

# UNITED STATES PATENT OFFICE.

HARVEY C. LOWRIE, OF DENVER, COLORADO.

## SEWER-CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 317,156, dated May 5, 1885.

Application filed September 16, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HARVEY C. LOWRIE, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Sewer-Cleaning Apparatus; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of the several features of my invention.

It is well known that in order to successfully operate excavating-tools in practically horizontal drain-pipes said tools must have for their handles sectional rods of considerable length, and that these require supporting-trucks adapted to travel within the pipe, and thereby to maintain the rods and sometimes the tools in a practically central position.

Sewer-rod trucks have heretofore been devised involving one or more wheels each; but they have always been so arranged that they would not permit the rotation of the rod carried by them, or carry the rod in a practically central position, or be capable of operation if perchance they were canted or tipped upon their sides. For enabling the rod to be freely rotated while carried by the truck, the latter is bored larger than the diameter of the rod, and the latter is provided with readily-detachable collars, between which the body of the truck is loosely located, said collars being then fastened in position by clamp-screws. As a radical improvement in such rod-trucks, I employ two wheels, which take their bearings against the interior walls of a drain-pipe at practically opposite points in said pipe, and therefore my truck can be trundled as well in a horizontal position as in a vertical position, and also equally well at any intermediate angle. The axes of these wheels are parallel; but they are attached to the body of the truck at diagonally-opposite points, and the peripheries of the wheels are rounded or sometimes beveled. In many cases it is desirable to afford a centrally-guiding support for the rod closely adjacent to an excavating-tool, and in such cases the wheel-trucks could with difficulty be employed, if at all, because of its bulk and the solid mass of obstructive matter in the drain which the tool is to encounter, and therefore I have devised a skele-

tonized guide composed of three or more long narrow bow-shaped strips of metal secured at their ends to a rod so that the outer surface of at least two of said bow-shaped strips will have a bearing against the inner side of the pipe, and thus present but little obstruction to its advance, especially when rotated by and with the rod, and in this latter case it will perform the double function of a rotary scraper and rod or tool guide.

Another feature of my invention is a device by which the location of the entrances of small drains to the one being excavated can be readily determined. This is important in many cases—as, for instance, after working through an obstruction in a large pipe, and its clearance apparently effected, it may have been the case that the obstructive matter had mainly entered by way of a smaller lateral drain, which may still be blocked, and for determining as to that as well as for exactly locating the position of such lateral drain, I employ upon a sewer-cleaning rod a jointed or pivoted arm carrying a small supporting or guiding wheel at its outer end, and having a spring for causing said wheel to bear forcibly against the side of the drain-pipe, which enables it to enter any lateral drain it may encounter, and thereby to serve as a lateral-drain indicator for locating the position of said lateral, and also as to whether or not said lateral is obstructed at its mouth.

To more particularly describe said improvements, I will refer to the accompanying drawings, in which—

Figure 1 illustrates a section of a man-hole and large drain-pipe containing a sectional rod provided with my novel trucks, my skeleton rod-guide, and lateral-drain indicator. Fig. 2 is an enlarged side view of my rod-truck with a rod mounted therein. Fig. 3 is an end view of said truck, as if within a drain-pipe and carrying a rod. Figs. 4 and 5 are enlarged side and end views of my skeletonized rod-guide applied to a rod. Figs. 6 and 7 are enlarged side and top views of my lateral-drain indicator as applied to a rod.

Referring to Fig. 1, A denotes a man-hole, B a large drain-pipe, and C a lateral-drain entrance. The sewer-clearing rod D is constructed in sections securely coupled together to substantially constitute one rod, and while

it is mainly supported by the trucks E, it is supported and guided near its working end by the skeleton guide F. At the working end of said rod the lateral-drain indicator G is mounted, and it is shown to be entering the lateral C, which, as is sometimes the case, enters at the upper side of the large drain. It will be obvious that if said indicator will enter a lateral thus entering at the upper side of a drain, it can surely enter such laterals as enter at the sides of the large drain.

In putting this apparatus into service, as shown, the indicator G is first secured to one of the rod-sections, and then the skeleton guide F is secured to the next coupled section, and then after a proper number of sections have been coupled a truck, E, is put into service, and so on with as many sections and trucks as may in each instance be needed. Usually a single truck will suffice, and sometimes only the skeleton guide will be needed.

