

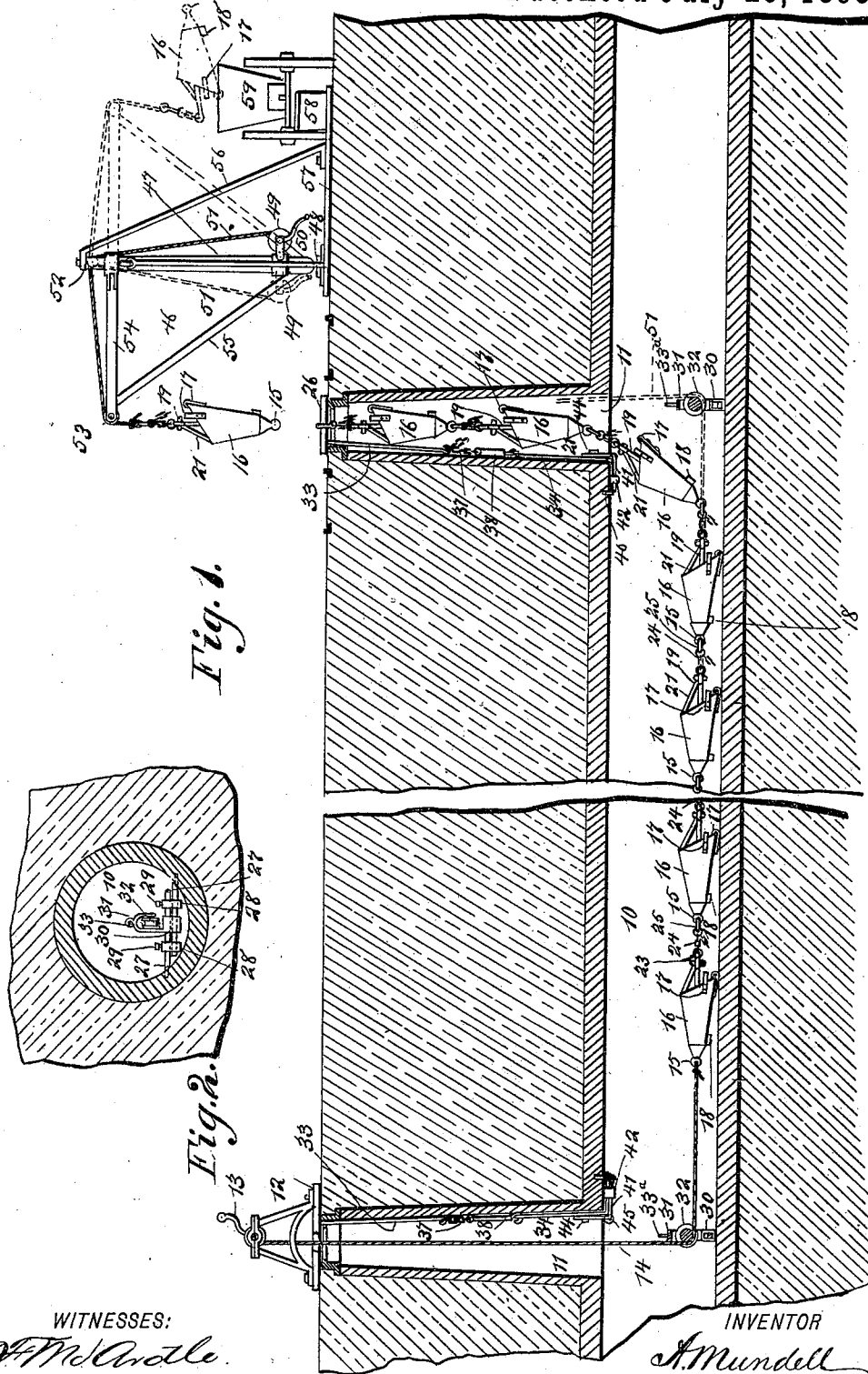
(No Model.)

