

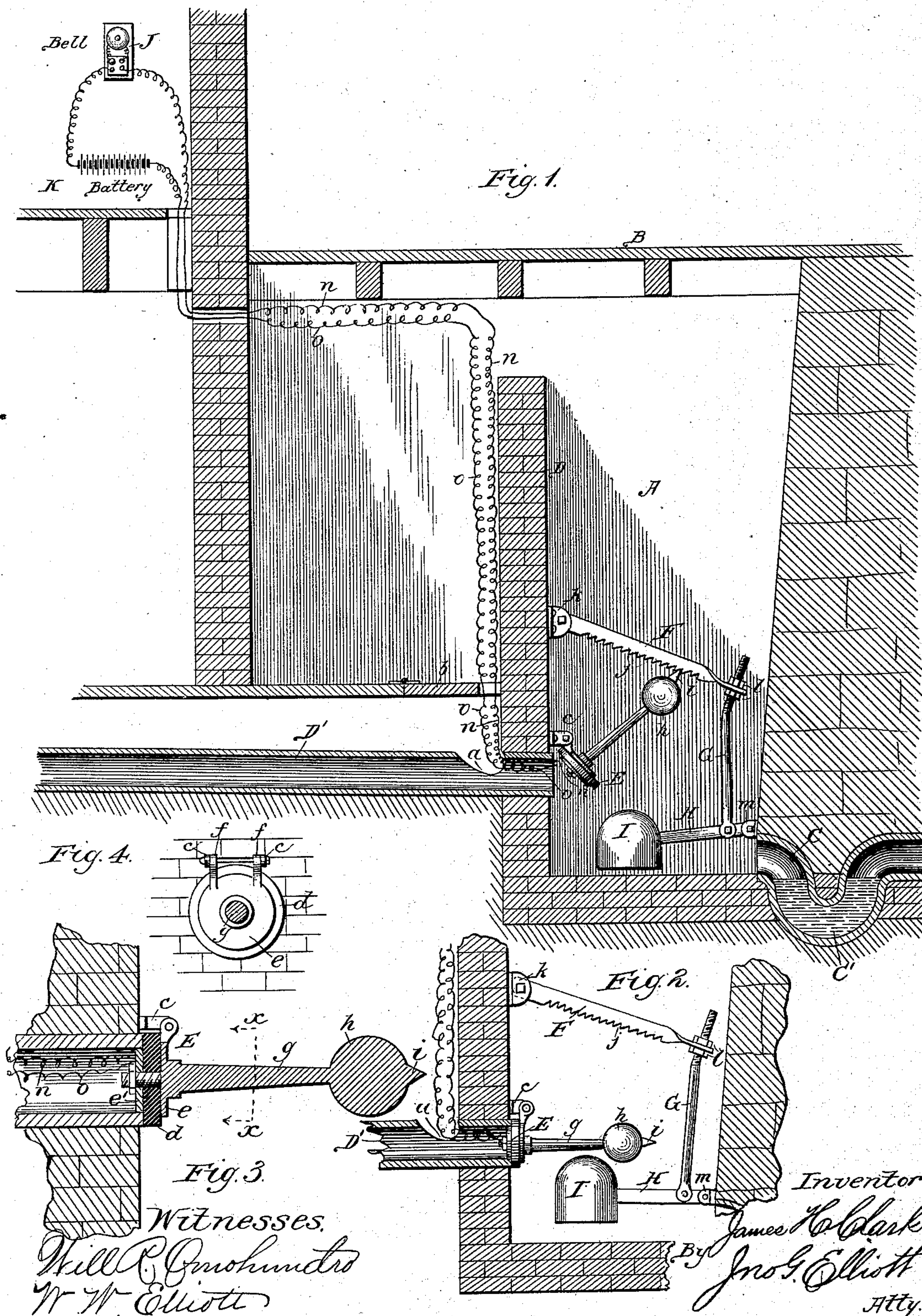
(No Model.)

J. H. CLARK.

SEWER.

No. 325,820.

Patented Sept. 8, 1885.



UNITED STATES PATENT OFFICE.

JAMES H. CLARK, OF CHICAGO, ILLINOIS.

SEWER.

SPECIFICATION forming part of Letters Patent No. 325,820, dated September 8, 1885.

Application filed June 29, 1885. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. CLARK, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Sewers, of which the following is a specification.

This invention relates to improvements in sewers, in which means are provided for preventing the backflow of water from the main sewer.

The object of this invention is to provide means for preventing the set-back of water into the basements or cellars of buildings when the main sewer or drainage pipe shall be flushed or overflow; to provide means for automatically cutting off the communication between the house drain-pipe and the main sewer-pipe when any set-back of water may occur from any cause; to provide an alarm which shall be automatically operated by the closing of the valve to notify the occupants of the building that a set-back from the sewer has occurred, and to provide certain details of construction hereinafter described. I attain these objects by devices illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section through a well located beneath the sidewalk, showing the relative location of the drain and sewer pipes and the operating parts of my device with the valve suspended in an open position; Fig. 2, a similar view in detail, showing the valve closed; Fig. 3, an enlarged detail section through the valve, showing the construction thereof; and Fig. 4, a detail section on line *x x*, Fig. 3.

Similar letters of reference indicate the same parts in the several figures of the drawings.

A indicates a well, preferably located beneath the sidewalk B, beyond the main wall of the building. It is connected with the main sewer-pipe (not necessary to be shown) by the pipe C, which pipe is provided with the usual cesspool or trap, C', forming a water-seal to prevent the escape of sewer-gas into the well.

