereto, and a hand-operated slide movable across said opening for regulating or cutting off such admission at will, as and in the manner set forth.

4. In a device of the character described, the casing having a door in the side near the top, and provided with an upper compartment having a door at one end and an opening in its bottom, a pivotally-mounted cut-off in line with said opening and comprising a chamber or pocket provided with means for admitting water thereto, and means for regulating or controlling such admission accessible through said doors.

5. In a device of the character described, the casing having a door in the side near the top, and provided with an upper compartment having a door at one end and an opening in its bottom, a pivotally-mounted cut-off

in line with said opening and having a chamber or pocket provided with means for admitting water thereto, and a slide for regulating or controlling such admission having a handle accessible through said doors.

6. In a device of the character described, the casing having at its upper part an opening through which water passes, an automatic cut-off having a chamber or pocket provided with two rows of holes or openings, a gate or weir across the upper surface of the cut-off intermediate said rows, said cut-off having an opening near its axis, and said pocket having a leak-vent, and a slide or valve coöperating with said weir, in the manner and for the purpose set forth.

7. In a device of the character described, the casing having at its upper part an opening through which water passes, a pivotally-mounted weighted cut-off having end pieces or guards, and provided with a chamber or pocket having two rows of holes formed in the cut-off, a gate or weir across the said cut-off intermediate the said rows, the cut-off having an opening near its axis and the pocket having a leak-vent, and a gate or valve cooperating with said weir, as set forth.

8. In a device of the character described, the casing having an upper compartment provided with an opening in its bottom and a door in one end, said casing having a contiguous door, a pivotally-mounted cut-off in line with said opening and having a chamber or pocket provided with two rows of openings formed in the cut-off, a gate or weir across the upper surface of the latter intermediate the said rows, and the slide having the handle accessible through said doors, as set forth.

9. In a device of the character described, the casing having the side and upper doors, and having the filtering devices therein and provided with the outlets to a sewer and a cistern, the box in the upper part of the casing having a door in one end and an opening in its bottom, the movable slide working beneath said box, and the pivotally-mounted cut-off having the chamber or pocket and formed with the two rows of holes or openings leading to said pocket, said cut-off having the weir intermediate said rows and formed with an opening near its axis partially surrounded by a collector or guard, and said pocket having a leak-vent, as set forth and shown.

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

WILLIAM EDWARD O'CONNER.

Witnesses:
A. S. HENDERSON,
JOHN J. BLAIR.