(No Model.)

M. N. COE.

RAIN WATER CUT-OFF.

No. 450,909. Patented Apr. 21, 1891.

Fig. 2

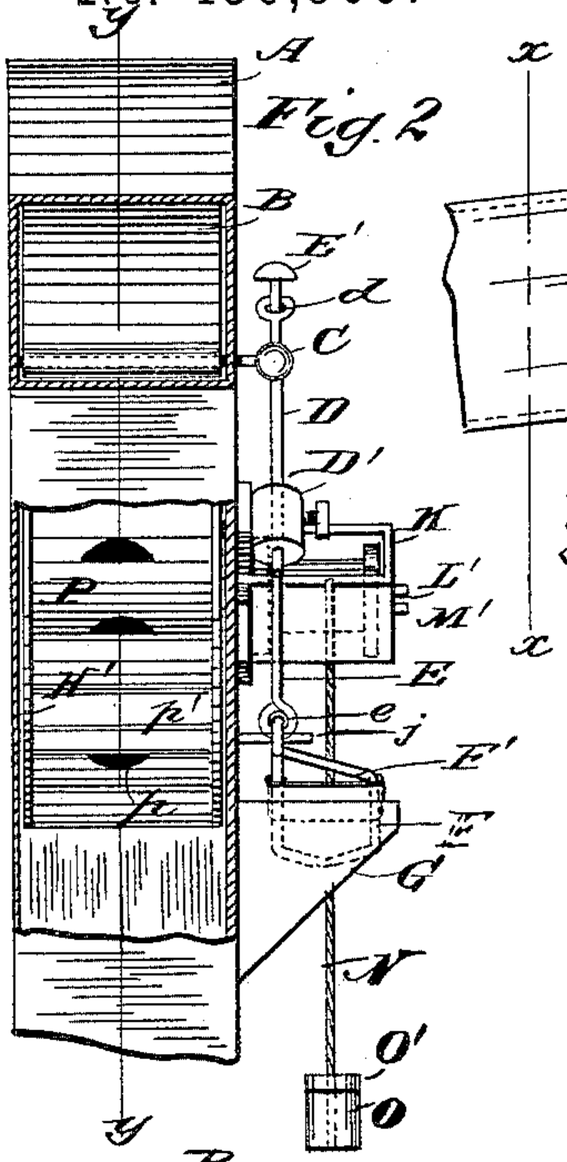

Fig. 4

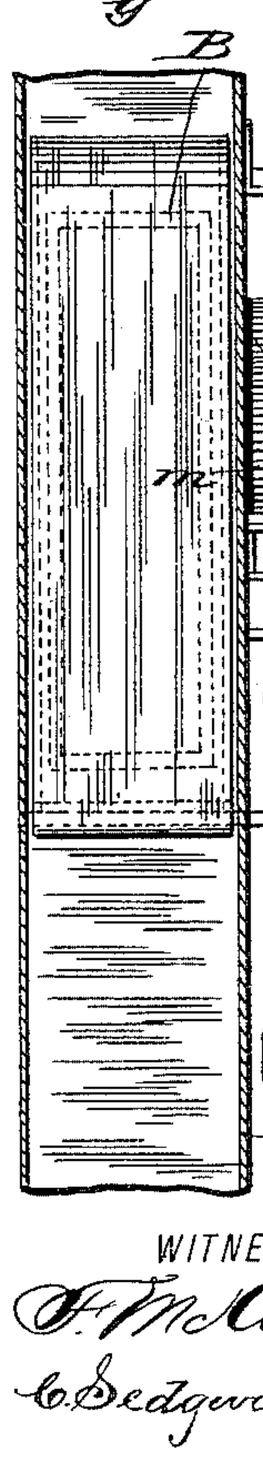

Fig. 5

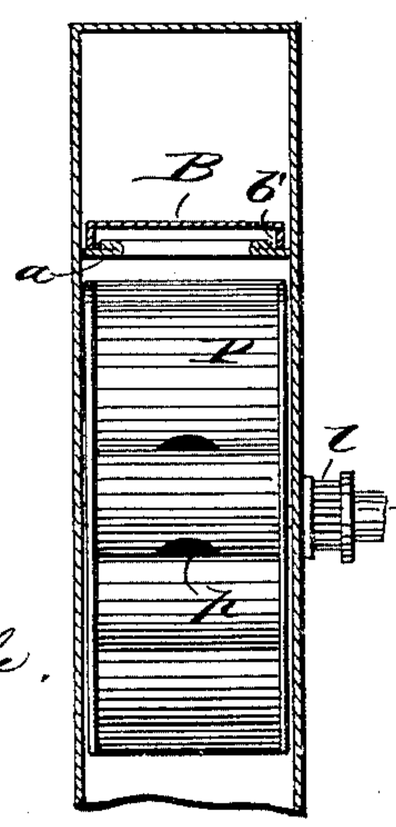

Fig. 6

Fig. 1

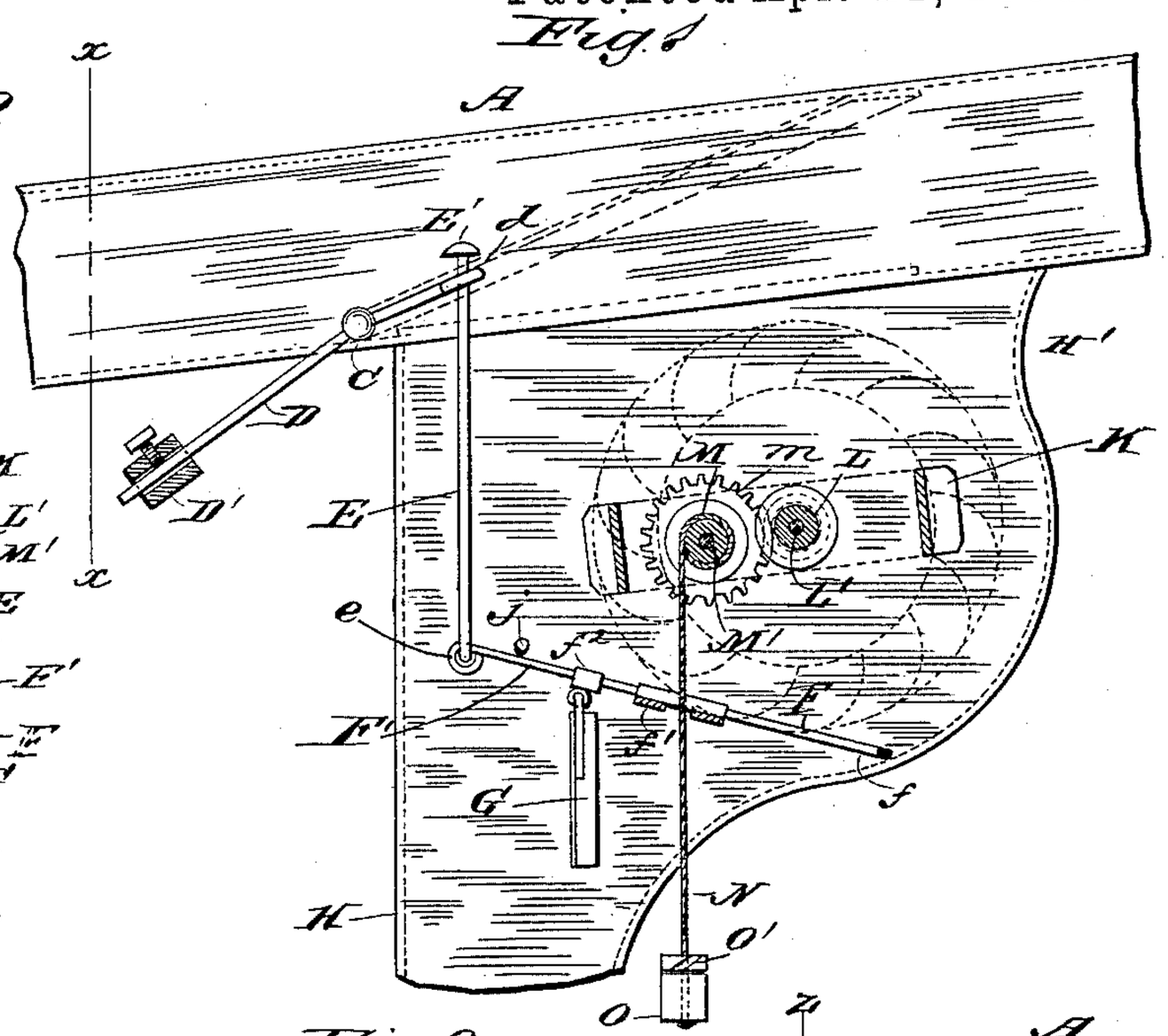

Fig. 3

Fig. 7.

Fig. 6

WITNESSES:

F. McArdle.

C. Sedgwick

INVENTOR:

M. N. Coe

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

MARION N. COE, OF NEW ORLEANS, ASSIGNOR OF ONE-THIRD TO EDWARD DE NEVEU, OF MONROE, LOUISIANA.

RAIN-WATER CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 450,909, dated April 21, 1891.

