

(No Model.)

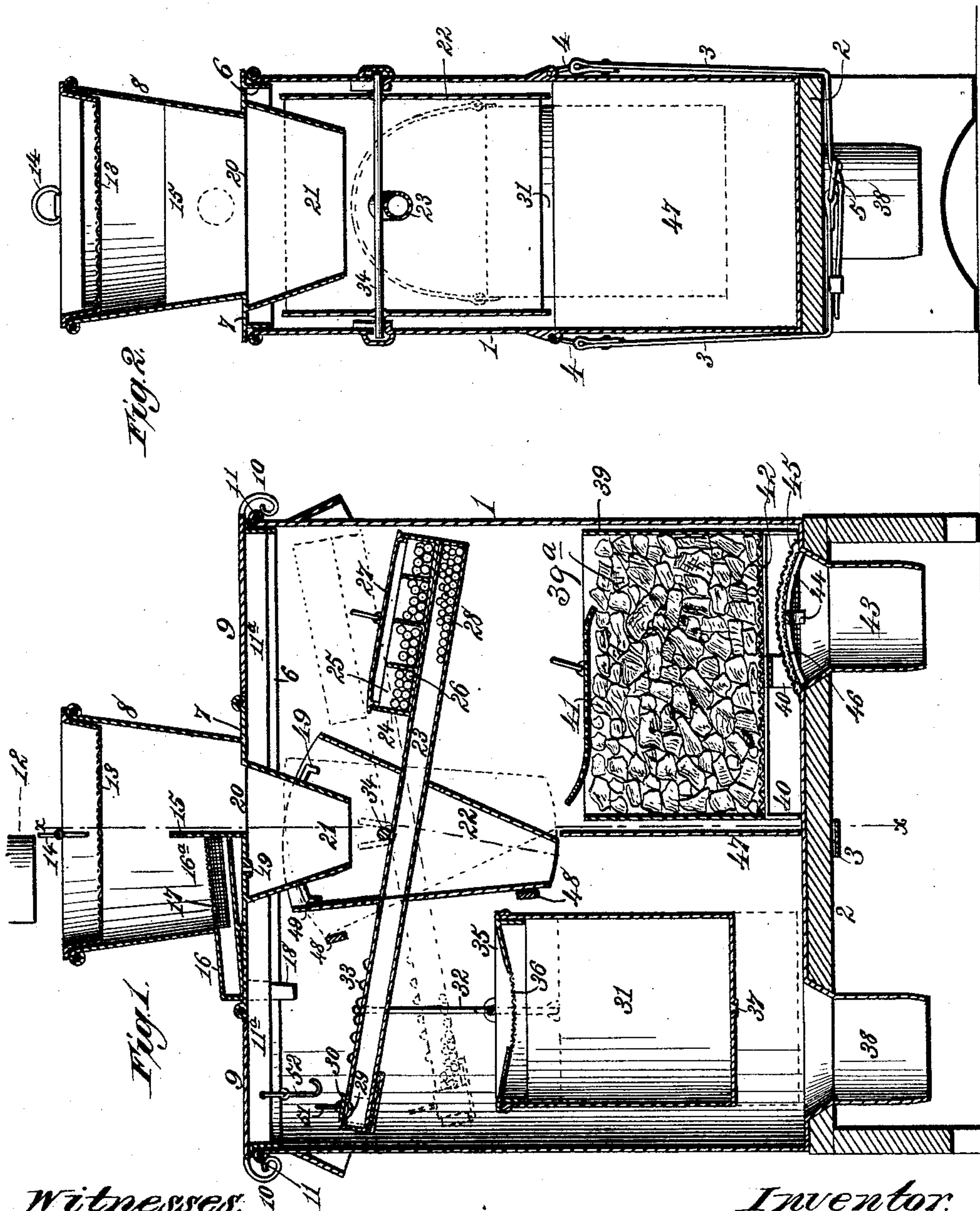
2 Sheets—Sheet 1.

W. W. BAYS.

COMBINED RAIN WATER CUT-OFF AND FILTER.

No. 452,538.

Patented May 19, 1891.