2 Sheets—Sheet 1.

A. MUNDELL.
SEWER CLEANING APPARATUS.

No. 502,130

Patented July 25, 1893.



WITNESSES:
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C. Sedgwick

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

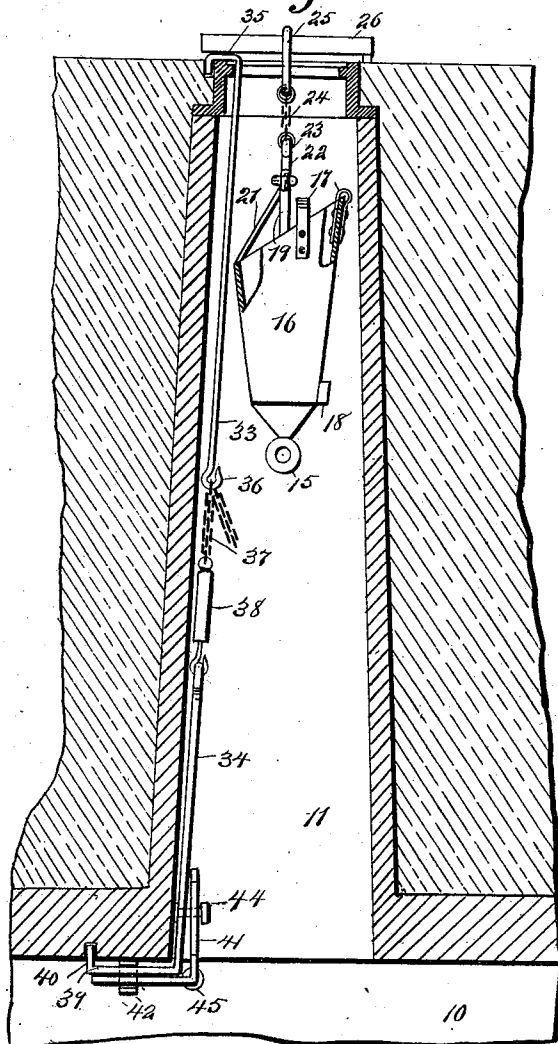


Fig. 4.

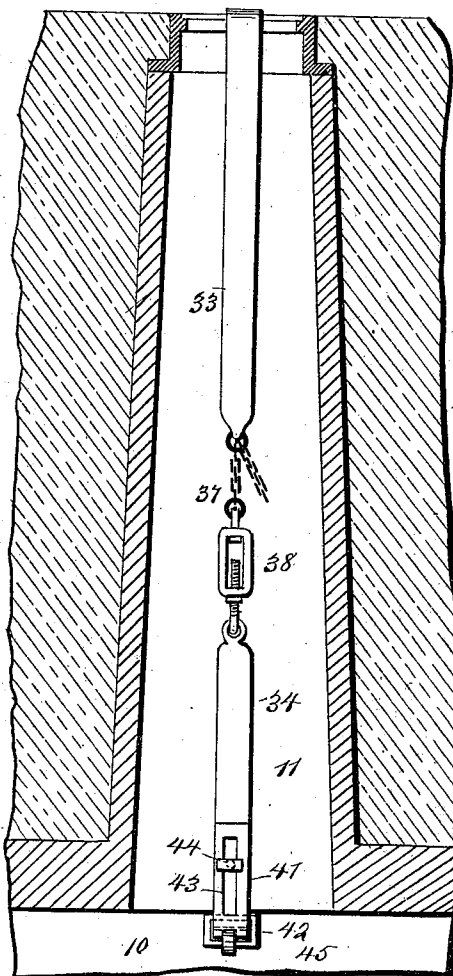


Fig. 5.

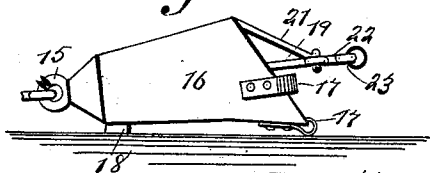


Fig. 6.

