(No Model.) 2 Sheets—Sheet 1.

G. W. PRINGLE.

SEWER CLEANING APPARATUS.

No. 345,804. Patented July 20, 1886.

Fig. 2.

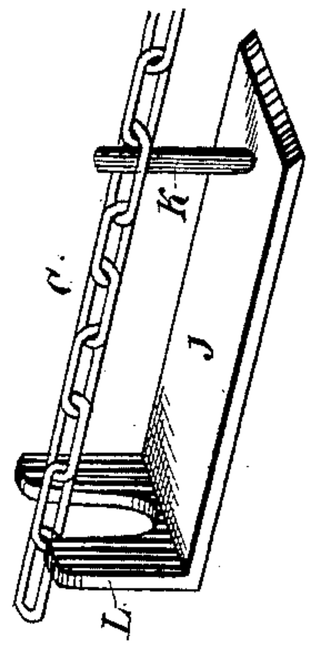
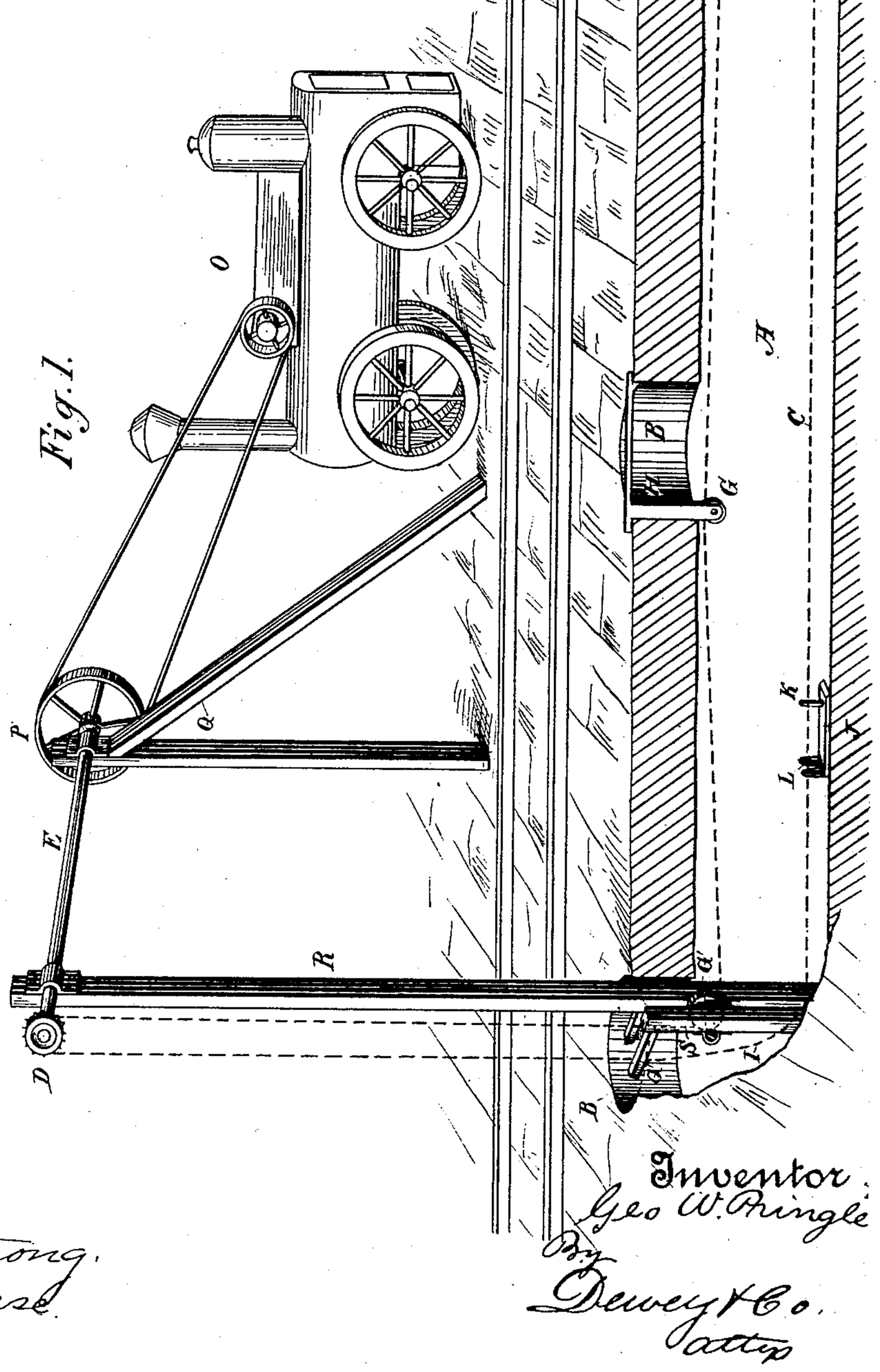


Fig. 1.