Witnesses:
Robert Everett
J. A. Rutherford

Inventor:
William W. Bays
By *James L. Norris*
Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

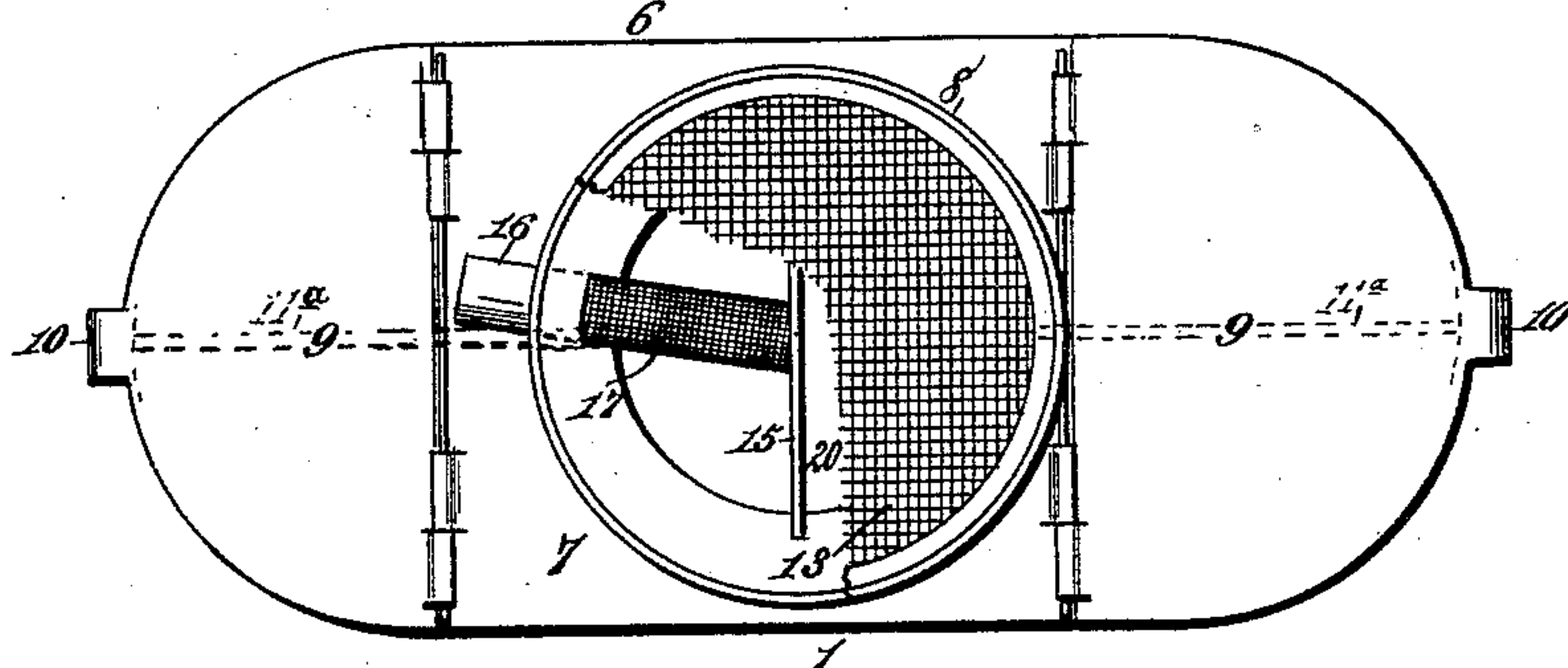


Fig. 4.