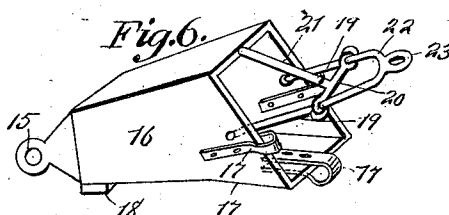


Fig. 7.

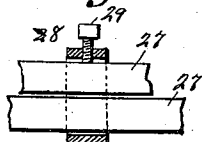
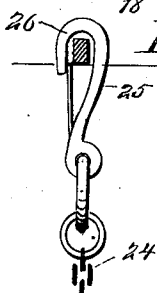


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALFRED MUNDELL, OF BROOKLYN, NEW YORK.

SEWER-CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 502,130, dated July 25, 1893.

Application filed November 17, 1892. Serial No. 452,326. (No model.)

To all whom it may concern:

Be it known that I, ALFRED MUNDELL, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Sewer-Cleaning Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of apparatus which are adapted for use in removing sediment and other matter from sewers of all kinds. Practically, it is a difficult matter to clean sewers when they contain water, and the object of my invention is to produce an apparatus by means of which a sewer, whether containing water or not, may be quickly and thoroughly cleaned. It is an expensive operation to remove the sediment from the sewer by ordinary means, but my invention is designed to remove the sediment in the sewer with great speed and consequently at little expense.

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

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

Figure 1 is a longitudinal section of the sewer and manhole showing my apparatus in position for use within the sewer and at the manhole thereof. Fig. 2 is a cross section through the sewer and shows also the manner of supporting one of the guide pulleys which is used therein. Fig. 3 is a broken enlarged sectional view of one of the manholes, showing a bucket suspended therein and showing also, in side elevation, the clamping device which is secured to the wall of the manhole. Fig. 4 is a similar section, but shows the clamping device in front elevation. Fig. 5 is a detail side elevation of one of the buckets used in removing the sediment. Fig. 6 is a perspective view of the same. Fig. 7 is a broken enlarged view, partly in section, showing the manner in which the cross pieces, which are arranged within the sewer, are held together; and Fig. 8 is an enlarged detail sectional view of one of the bucket snap hooks and the supporting cross piece to which the hooks are sometimes connected.

The sewer 10 may be of any usual kind and it is provided at intervals with the customary manholes 11 leading from the sewer to the surface of the ground. At one of the manholes a windlass 12 is placed, which is operated by a crank 13 and which forms a part of my apparatus. The windlass is adapted to wind up a cable or rope 14 which extends down into the sewer through the manhole, and the free or lower end of this rope is adapted to be secured to an eye 15 on the closed or reduced end of one of the cleaning buckets 16. These buckets are adapted to be arranged in series, one behind another, and the number of them which is used depends upon the size of the sewer and the amount of sediment therein.

Each bucket is provided at its lower front edge and on its front side edges with shoes 17 which protect the edges of the bucket and also reduce friction, thus enabling the bucket to be drawn with little power. The shoes 17 are formed of straps which are bent nearly double and have their end portions riveted to the bucket. Each bucket is also provided near its rear end with a shoe 18 which serves as a wear plate and is produced on the under side of the bucket so as to prevent the surface of the bucket from coming in contact with the sewer or other point of contact.

Each bucket is separable from the others and it is provided with a flaring mouth, the lower side of the bucket being prolonged so as to act as a scraper and cause the sediment in the sewer to be forced into the bucket when the latter is drawn forward. The flaring shape of the bucket also enables it to be easily dumped when necessary.