I will first particularly describe the truck E. As will be seen in Figs. 2 and 3, the body *a* of the truck is substantially rectangular in cross-section, and is usually a block of cast-iron bored longitudinally to properly receive a rod-section, D, and if it is to be so connected thereto that said rod cannot rotate independently of the truck a clamp-screw, *b*, is employed; but when the rod is to be capable of rotation the truck is loosely secured in place between two clamping-collars, *c*. The wheels *d* are two in number, and have their axes at diagonally-opposite corners of the truck. Each wheel-axis is a bolt-stud, *d'*, housed in an eyebolt, *e*, which occupies a housing in the side of the truck-body *a*. Between the head of the eyebolt and the coincident surface a rubber cushion, *e'*, is inserted, for allowing the wheels to travel over joints in a pipe with little or no shock. The rims of the wheels are beveled, as shown, or rounded, so as to be readily adapted to the various pipe-surfaces with which they are liable to be in contact.

As seen in Fig. 3, it is obvious that a rod-truck thus constructed can be trundled in a vertical position or in a horizontal position, because the peripheries of its wheels have bearings at almost diametrically-opposite points in the pipe.

For adjusting the truck to various-sized pipes, the wheels can readily be removed and others substituted; or for small adjustments the eyebolts *e* can be extended in their housings, in which case blocks of proper thickness and with holes for the shanks of the bolts should be placed beneath each rubber cushion. The wheels are preferably composed of cast-iron, and in some cases provided with wooden or other soft tires.

The skeleton guide F for the rod D is composed of three flat bent pieces or bows of metal, *f*, each of which at one end is riveted to a collar, *f'*, which is snugly fitted to a rod-section, but capable of sliding thereon. Said bows *f*, at their opposite ends, are quite straight, and have turned-up tips, and are in-

closed by a clamping collar or ring, *f''*. I prefer that the bows be flat; but they may be composed of wood or metal of other forms, and as a rule they should be capable of yielding, or, in other words, have some slight springing capacity.

I am aware that somewhat similar skeletonized devices have heretofore been affixed to rods for use in cleaning boiler-flues; but said devices were not provided with clamping-collars whereby they could be readily shifted in position longitudinally on their rods, nor were they employed in combination with separate excavating-tools carried at the end of a rod, so as to operate as a guide for said tool.

Of the various well-known forms of excavating-tools, but one is illustrated by me, as at F', Fig. 4, that being a worm-shaped blade, and it will be seen that the guide F will assure a central location of said tool when in use, and it will also be seen that said guide has equal value when employed with the branch-indicating arm G, which in many cases will serve as an excavator, for puncturing and loosening masses of solid matter, especially when accumulated at or near the mouth of a lateral drain. The lateral-drain indicator G includes a rod-section, D, provided with a coupling at one end; also an arm, *g*, pivoted to said rod-section and extending beyond its tip, and laterally pierced or slotted for the reception of a stud, *g'*, which projects laterally from the rod-section, and serves both as a support or brace for said arm *g* and as a support for an expansive spiral spring, *g''*, interposed between said arm and the rod-section. At the outer end of the arm there is a guide-wheel, *g'''*. It will be seen that whatever position the indicator may occupy in a drain-pipe said guide-wheel will be forced against the inside wall of the pipe during its movement to and fro, as when operated by way of a sectional rod, D. The arm *g* may be provided with a spring-metal bow-shaped guide at its outer end as a fair substitute for the wheel, although the latter is generally preferable.

With a sectional rod provided with occasional or frequent flexible joints as devised by me, and with my trucks, I find that I can explore and excavate drain-pipes having various curvatures, and it will be seen that my trucks are specially adapted for use with flexible sectional rods, because in traversing a curve they will always keep the rod substantially central in the drain-pipe.

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

1. The rod-truck provided with wheels at diagonally-opposite corners, substantially as described, whereby said wheels can take bearing with their peripheries at substantially opposite points in a drain-pipe.

2. The combination of the tubular rod-truck body, the wheels at diagonally-opposite corners thereof, and the rubber cushions, substantially as described.

3. The combination of the tubular rod-truck body and the adjustable wheels at diagonally-opposite corners, substantially as described, whereby the truck can be adjusted to operate  
5 in drain-pipes of various sizes.

4. The combination of a rod-truck and a sectional sewer-clearing rod coupled to said truck for longitudinal movement, but free to rotate independently thereof, substantially as de-  
10 scribed.

5. The combination, with a sewer-cleaning rod and an excavating-tool at the end thereof,

of the skeleton guide F, consisting of the bow-shaped plates or bars, the collar to which said plates are fastened, and the clamping collar  
15 or ring, substantially as described.

6. The combination, with a rod-section provided with a coupling, of a spring-arm, *g*, pivoted thereto, and provided with a guide-wheel at its outer end, substantially as described.

HARVEY C. LOWRIE.

Witnesses:

ANDREW RYAN,  
J. S. LITTELL.