Application filed September 19, 1890. Serial No. 365,456. (No model.)

To all whom it may concern:

Be it known that I, MARION N. COE, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Rain-Water Cut-Off, of which the following is a full, clear, and exact description.

My invention relates to improvements in rain-water cut-offs, such as are used to regulate the flow of water from the roofs of buildings to adjacent cisterns. It is well known that between rains quite a quantity of dirt, dust, and other refuse will collect upon the roof of a building, and when the rain descends this refuse is washed through the conductors and into the cistern.

The objects of my invention are, first, to provide a cut-off that will prevent the flow of water from sheds or roofs into the tanks or cisterns until a sufficient quantity of rain has fallen to wash the deposit of dust and dirt from the roof; second, to provide a cut-off that will act automatically and with certainty, and, third, to provide a cut-off which, while serving the above purposes, will also prevent the passage of pigeons, rats, roaches, and other insects into the cistern.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a broken side elevation of the device embodying my invention, with parts of the mechanism in vertical section. Fig. 2 is a transverse section of the same on the line *x x* in Fig. 1, and with the spout broken away. Fig. 3 is a vertical longitudinal section on the line *y y* of Fig. 2. Fig. 4 is a broken sectional plan of the device. Fig. 5 is a vertical cross-section on the line *z z* of Fig. 3. Fig. 6 is a detail plan view of one of the weights used in connection with the device, and Fig. 7 is a plan view of the swinging frame.

The conductor A is of the usual construction, except for the opening and gate therein, and leads from the roof of the building to a cistern. In the bottom of the conductor is an opening A′, and the edges of the opening are turned up, as best shown in Fig. 3, to form a seat *a*. A gate B is fixed at the lower end of the opening to the rod C, which extends transversely through the conductor, the said gate having its upper end *b* beveled, as shown, so that it will lie flatwise against the bottom of the conductor and will cause the water to flow readily over it, and the gate is also provided with depending side flanges *b′*, which close around the seat *a*. The rod C is pivoted in the conductor A, and the outer end of the rod has fixed thereto a lever D, which extends at right angles to the rod, and the long end of the lever has a weight D′, adjustably secured thereon, so that the weight will normally tilt the lever and rod and raise the gate B, thus closing the conductor and allowing the water to flow through the opening A′.

The short end of the lever D is provided with an eye *d*, through which extends vertically the rod E, the upper end of the rod being provided with a head E′, which prevents it from dropping through the eye *d*. The lower end of the rod E is formed into an eye *e*, which is hooked to a corresponding eye in the prolonged end F′ of the frame F. The frame F comprises two parallel bars *f*, one of which is prolonged to connect with the vertical rod E, as described, and the frame is pivoted horizontally on the bracket G, which is fixed to the spout H, connecting with the conductor, as described below. The frame F is provided with a smaller frame *f′*, which is slotted transversely, as shown, and which is mounted loosely on the parallel bars comprising the frame F, so that it may slide easily thereon. The frame F is also provided with a transverse plate f^2, which is fixed thereto and which is pivotally connected with the bracket G. The frame F will thus swing vertically upon its support, and near one end of the frame and above the prolonged end F′ is a stud *j*, which projects from the side of the spout H and limits the upward movement of the frame. The spout H is attached to the under side of the conductor A, the spout being of the same width as the conductor and having an enlarged portion H′, which enables it to catch all the water dropping through the opening A′ and to also afford room for the water-wheel, as described below.

Fixed to the side of the enlarged portion H′ of the spout above the frame F is a rectangular frame K, through which extend transversely the shafts L′ and M′, which carry the drums L and M, respectively. The shaft L′ has a pinion *l* fixed thereto which meshes with a gear-wheel *m* on the shaft M′, and a slower motion is thus transmitted from the shaft L′ to the shaft M′. The drum M has a rope N fixed thereto and adapted to be wound thereon, the said rope extending downwardly through the slotted frame *f′* and having at its lower end a weight O, and additional weights O′ may be attached to the rope, if desired. The weight O′ has a central perforation to fit the rope and has a radial slot O^2 extending from the central perforation to the circumference of the weight, the said slot being diagonal to the plane surface of the weight, so that it may be easily slipped upon the rope, and when once in position it cannot accidentally be removed. The shaft L′ extends through the enlarged portion H′ of the spout H, and fixed to the shaft is a water-wheel P, the said water-wheel being arranged beneath the upper portion of the opening A′ and having a series of curved blades P′ around its periphery, said blades having central perforations *p* to permit the escape of water.

While I find the above-described water-wheel to be well adapted to operate the device, still it is not absolutely essential, and any suitable wheel may be substituted.