Each bucket has at its open end and on opposite sides outwardly extending arms 19 which are connected by a cross bar 20, and the cross bar is strengthened by a brace 21 which extends from the center of the cross bar to the upper edge of the bucket. Pivoted to the outer ends of the arms 19 is a bail 22 which is provided with an eye 23, and to this is secured a chain 24 which terminates in a snap hook 25 adapted to be hooked to the eye of the next bucket in front, see Fig. 1, or to a cross bar 26, as shown in Figs. 3 and 8, when the bucket and those beneath it are to be suspended from the said cross bar in op-

erating the apparatus, as will be more fully described below. The arms 19, the cross bar 20, and the brace 21 serve as a framework, and the brace is adapted to come in contact with one of the guide rollers at the lower end of the manhole, as hereinafter described, while the bail 22 facilitates the easy handling and dumping of the bucket, as shown in Fig. 1.

It is necessary to arrange a guide below the manholes with which the apparatus is connected, and to this end cross pieces 27 are used, these being arranged to overlap, as shown in Figs. 2 and 7, and the inner ends of the cross pieces are held together by a keeper 28 and a set screw 29, while the outer ends may be embedded in the walls of the sewer. The cross pieces support a block 30 on which is fastened an upwardly extending frame 31, and in the frame is journaled a guide pulley 32 over which the cable 14 runs, and the frame 31 is also provided at the top with an eye 33^a into which a hook may be engaged so as to permit the easy removal of the frame. The frame 31 is open on one side to facilitate the ready attachment or detachment of the cable.

At the manholes where the buckets are lowered and raised, guides are used, which prevent injurious contact of the buckets with the corners of the manholes, and clamping devices are used to fasten the guides. It is necessary to have adjustable devices as the depth of the manholes varies. The clamping devices employ bars 33 and 34, the former terminating at its upper end in a hook 35 which is adapted to fasten over the top rim of the manhole, and the bar 33 terminates at its lower end in a hook 36 which engages a chain 37, attached to a turn buckle 38, and the latter is hooked to the bar 34. The bar 34 is bent, at its lower end, as shown at 39, so as to extend parallel with the sewer wall and at its extreme lower end it is bent upward, as shown at 40, so as to engage the wall of the sewer. By adjusting the bars 33 and 34 upon the upper and lower ends of the manhole wall and then turning the turn buckle, the bars may be tightened and held firmly in place. The bar 34 carries, near its lower end and at a point opposite the bottom of the manhole, an angle bar 41 which has its lower portion held in a keeper 42 which also embraces the part 39 of the bar 34, and the upper or vertical member of the angle plate 41 is slotted longitudinally, as shown at 43, so as to receive a clamping screw 44 which extends through the slot and into the bar 34. By means of this clamping bolt and the slot, the angle plate may be adjusted and fastened firmly in place. At the corner of the angle plate is journaled a roller 45 which is adapted to engage the brace 21 of the bucket when the latter is raised; or if the bucket is lowered, is adapted to engage the lower end of the bucket and consequently the roller prevents the bucket from being injured and also enables it to be easily operated.

The clamping devices and guides described above are used at both manholes in which the

apparatus is employed, and said devices are attached to the sides of the manholes nearest each other. The windlass is used at one manhole and is adapted to withdraw the buckets when empty or to draw them back into position for use, while at the opposite manhole through which the lowered buckets are hoisted a crane derrick 46 is employed. This derrick is provided with the usual mast 47 which is pivoted at its lower end, as shown at 48, and near the lower end of the mast is a windlass 49 operated by a crank 50 and carrying a cable 51 which extends upward and outward over guide pulleys 52 and 53, the latter being journaled on the free end of the crane arm 54, and it enables the buckets to be conveniently raised in a vertical line, as shown in Fig. 1. The crane arm is braced by a brace 55; the derrick is provided with braces 56 and is mounted on a base 57 having a counterweight 58 at one end which prevents the derrick from tipping over. It will be seen that the derrick may be swung on its pivot, as shown by dotted lines in Fig. 1, and in this way, if the crane arm extends over a track or in the way of a carriage, it may be swung around out of the way until the car or vehicle has passed, when it may be again returned to operative position.