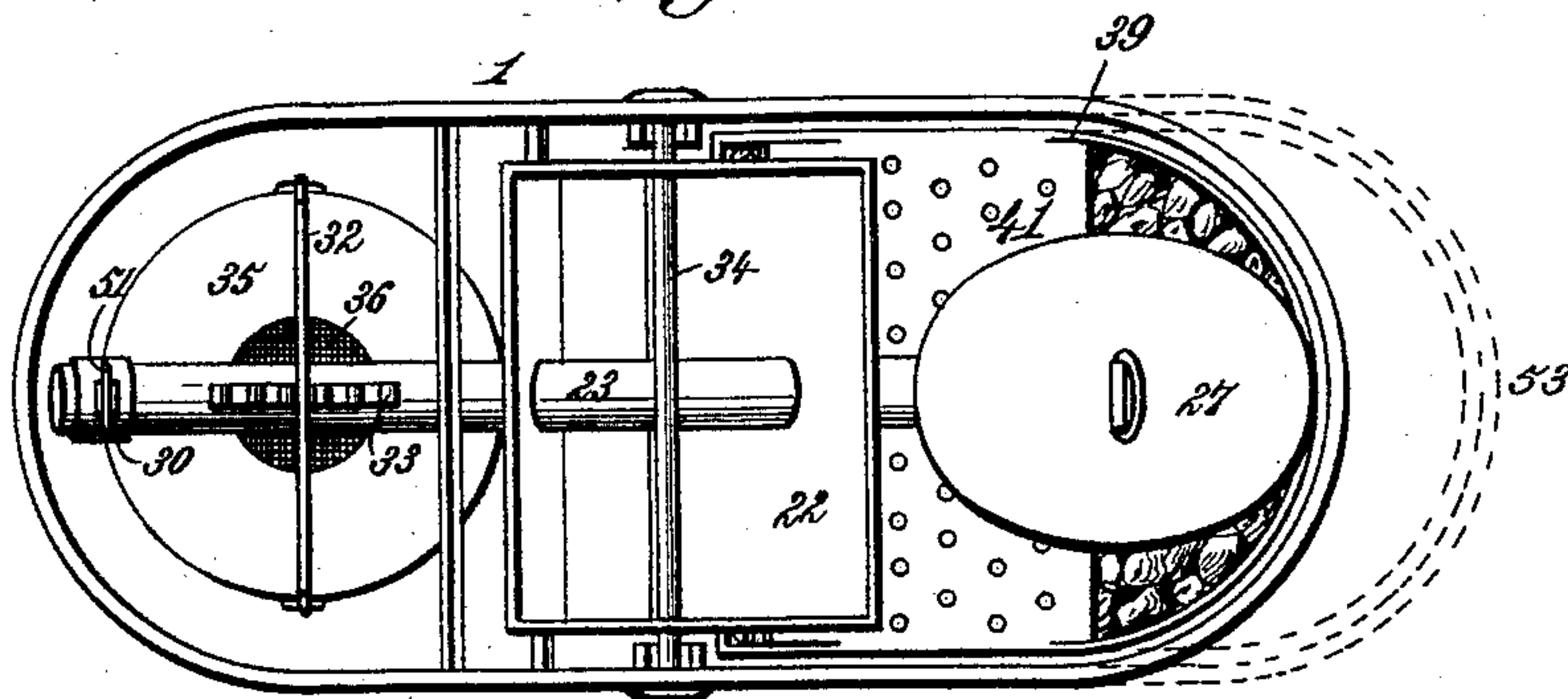
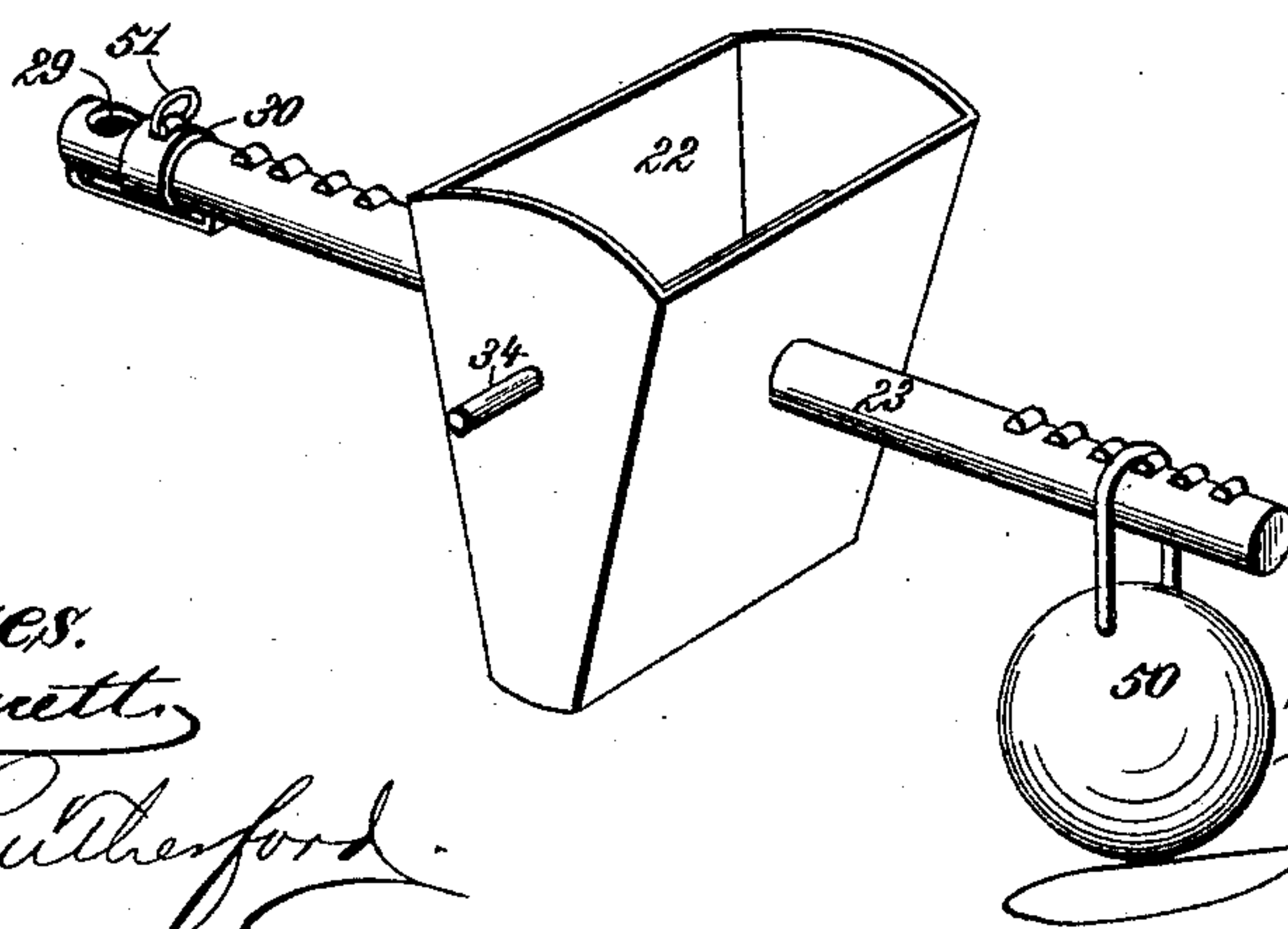