The operation of the device is as follows: The weight D′ actuates the lever D and rod C and normally holds the upper end of the gate B in an elevated position so as to close the conductor A and thereby prevent anything from getting into the cistern through the conductor, and the weight O will normally unwind the rope N from the drum M, so that the rope will be extended its full length. When the water falls upon the roof with which the conductor is connected, it will flow through the conductor and through the opening A′ upon the water-wheel P, thus turning the water-wheel, which will turn the shaft L′, the pinion *l*, gear-wheel *m*, shaft M′, and drum M, thus winding the rope upon the drum, and when the weight O reaches the slotted frame *f′* it raises said frame, and the free end of the frame F, connected therewith, thus depressing the elongated end F′ of the frame F, actuating the rod E and causing the enlarged end E′ of the said rod to move the lever D and close the gate B, and when the gate B is closed the water flowing through the conductor and above the gate will hold it closed. As soon as the gate is closed and the water excluded from the wheel the weight O unwinds the rope N from the drum M, and the weight D′, operating on the lever D and rod C, when the flow through the conductor ceases, again raises the gate P, and the device is ready for another operation. It will be seen that the length of time during which the water runs to waste through the spout H may be regulated by the length of rope N, and if it is desired to have the gate closed quickly the rope N may be detached from the drum M and attached to the drum L, which moves much faster.

The length of time during which the water runs to waste may be changed according as the roof with which the conductor is connected is steep or flat, as a steep roof will be washed much more quickly than a flat roof, and hence the gate should be more quickly closed.

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

1. In a rain-water cut-off, the combination, with a conductor having an opening therein, of a hinged and counterbalanced gate in the conductor adapted to alternately close the conductor and the opening therein, a water-wheel mounted adjacent to the opening, and a connection between the water-wheel and gate for operating the latter to close it over the said opening and cut off the water from the wheel, substantially as described.

2. In a rain-water cut-off, the combination, with a conductor having an opening in the under side thereof, of a rod mounted transversely in the conductor, a gate fixed to the rod so as to close over the opening, a water-wheel mounted beneath the opening in the conductor, and a gear-and-lever mechanism connecting the water-wheel shaft with the gate-rod, so that the gate will be closed by the movement of the water-wheel, substantially as described.

3. In a rain-water cut-off, the combination, with a conductor having an opening in the under side thereof, of a gate hinged in the conductor so as to close over the opening, a water-wheel mounted beneath the opening in the conductor, a gear-and-lever mechanism connecting the water-wheel shaft with the gate, so as to close the same by the operation of the water-wheel, and a device for automatically opening the gate, substantially as described.

4. In a rain-water cut-off, the combination, with a conductor having an opening in the under side thereof, of a rod extending transversely through the conductor, a gate fixed to the rod so as to close over the opening in the conductor, a weighted lever fixed to one end of the rod, a water-wheel mounted beneath the opening in the conductor, and a gear-and-lever mechanism connecting the water-wheel shaft with the weighted lever, substantially as described.

5. A rain-water cut-off comprising a conductor having an opening in the under side thereof, a gate hinged in the conductor at one end of the opening so as to close over the same, a weighted lever connected with the gate, so as to normally hold it in open position, a water-wheel mounted beneath the opening in the conductor, a drum fixed to the water-

wheel shaft, a weighted rope connected therewith, a frame pivoted horizontally in the path of the rope-weight, and a rod connecting one end of the frame with the weighted lever attached to the gate, substantially as described.

6. In a rain-water cut-off, the combination, with the conductor having an opening in the under side thereof provided with a seat, as shown, of a gate hinged at one end of the opening, said gate having its free end beveled and having depending side flanges to close over the seat in the conductor, and means for closing the gate, substantially as described.

7. In a rain-water cut-off, the combination, with the gate-rod and gate and the weighted lever attached thereto, the revoluble drum, and the weighted rope attached to the drum, of the frame pivoted horizontally beneath the drum and connecting at one end with the weighted lever, as shown, and the slotted frame arranged to move longitudinally on the swinging frame and guide the weighted rope, substantially as described.

8. A rain-water cut-off comprising a conductor having an opening in the under side thereof, a gate hinged at the lower end of the opening so as to close over the same, a waste-spout attached to the conductor beneath the opening and provided with an enlarged upper end, as shown, a water-wheel pivoted transversely in the enlarged end of the spout under the opening of the conductor, and a gear-and-lever mechanism connecting the water-wheel shaft with the gate and adapted to close the same and cut off the water from the wheel, substantially as described.

MARION N. COE.

Witnesses:
L. EMILE CRUSEL,
JAS. B. GRAHAM.