

(No Model.)

2 Sheets—Sheet 1.

J. T. DOUGINE.

CLEANING SEWERS.

No. 287,811.

Patented Nov. 6, 1883.

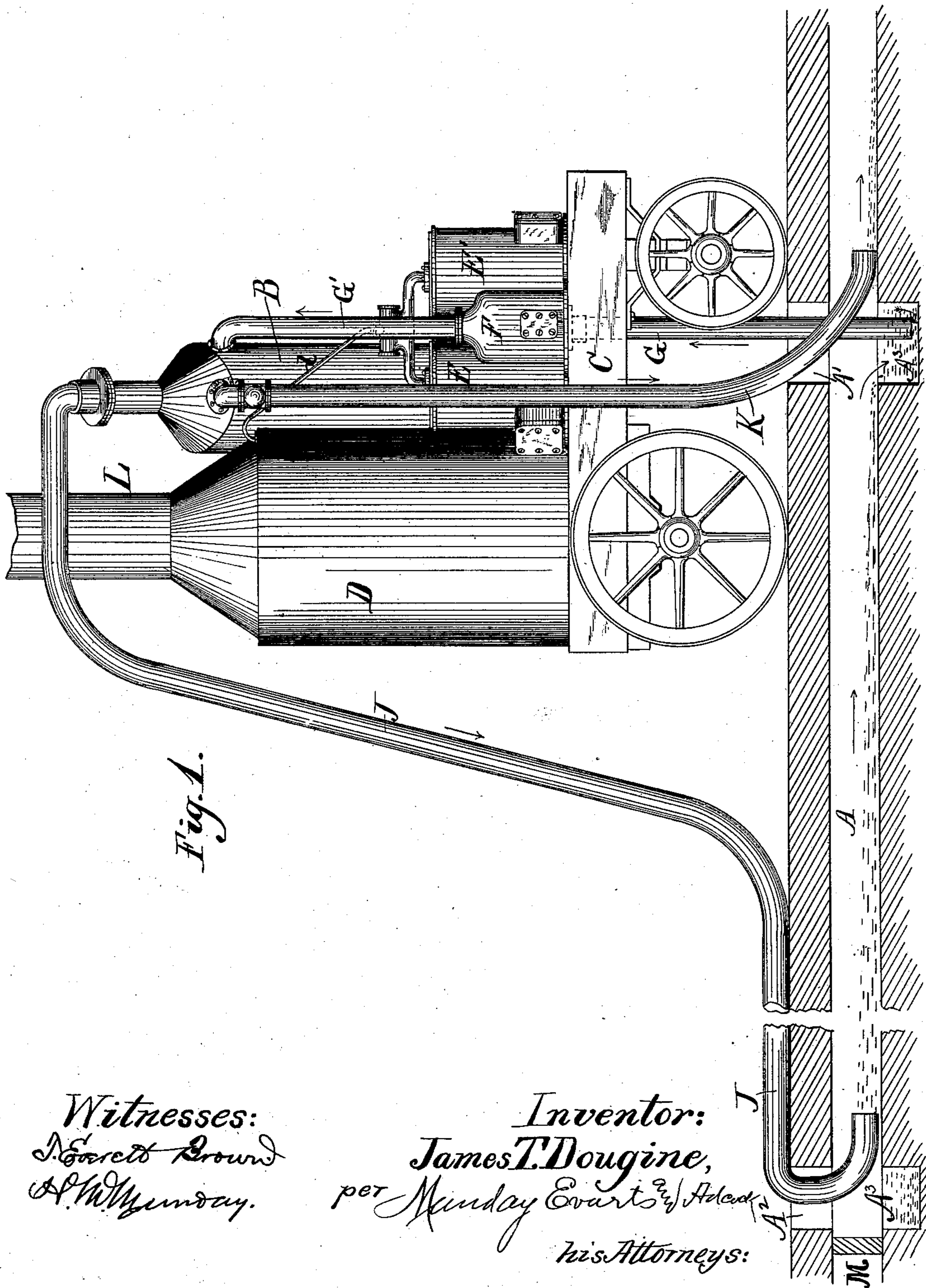


Fig. 1.

Witnesses:
J. Everett Brown
A. W. Munday.

Inventor:
James T. Dougine,
per Munday Ewart & Adams
his Attorneys:

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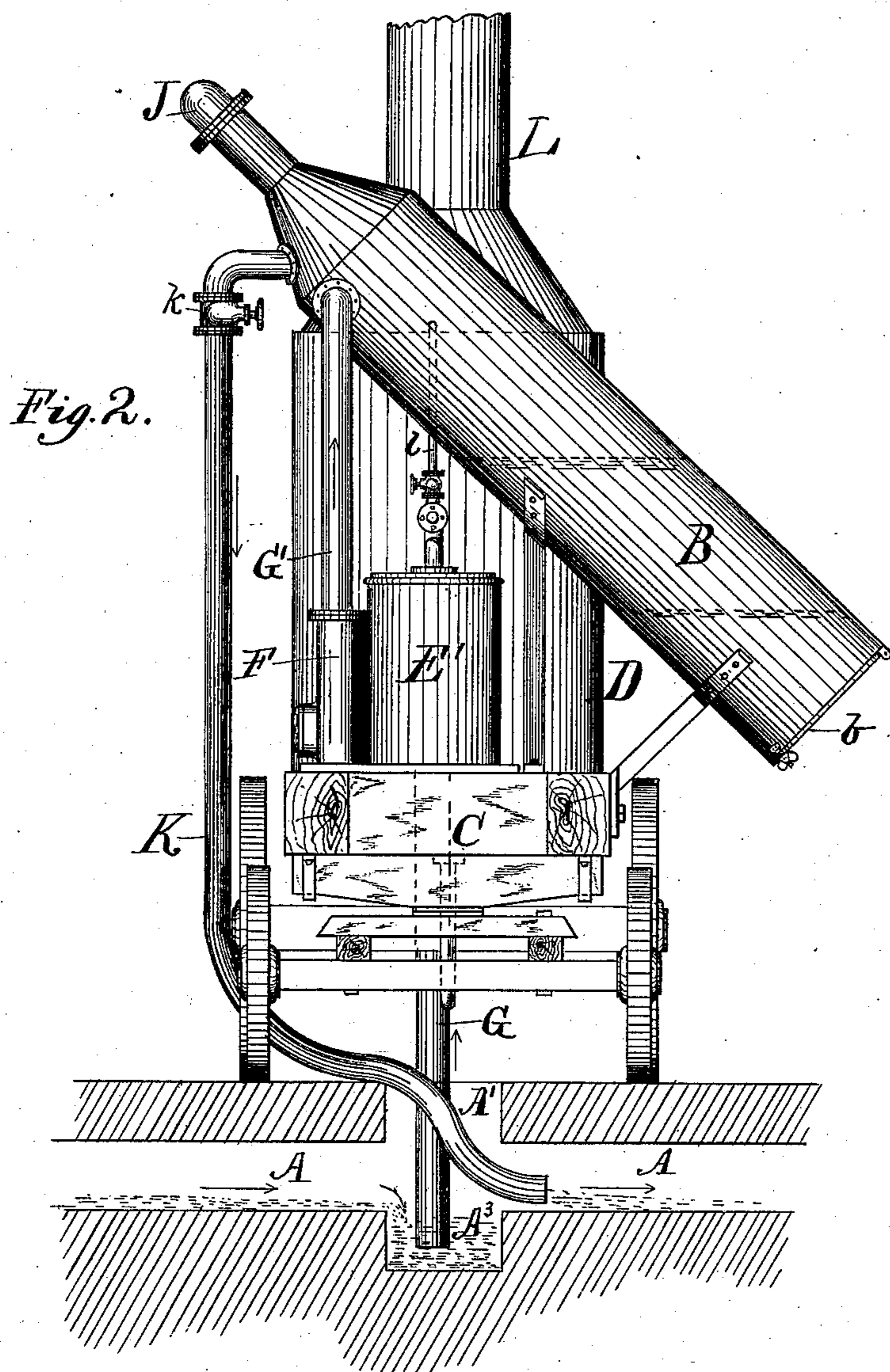
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A. W. Munday.

Inventor:
James T. Douglass,
per Munday, Evarts & Adcock
his Attorneys:

UNITED STATES PATENT OFFICE.

JAMES T. DOUGINE, OF CHICAGO, ILLINOIS.

CLEANING SEWERS.

SPECIFICATION forming part of Letters Patent No. 287,811, dated November 6, 1883.

Application filed August 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. DOUGINE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Cleaning Sewers, of which the following is a specification.

The object of my invention is to provide an effective and simple method of cleaning sewers and removing the dirt and sediment therefrom.

In my invention the sediment is loosened and carried along the sewer to the man-hole by a flush or rapid current of water produced in the sewer by pumping or otherwise elevating the water and sediment up out of the sewer at one man-hole into a settling-chamber, from the top of which chamber the water flows back into the sewer at the other man-hole, so as to produce a constant circulation of water through the sewer, in at one man-hole and out at the other, while the dirt and sediment, separating from the water with which it is pumped up, settles to the bottom of the settling-chamber. The top of the settling-chamber should be ten or twelve feet high, or more, so that the hydraulic pressure in the return-flow pipe will be sufficient to cause a great flush and rapid current of water in the sewer, so as to thoroughly wash the same and loosen the dirt and mix it with the water. The settling-chamber should be provided with a gate or opening near its bottom for the removal of the sediment collected therein. The settling-chamber should be elevated, so that the sediment collected therein may be dumped directly therefrom into a wagon or cart. Any suitable means or apparatus may be employed for elevating the water from the sewer into the settling-chamber; but I deem it preferable to employ a steam vacuum-pump.

In the accompanying drawings, which form a part of this specification, I have illustrated an apparatus suitable for use in practicing my invention, and one which I deem the preferable one to use ordinarily.

In said drawings, Figure 1 is a side elevation of a device embodying my invention, and Fig. 2 is an end view of the same.