Fig. 5.



Witnesses.
Robert G. Smith.

J. A. Rutherford.

Inventor.
William W. Bays.

By
James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM W. BAYS, OF KNOXVILLE, TENNESSEE.

COMBINED RAIN-WATER CUT-OFF AND FILTER.

SPECIFICATION forming part of Letters Patent No. 452,538, dated May 19, 1891.

Application filed March 19, 1890. Serial No. 344,505. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. BAYS, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented new and useful Improvements in Combined Rain-Water Cut-Offs and Filters, of which the following is a specification.

This invention relates to a combined rain-water cut-off and filter.

The object of my invention is to produce a device of the above description in which the flow of the soiled and impure water is deflected or carried away from the cistern or reservoir, and the pure water carried to a suitable filter previous to being discharged into the cistern; furthermore, to produce a combined rain-water cut-off and filter in which the mechanism for deflecting the flow of the water shall be operated automatically by the rain-water itself, and finally to produce a device which shall be of the greatest simplicity of construction and highest efficiency and durability in use.

With these objects in view the invention consists, broadly, of a casing having mounted therein a pivoted spout, the discharge-mouth of which is normally turned from the filter, and mechanism connecting with the said spout to cause it automatically to turn in the position necessary to bring the discharge-mouth over the filter.

The invention further consists in the improved construction and combination of parts in a combined rain-water cut-off and filter, as will be hereinafter fully described in the specification, illustrated in the drawings, and more particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, and in which like reference-numerals indicate corresponding parts, I have illustrated one form of device embodying the essential features of my invention, although the same may be carried into effect in other ways without in the least departing from the spirit thereof; and in the drawings—

Figure 1 is a longitudinal vertical sectional view of my improved device, showing the internal construction of the same. Fig. 2 is a transverse sectional view taken on the line

xx, Fig. 1. Fig. 3 is a top plan view with the cover or lid in position. Fig. 4 is a similar view with the cover or lid removed. Fig. 5 is a perspective detail view, showing a modification of the mechanism for operating the hopper.

Referring to the drawings, the numeral 1 designates the casing of the device, which may be made of any suitable material—such, for instance, as tin-ware, sheet-iron, galvanized iron, cast-iron, zinc, &c., or even wood—and may be supported in any manner desirable, but preferably upon a base or bench 2, and on which it is held by means of straps or bands 3, which pass through rings or cleats 4, and which are secured on the under side of the base or bench 2 by means of a buckle or other fastening device 5.