The apparatus is used in the following way:—The windlass 12 is arranged at one manhole, the derrick 46 at another, and the clamping devices and the guides are secured in the throats of the manholes, as described; the guide pulleys 32 and their supports are arranged beneath the manholes and the cable 14 is conveyed from one manhole to the other. If the sewer is not sufficiently large to permit a man to carry the rope through, a cord may be attached to a float and passed through from one manhole to the other, the cord being attached to the cable 14 and by then pulling upon the cord the cable may be drawn through. The buckets 16 are then attached in series, as many buckets as necessary being used, one bucket having its terminal eye 15 attached to the cable 14 and the next having its eye 15 connected with the eye 23 of the first bucket by the chain 24 and hook 25, and so on through the entire series, the last bucket being connected with the cable 51. The string of buckets is then drawn back by the windlass 12 as far as is necessary, and the cable 51 passed around the pulley 32 beneath the manhole, as shown by dotted lines in Fig. 1, so that when the windlass 49 is operated the cable 51 may be wound up and draw the buckets in a line along the sewer bottom. When the buckets are drawn back and out by the windlass 49, their rear or reduced ends are lifted from the sewer bottom while their lower front edges act as scrapers and run along the bottom of the sewer causing the sediment to be scooped up. When the first bucket reaches the manhole beneath the derrick 46 the cable 51 is removed from the pulley 32 and the buckets hoisted through

the manhole, as shown in Fig. 1. When the second bucket emerges, a cross bar 26 is thrust through the snap hook 25 beneath the first bucket or through the bail, as shown in Figs. 3 and 8, and the cross bar lowered so as to lie across the mouth of the manhole, see Fig. 3, after which the first bucket is detached, raised from the crane arm and dumped into a cart 59 ready to receive the sediment. In this way, it will seen, that a long string of buckets may be used and a vast amount of sediment quickly removed.

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

1. In a sewer cleaning apparatus the guide comprising the bars 27 overlapped at their inner ends, keepers 28 embracing said overlapped ends and each provided with a set screw 29 to bind the bars in their adjusted positions, and a block 30 supported by said bars and provided with an upward projecting frame 31 having a pulley journaled therein to guide the operating cable, substantially as set forth.

2. A sewer cleaning bucket 16 having its front open end inclined upwardly and rearwardly, straps 17 embracing and projecting in front of the sides and bottom of the bucket, side bars 19 rigidly secured to the sides of the bucket projecting in front thereof and having a transverse connecting bar 20, a brace 21 extending from the upper edge of the bucket forwardly and downwardly to the middle of the bar 20, a bail 22 pivoted to the

frame formed by said bars and brace, a wear plate 18, and an eye 15 at the rear end of the bucket, substantially as set forth.

3. In a sewer cleaning apparatus the guide comprising bars 33, 34 having hooked outer ends 35, 39, an adjusting mechanism connecting the inner ends of said bars, an angle plate 41 having a slot 43 in its vertical member, a clamping screw 44 extending through said slot into the bar 34, a keeper 42 on the horizontal portion of bar 34 and through which the corresponding member of the plate 41 projects and the roller 45 journaled in the angle of the plate 41, substantially as set forth.

4. The combination with the sewer and manhole and the buckets adapted to be drawn upward through the manhole, of the clamping bars adapted to be secured to the walls of the manhole, mechanism for tightening and fastening the bars, and an angle plate secured to the lower bar and having a guide roller journaled therein, substantially as described.

5. The combination with the sewer and manhole and the hoisting bucket adapted to pass through the manhole, of the clamping bars extending from top to bottom of the manhole, the turn buckle connecting the two bars, an angle plate adjustably secured to the lower bar, and a guide roller carried by the angle plate, substantially as described.

ALFRED MUNDELL.

Witnesses:

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