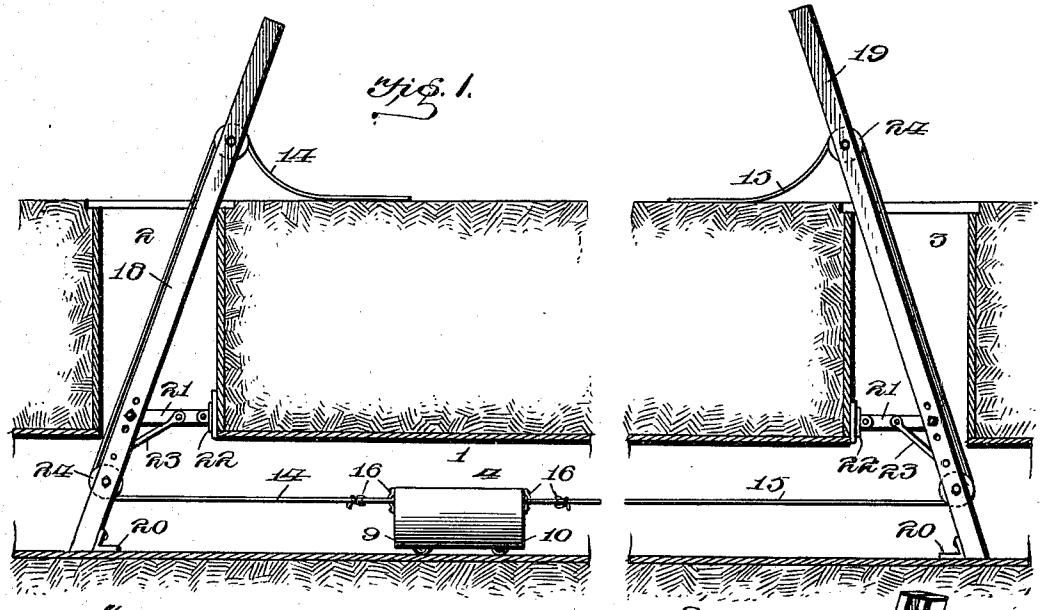
No. 672,593. Patented Apr. 23, 1901.

M. T. CONNOLLY.

DEVICE FOR CLEANING SEWERS.

(No Model.) (Application filed Jan. 12, 1901.)

Fig. 1.



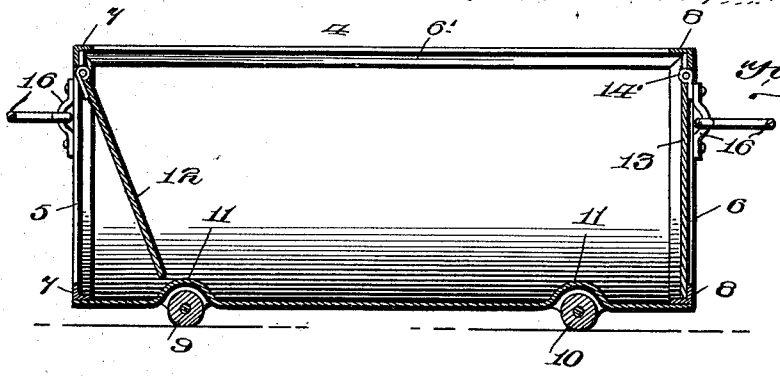


Fig. 2.

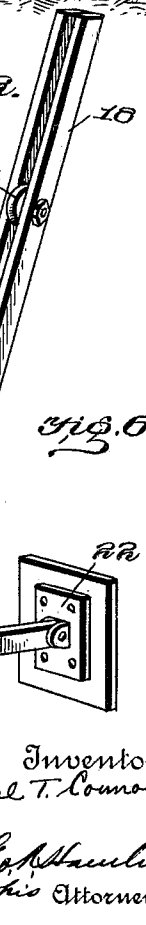


Fig. 3.

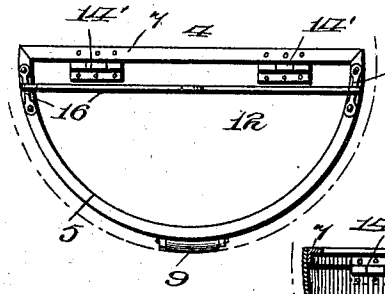


Fig. 5.

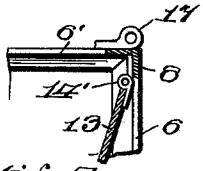
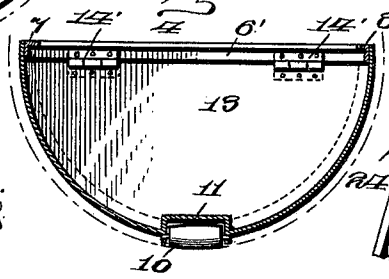


Fig. 4.