The shape of the casing 1 may be of any desired configuration, but that shown in the drawings is preferred—that is, having vertical side walls and rounded ends.

Upon the top of the casing 1 is placed a removable cover or lid 6, consisting of a center portion 7, carrying on its top a stationary hopper 8, and said hopper may be round, oblong, oval, or square, as desired. The center portion 7 also carries two hinged flaps 9, which are held closed by springs 10, engaging projections 11 on the casing, or, if desired, on the rim of the lid. The flaps 9 are supported by horizontal longitudinal bars 11^a, attached to the cover or lid. The use of the flaps is to allow the inside of the casing to be seen without removing the covering 6. The hopper 8 is placed beneath a spout 12, which in this instance represents a rain-spout connected with the gutters on the roof of the house or other water-shed.

The upper part of the hopper 8 is provided with a coarse sieve or filter 13, which prevents the entrance of foreign matter, such as sticks, leaves, moss, &c.—to the interior of the device, and the filter 13 has a bail or handle 14, by which it can be easily and readily removed from the hopper for the purpose of cleansing, should the meshes of the sieve become clogged or obstructed. In the center of the hopper is secured a vertical partition 15, on one side of which is placed a spout 16, on top of which hopper 8 is a convex

sieve or strainer 17 with fine meshes. The spout 16 passes through the hopper, with a slight inclination toward its outer end, where it is provided with an elbow 18, causing it to pass vertically through the center portion 7 of the lid 6. Below the spout 16 is a small opening 19, the function of which, in connection with the spout, will be described farther on. On the other side of the partition 15 the lid is cut away to form a passage 20, which opens with a funnel-shaped mouth or spout 21, forming a part of the cover 6.

Within the casing 1 is pivoted a funnel-shaped spout 22, carrying a hollow beam 23. On one end of the beam 23 is mounted a box 24, provided with a series of compartments 25, in which are placed a series of counterpoises or weights 26. The box 24 is also provided with a lid 27, so as to admit of easy access to its interior, either for increasing or diminishing the number of the weights or for arranging them in the compartments. As before stated, the beam is hollow and carries within its hollow portion a number of weights, shot, or balls 28, which are introduced through an opening 29, the said opening being closed by means of a sliding collar 30, so as to prevent the weights falling out when the position of the beam is changed, as shown by dotted lines in Fig. 1. On the opposite end of the beam 23 to that on which the box is mounted is suspended a bucket 31, the bail of which 32 is designed to rest between lugs or projections 33 on the top of the beam 23 to prevent the bail from slipping off when the beam is tilted. As will be seen, there are a plurality of these lugs. This is done to increase or diminish the weight necessary to overcome the weight 26, as by moving the bail in toward the pivot 34 a greater weight will be necessary to tilt the beam than were the bail moved to the outer end of the same. On the top of the bucket 31 is placed a removable lid 35, which is concave, and in the center is a fine sieve or strainer 36, to prevent any foreign or solid matter from entering the bucket. In the bottom of the bucket 31 is a small outlet 37 to allow the water to pass from the bucket to a waste-pipe 38 in the bottom of the outer casing. At the opposite end of the casing to that in which the bucket is suspended is placed a filter-box 39, containing suitable filtering material 39^a, such as charcoal, gravel, &c., the said box being supported on legs 40, which rest upon the bottom of the casing, as clearly shown in Fig. 1.

Above the top of the filter-box is placed a deflector 41, which may be made of any foraminous or reticulated material, and in the bottom of the filter-box 39 is a sieve or strainer 42 to prevent the filtering material from falling out and to let the water readily escape. Immediately below the filter-box 39 is a pipe 43, across the mouth of which is placed a convex four-armed support 44, over which are stretched two sieves or strainers 45 46, the upper one 45 being rather coarse and the

lower one 46 being very fine. The object of having two strainers is to prevent effectually the entrance of any foreign matter to the pipe 43, which connects with a cistern or reservoir.

At one end of the filter-box 39 is secured a vertical partition or wall 47, which extends across the casing and is hermetically sealed at the points where it joins the sides and the bottom of the casing.