The opposite side of the well is a wall, preferably composed of masonry, of sufficient height to obviate the possibility of an overflow of the well into the basement or cellar of the building. If desired, this wall may extend up to

the sidewalk and a removable lid or cover be provided to permit access to the well from the street; also, if desired, the drain-pipe from the gutter-spout may be led into this well, but it is not deemed necessary to illustrate these points in the drawings filed herewith. Projecting through this wall, near the bottom of the well, is the discharge-end of the pipe D' for carrying off the sewage from the house, having provided therein, just inside the said wall, an opening, *a*, for convenience of removing any obstruction or sediment that may lodge in the end of this pipe or bottom of the well sufficient to interfere with the perfect operation of the valve. This opening also forms a passage through which the device for automatically giving the alarm is operated by the valve, as hereinafter described.

A suitable trap-door, *b*, may be provided in the floor of the basement, affording easy access to the aforesaid opening.

For the purpose of preventing the backflow of water from the sewer from entering the said drain-pipe D', I have provided the automatically-operating valve now to be described.

Hinged to suitable projections, *c*, on the wall D is a valve, E, adapted to swing upon the hinge and effectually close the mouth of the pipe D'. This valve is preferably composed of an annular rubber plate, *d*, rigidly secured between two metallic flanges, *e e'*, (see Fig. 3,) the flange *e* having cast therewith or otherwise rigidly secured thereto the lugs *f f*, which, in conjunction with the projections *c*, constitute the hinge upon which the valve swings.

Extending at right angles from, and preferably constituting a part of, flange *e* is an arm, *g*, carrying upon its free end a weight, *h*, having projected from its outer surface a prism-shaped lug, *i*, adapted to engage notches or teeth *j* in the bar F, for the purpose of suspending the valve in front of the mouth of the drain-pipe D', and free from contact therewith.

The bar F is pivoted to a suitable projection, *k*, on the wall D, and has provided on its under side a series of teeth or notches, *f*, in which to engage lug *i*, as before explained. Its outer end is formed into an eye, having an elongated slot therein, through which projects

the upper end of a rod, G. This rod is screw-threaded on its upper end, and has a jam or lock nut, *l*, on either side of bar F, for the purpose of adjusting the position of said bar, and consequently altering the suspended position of the valve.

The lower end of the rod G is pivotally connected to a rod, H, which is also pivotally secured to a projection, *m*, on the opposite wall of the well, extending horizontally therefrom, and having secured at its outer or free end, beyond the pivotal point of the rod G, a float, I, having the general contour of a loaf, the flat or plane surface thereof being nearest the bottom of the well. This shape is deemed preferable, as rendering the float more sensitive to the water-pressure.

I do not limit myself to the particular construction of this automatic valve herein shown, as it is obvious that changes of mechanical construction might easily be effected without departing from the spirit of my invention—such, for instance, as perforating the ends of the bar F and rod G, and making the adjustment by means of a connecting-pin.

The operation is as follows: When the back-water from the main sewer-pipe rushes into the well through the pipe C, it elevates the float I, which, through the medium of rods H and G, in turn elevates the toothed bar F, causing the lug *i* on the weight *h* to become disengaged from the notch on bar F, and the gravity of the weight causes it to fall, carrying with it the hinged valve E, instantaneously and effectually sealing the mouth of the drain-pipe D', as illustrated in Fig. 2.

In order to render this device more practical and useful, it is designed that the automatic closing of the valve shall automatically operate to give notice or warning to some suitable part of the house that a set-back from the sewer has occurred. This is also essential in order that the valve may be reset after the backflow has subsided. To this end I have provided an electric bell, J, located at some convenient point in the house, connected with a battery and having a wire, *n*, strung in any well-known manner along the walls of the building, the free end of which wire passes through the opening *a* along the top of the drain-pipe D' and projects slightly beyond the end of said pipe. Another wire, *o*, connected with the battery, is strung in a similar manner and parallel thereto, with a few inches' space between them.

When the valve E is seated on the end of

pipe D', (see Fig. 2,) the metal flange *e'* comes in contact with the projecting ends of these wires, completes the electric circuit, and produces the alarm.

I do not limit myself to this particular device for producing the automatic alarm, as various forms of mechanical construction may be employed without departing from the spirit of my invention.

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

1. A valve automatically operated to cut off communication between the house drain-pipe and the main sewer-pipe, substantially as described.

2. The valve, in combination with means for causing the said valve to automatically cut off communication between the house drain-pipe and the main sewer-pipe, substantially as described.

3. A hinged or pivoted valve and a weight rigidly secured thereto having a lug projecting from said weight, in combination with a notched or toothed bar, whereby the valve may be suspended, substantially as described.

4. A hinged or pivoted valve and a weight rigidly secured thereto having a lug projected from said weight, in combination with a float and a separable connection between said weight and float, substantially as described.

5. A hinged or pivoted valve, E, and the weight *h*, rigidly secured thereto, having a lug projecting from said weight, in combination with the pivoted bar F, the adjustable connecting-rod G, and pivoted rod H, provided with a float at its free end, substantially as described.

6. The automatically-operating valve, in combination with means for automatically producing an alarm, substantially as described.

7. The hinged or pivoted valve, in combination with means for producing an alarm automatically operated by said valve, substantially as described.

8. The hinged or pivoted valve having a metal plate upon one face thereof adapted to form a connection to complete the circuit between the two disconnected poles of a battery when the said valve is seated, substantially as described.

JAMES H. CLARK.

Witnesses:

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WILL R. OMOHUNDRO.