Witnesses
Geo. P. Byrne.
Sarah V. Lockwood.

Inventor
Michael T. Connolly
by Edw. A. Hamilton
his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MICHAEL T. CONNOLLY, OF JERSEY CITY, NEW JERSEY.

DEVICE FOR CLEANING SEWERS.

SPECIFICATION forming part of Letters Patent No. 672,593, dated April 23, 1901.

Application filed January 12, 1901. Serial No. 43,007. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL T. CONNOLLY, a citizen of the United States, residing at Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Devices for Cleaning Sewers, of which the following is a specification.

This invention relates to devices for cleaning sewers.

Heretofore it has been proposed to clean sewers by drawing a bucket or a half-cylinder mounted on wheels (or otherwise) through the sewer from one manhole to another and to dump it when the manhole was reached, after which it would be drawn back empty to the manhole from which it was started and then drawn through again and dumped, this operation being repeated until the sewer had been properly cleansed. Prior devices of this nature also contemplate the provision of one or more valves in the drag or bucket, which will close when the bucket is moving toward the manhole on its forward movement to catch the accumulation in the sewer and open when the bucket is being drawn back to the first manhole in order to pass through the accumulation without moving it and without resistance. In all such prior valved devices for cleaning sewers the accumulations can only be removed in one direction through the sewer—that is to say, when the bucket, half-cylinder, or receptacle was being drawn (with valve closed) from the first manhole to the next adjoining one—as the return movement to the first manhole is simply to get the bucket in position for drawing through the sewer again. In consequence the time and labor spent in returning the bucket or cleaning device to initial position has been without any resulting useful work in ridding the sewer of its accumulations and has been so much time and labor lost.

The present invention contemplates the provision of a sewer-cleaning device, designed to be drawn back and forth through the sewer from one manhole to another, which will be adapted to catch and remove the accumulations both on its forward and return passage through the sewer, thereby obviating the lost time and labor incident to the sewer-cleaners now in use and heretofore known to the art and insuring a cleaning action at all times while the device is in use.

To accomplish the foregoing object, I provide the bucket, receptacle, or half-cylinder with separated automatically-acting valves of improved construction and arrangement, one of which will open and the other close when the half-cylinder is on its forward movement, while a reversal of the positions of the valves will take place on the return movement through the sewer, whereby one valve will always be closed and the other open, (according to the direction of movement in the sewer,) and the bucket or half-cylinder will thus be ready and adapted at all times to catch the accumulations and remove them to the manhole toward which the device is moving at the time.

The invention also contemplates the provision of an improved means for bracing the timber, beam, or support let down into the manholes and carrying the pulleys for the rope or cable used to pull the half-cylinder or bucket, whereby said supports are prevented from slipping from their proper positions and are made firm and rigid.

The details of the invention will be fully set forth hereinafter and the novel features recited in the claims hereto appended.

In the accompanying drawings, Figure 1 is a sectional view illustrating the manner in which the invention is used in a sewer; Fig. 2, a longitudinal detail section of the half-cylinder or shell and valves or doors; Fig. 3, an end elevation thereof; Fig. 4, a cross-section thereof; Fig. 5, a detail view showing a different manner of attaching the pulling-rope to the half-cylinder, and Fig. 6 a detail perspective of the brace for the pulley supports or beams.

In the drawings, 1 designates a section of sewer, and 2 and 3 two manholes.

The cleaning device 4 is a shell of semi-cylindrical shape, properly proportioned to the size of the sewer and constructed of sheet metal. It is closed on all sides, but is open at both ends 5 and 6. The flat top of the shell 4 is provided on the inside with a bracing-frame 6′, of angle-iron, and the shell is provided at its ends with the internal bracing angle-irons 7 and 8, which not only strengthen

the shell, but act as stops to limit the outward movement of the valves or doors. The angle-iron frame gives the shell or half-cylinder suitable rigidity and strength to withstand the pressure to which it is subjected and effectually prevents buckling. At the bottom of the shell are the rollers 9 and 10, which are suitably journaled and are let into the shell by the provision of the inwardly-depressed portions 11 of the shell. The shell or half-cylinder is thus allowed to set as low as possible in the sewer as it rolls on the bottom thereof, which insures the proper cleansing thereof.

At the ends of the half-cylinder are my improved doors or valves 12 and 13. These are of semicircular shape and hinged at 14′ to the top transverse angle-irons on the shell, and said doors or valves are of such a size as to completely close the ends of the shell and to abut against the angle-irons 7 and 8, respectively, which act as stops or abutments to prevent the doors from opening outwardly, and they can only open inwardly into the shell, as indicated in the drawings.