Having now fully described my device, I will proceed to describe its manner of operation. The beam being in the position shown in Fig. 1, the rain-water in entering the spout 12 falls directly upon the convex sieve 17 on top of the spout 16 and a small portion of said rain-water passes through the convex sieve 17, then along through the spout 16, and on through the elbow 18, and is discharged upon the sieve 36 of the bucket-lid, the sieves 17 and 36 acting in conjunction to prevent any foreign matter from getting inside the bucket 31 and obstructing the small outlet 37 in the bottom of the bucket. As the beam occupies the center of the casing, the pipe 16 has to be arranged at an angle thereto in order to prevent the water running over the beam, as will be understood by reference to Fig. 3. When the tank 16^a (which is the name applied to the space formed by the partition 15 and the wall of the hopper 8, and in which the inner end of the spout 16 is placed) becomes filled the rain-water pours down through the mouth 21, which opens inside the top of the funnel-shaped spout 22 and down through said spout 22, through the discharge-pipe 38, thence onto the sewer or other waste-receptacle. At the same time the bucket is being slowly filled, and the roof of the house or other water-shed is being washed off, while the soiled water is discharged through the waste-pipe 38 and not into the cistern. As soon as the bucket 31 is sufficiently filled its weight overcomes the counterpoise at the other end of the beam and causes the same to tilt, thus throwing the mouth of the oscillating spout 22 over the deflector 41, which causes the water to flow in an even sheet and distributes it at various points, instead of discharging it at one spot. As soon as the beam begins to tilt the weights 28 roll to the opposite end of the beam, and thus prevent any oscillation of the spout after it has once resumed the position indicated by the dotted lines in Fig. 1. In order to prevent the spout 22 moving too far stops 48 are provided, against which the spout abuts when swinging either into or out of operative position. The stops just referred to extend entirely across the casing; but, if desired, they may be secured to the funnel-shaped mouth 21, as shown at 49, or the mouth itself may be made of such size as to dispense with them, thus allowing the inside of the spout 22 to abut against the outside of the mouth 21. When the rain has ceased the beam is caused to resume its normal position by the water in the bucket slowly escaping through the open-

ing 37, and the tank is likewise emptied through the opening 19.

In practice I have found that the box of weights may be dispensed with and the form of weight shown in Fig. 5 used. In this instance the beam is provided with lugs at both ends, and one set is engaged by the bail or handle of the bucket and the other set by that of the weight 50. This will be found to perform the same function as the weighted box 24. If desired, I may dispense with the filter-box and place the filtering material directly on the floor of the casing.

When the cistern is filled and it is desired to prevent the further flow of the water thereto, the beam is held against movement by bringing a ring 51 thereon into engagement with a hook 52 on the bar 11^a of the cover 6.

If it should be found that the filter-box is too small to allow the water flowing thereto to be thoroughly filtered, its capacity may be increased by making the end of the casing in which it is mounted larger than the opposite end, as shown by dotted lines at 53 in Fig. 4. This of course will be optional and will be dispensed with, if desirable.

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

1. In a rain-water cut-off and filter, the combination of a casing, a filter, a hollow beam, a spout connected therewith, a box on the beam carrying counterpoises, which keep the spout normally out of operative position with the filter, a bucket, means for directing the flow of water to the same to cause it to overbalance the counterpoises and bring the spout into operative position with the filter, and a series of balls or weights in the beam.

2. In a rain-water cut-off and filter, the combination of a filter, a discharge-pipe mounted beneath the same, having a series of strainers over its mouth, a foraminous deflector adjacent to the filter, and mechanism for directing a flow of water to the filter.

3. In a rain-water cut-off and filter, the combination of a filter, a spout pivoted within the casing, a hollow beam carried by the spout, counterpoises carried by the beam to keep the spout out of operative position with the filter, a bucket also carried by the beam, and means whereby the bucket may be moved and retained in place at different points in the beam.

4. In a rain-water cut-off and filter, the combination of the casing 1, having waste-pipe 38 and discharge-pipe 43, a filter located in the casing above the discharge-pipe 43, a removable lid 6 on top of the casing, a stationary hopper 8, attached to the top of said lid, a removable sieve 13, mounted in the upper part of said hopper, the sieve 17, located in the lower part of the hopper and having an elbow-pipe 16 that opens into the casing, a spout 22, pivoted in the casing beneath the hopper and provided with a counterpoised beam 23, and a bucket 31, suspended from one end of said beam above the waste-pipe and having in its top a sieve that is in line with the elbow-pipe, substantially as described.

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

WILLIAM W. BAYS.

Witnesses:

W. H. ROBERTS,
M. O. FRENCH.