(No Model.)

H. C. LOWRIE.  
SEWER CLEANING APPARATUS.

No. 317,156.

Patented May 5, 1885.

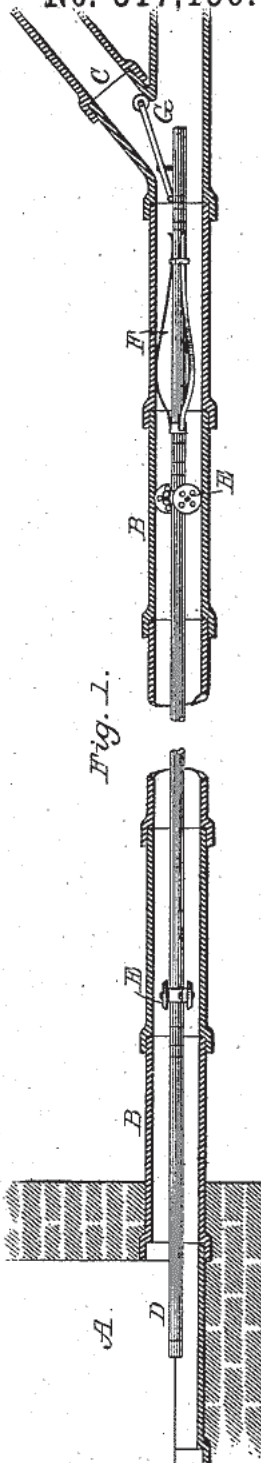


Fig. 1.

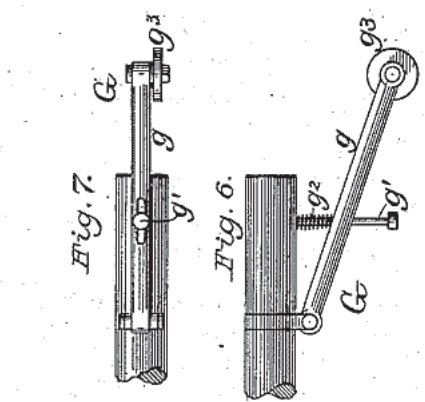


Fig. 7.

Fig. 6.

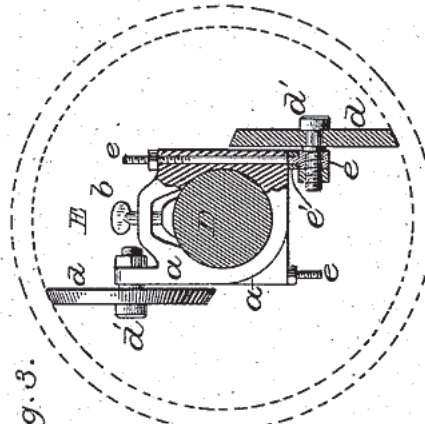


Fig. 3.

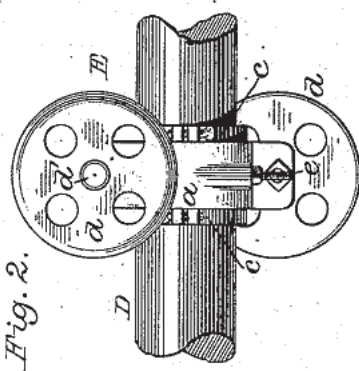


Fig. 2.

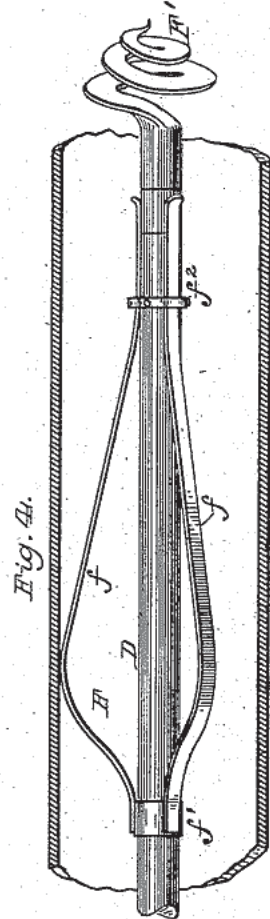


Fig. 4.

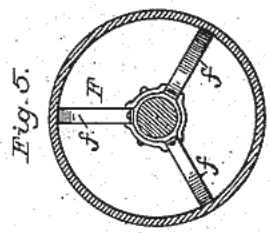


Fig. 5.

Attest:  
Philip F. Larnes,  
Notary Public

Inventor:  
Harvey C. Lowrie,  
By *Wm. Wood*  
Attorney.