In said drawings, A represents the sewer, or a section thereof, between two man-holes, the fall or descent being in the direction in-

dicated by the arrows. A' is the lower man-hole, A² the upper man-hole, and A³ are collecting-basins at the man-holes.

B represents the settling-chamber, in which the water and sediment or contents of the sewer are delivered. This chamber, preferably, may occupy an inclined position on the wagon C, so that its bottom will project over, conveniently for dumping the sediment collected therein into a cart or receptacle.

The steam vacuum-pump on the wagon C may be of any ordinary construction; and consists, for example, of the steam-boiler D, steam vacuum-chambers E E', and pump-cylinder F.

G is the induction-pipe leading from the basin A³ to the pump-cylinder, which is connected by the eduction-pipe G' to the settling-chamber B, near the top of said chamber.

J is the return-flow pipe, leading from the top of the settling-chamber B to the upper man-hole, A².

The settling-chamber B is provided with a hinged bottom or door, b, for removing the sediment therefrom. This door or hinged bottom b should project over and be located high enough so that a wagon or cart may be run or placed under it to receive the sediment from the chamber B when the door or hinged bottom is opened. As the water and sediment is pumped into the settling-chamber near its top through the pipe G', and as the water flows out of said chamber near its top, the heavier particles of dirt and sediment will settle to the bottom of the chamber B, while the water will flow back through the return-pipe J into the sewer at the other man-hole, thus constantly flushing the sewer over and over again with the same water, which circulates around through the settling-chamber and return-flow pipe until the sewer is washed entirely clean.

To prevent too great pressure of water in the sewer or in the return-flow pipe, I provide an extra discharge-pipe, K, leading from the upper part of the chamber B to the lower man-hole, A', through which any excess of water may flow off into the part of the sewer below the section being cleaned. This pipe K is provided with a regulating-valve, k, by which said pipe may be closed or opened, as occasion may require.

L represents the smoke-stack, and l the

steam-pipe leading from the boiler to the vacuum-chambers.

In practicing my process I ordinarily stop up temporarily the upper or cleaned portion of the sewer by a portable dam, M, or other suitable means, so as to prevent any back-flow of water and slush into the portion of the sewer already cleansed.

By my process it will be observed the sewer is cleaned in sections—that is to say, from one man-hole to another at a time.

The supply of water requisite for cleaning a section between two man-holes may be collected by temporarily stopping up the sewer at the lower man-hole, A', until sufficient water collects from its natural flow, when the steam-pump may be set in operation and the water put into rapid circulation through the sewer, settling-chamber, and return-flow pipe.

Of course it will be understood that in cleaning the sewer by my invention the operation will be ordinarily begun at the upper end or highest point. By employing a longer hose for the return-flow pipe any desired length of sewer may be cleaned at once.

The top of the chamber B, or the point where the pipe J is connected thereto, should be sufficiently high to produce by hydraulic pressure a rapid and powerful stream in the sewer from the pipe J. Of course, however, the requisite pressure may be produced by the pump alone.

The steam-pump and settling-chamber being mounted on wheels, the apparatus may be readily moved from one man-hole to another as sections of the sewer are cleaned. The wagon C may be propelled by steam, or horses may be employed, as may be preferred.

I do not desire to limit myself to any particular form of pump or apparatus for elevating the contents of the sewer into the settling-chamber, as any suitable mechanism may be employed for this purpose. The pipes G, J, and K should preferably be large hose or other flexible pipe.

I claim—

1. The process or method of cleaning sewers, consisting in continuously circulating or passing water through a section of the sewer and a settling-chamber connected therewith, in

which the sediment is collected, substantially as specified.

2. The process or method of cleaning sewers, consisting in continuously circulating water through a section of the sewer and a settling-chamber connected therewith, in which the sediment is collected, said circulating stream of water being discharged into the sewer under pressure, substantially as specified.

3. The combination of a settling-chamber with means for elevating the contents of the sewer into the same from one man-hole, and means for returning the water from the settling-chamber to the other man-hole of the sewer, substantially as specified.

4. The combination of a settling-chamber with a pump and pipes leading from one man-hole of the sewer to the settling-chamber, and pipes leading from the settling-chamber to the other man-hole of the sewer, substantially as specified.

5. The combination, with wagon C, of inclined settling-chamber B, provided with gate b, projecting over the edge of said wagon, so that sediment collected in said chamber may be dumped directly therefrom into a cart or receptacle, and means for dumping or delivering the contents of the sewer into said chamber, and a return-flow pipe to carry the water back into the sewer, substantially as specified.

6. The settling-chamber B, projecting over the edge of the wagon, and provided with a dumping-gate for discharging the sediment, in combination with apparatus for delivering the sewage into said chamber and discharging the water back into the sewer, substantially as specified.

7. The settling-chamber provided with means for pumping the sewage into the same and discharging the water back into the sewer, so as to produce a circulation of water in the sewer, in combination with second discharge-pipe provided with a valve for regulating the volume and pressure of water, substantially as specified.

Chicago, Illinois, August 22, A. D. 1883.
JAMES T. DOUGINE.

Witnesses:

T. EVERETT BROWN,
H. M. MUNDAY.