The pulling or operating ropes 14 and 15, by which the device is drawn back and forth through the sewer by horse-power or other means, are connected to the shell at opposite ends thereof by the connections 16; but when the device is intended for use in small sewers I sometimes prefer to place these connections on top of the shell, as shown at 17 in Fig. 5.

The inclined pulley supports or beams 18 and 19 commonly used in the manholes in connection with sewer-cleaning devices have a tendency to slip at their lower ends on account of the strain to which they are subjected when the cleaner is being operated. I remedy this defect by providing angular feet 20 at the lower ends of said beams and equipping the beams or supports with a double brace, composed of the adjustable member 21, with pivoted foot 22 to rest against the wall of the manhole, and the inclined member 23 for bracing said adjustable member. When the beams or supports are in inclined position in the manholes, as indicated in Fig. 1, they are thus effectually braced against slipping. Said beams are provided with the usual to pand bottom pulleys 24 for the respective ropes 14 and 15.

The apparatus having been placed in position for use, as shown in Fig. 1, the operation is as follows: The shell starts, say, at manhole 3. When rope 14 is pulled, said shell will move in the direction of manhole 2, whereupon it encounters the accumulations in the sewer 1, the pressure of which swings valve or door 12 inwardly and maintains it open, while valve or door 13 closes against the angle-irons and constitutes a bottom or end for the shell, thus transforming it into a bucket which catches the accumulation and carries it to manhole 2, where it can be dumped. Rope 15 is then pulled, whereupon the device moves back toward manhole 3, whereupon valve or door 12 (previously open) will close and valve or door 13 (previously closed) will open. The shell thus fills with the accumulation on its return movement, and when it reaches manhole 3 it can be dumped. Continued operation of the device back and forth in the sewer effectually cleanses the latter, and the movement in one direction is just as effectual as in the other direction, thereby saving time and work over the old manner of cleansing.

I am aware that my invention could be varied or changed in many particulars without detracting from any of its advantages or changing its mode of operation, and I do not therefore limit myself to the precise constructions herein shown and described, but consider that I am entitled to all such variations or modifications as come within the spirit and scope of the invention.

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

1. In a device for cleaning sewers, a cleaner having open ends and adapted to be drawn through the sewer, which is provided with means for opening and closing said ends.

2. In a device for cleaning sewers, a cleaner having open ends and adapted to be drawn through the sewer, and automatically-acting valves or doors for opening and closing said ends.

3. In a device for cleaning sewers, a cleaner having open ends and adapted to be drawn through the sewer, and automatically-acting doors or valves for closing said ends which open inwardly into the cleaner in opposite directions.

4. In a device for cleaning sewers, a cleaner having open ends and adapted to be drawn through the sewer, and automatically-acting doors or valves for closing said ends which open inwardly into the cleaner in opposite directions, and means for arresting the outward movement of said doors or valves.

5. In a device for cleaning sewers, a cleaner having open ends and adapted to be drawn through the sewer in both directions, and means for automatically opening one end of the cleaner and closing the other end as the cleaner passes through the sewer.

6. In a device for cleaning sewers, a cleaner having open ends and adapted to be drawn through the sewer, and automatically-acting doors or valves for closing said ends, one of said valves being adapted to automatically close and the other being adapted to automatically open as the cleaner passes through the sewer in a given direction.

7. In a device for cleaning sewers, a shell, open at both ends, which is adapted to be drawn through the sewer, a strengthening-frame for the shell and for the ends thereof, and valves or doors hinged at one end within the shell and adapted to close the ends of the shell and to open inwardly thereinto in opposite directions, said doors having their out-

ward movements limited by the frames at the ends of the shell.

8. In a device for cleaning sewers, a shell of semicylindrical shape, open at both ends, which is adapted to be drawn through the sewer, a strengthening-frame for the top of the shell, strengthening-frames inside the ends of the shell, and doors or valves for closing the ends of the shell, said doors being hinged to the end frames at the tops thereof and opening into the shell in opposite directions and abutting the end frames when closed.

9. In a device for cleaning sewers, a removable pulley-carrying beam adapted to be positioned in a manhole, which is provided with a lateral brace projecting freely therefrom and having its extremity adapted to abut the wall of the manhole, and an inclined brace for said lateral brace.

10. In a device for cleaning sewers, a removable pulley-carrying beam adapted to be positioned in a manhole, which is provided with an extended foot at its lower end, and also provided with a lateral brace projecting freely therefrom and having its extremity adapted to abut the wall of the manhole, and an inclined brace for said lateral brace.

11. In a device for cleaning sewers, a removable pulley-carrying beam adapted to be positioned in a manhole, and a laterally-extending brace connected to said beam and projecting freely therefrom and having its extremity adapted to abut the wall of the manhole.

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

MICHAEL T. CONNOLLY.

Witnesses:

WILLIAM D. KELLOGG,

ROBT. BAIN.