Witnesses,
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J. B. Howard.

Inventor.
Geo W. Pringle
By
Dewey & Co.
Attys

(No Model.) 2 Sheets—Sheet 2.

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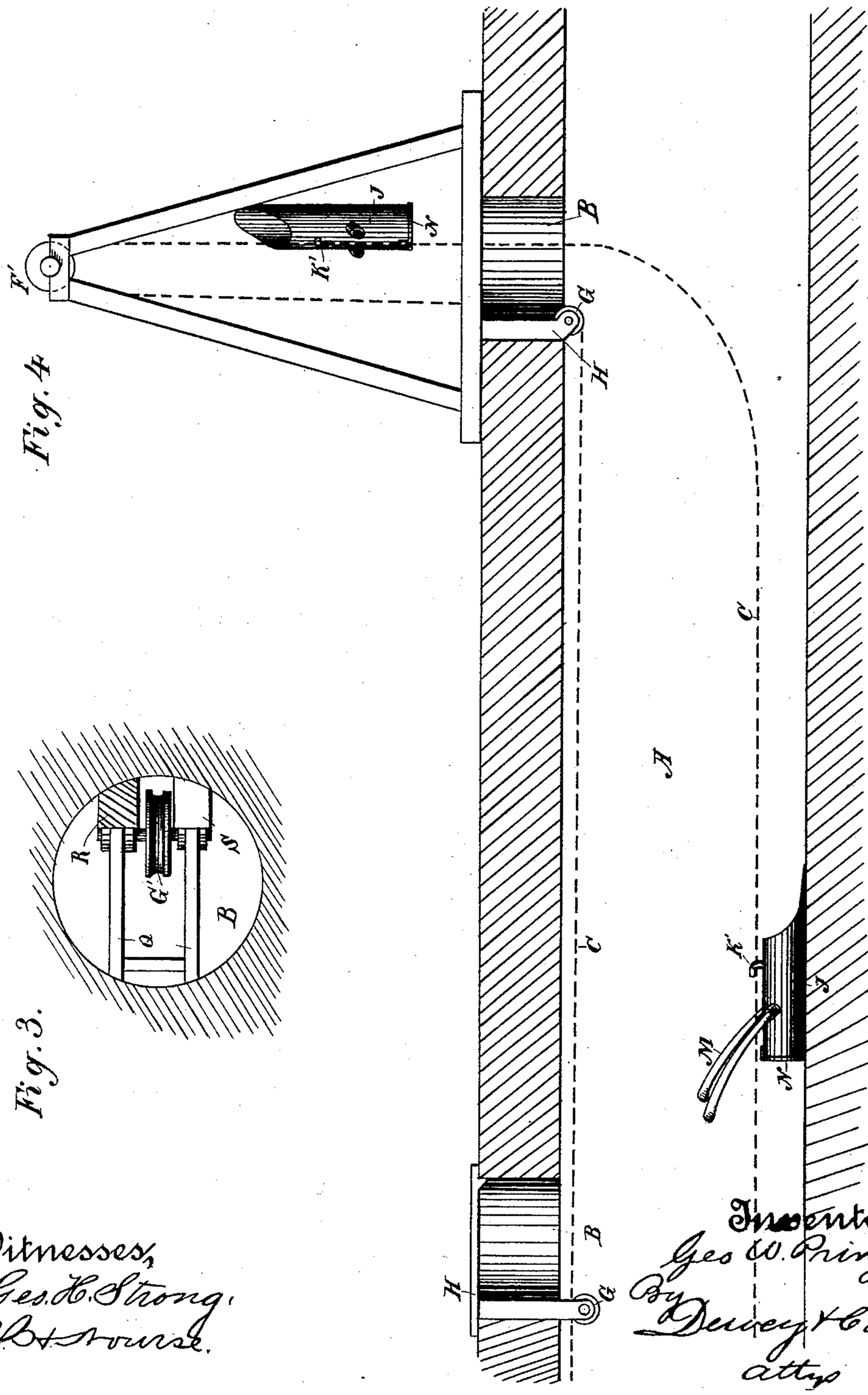

Fig. 4.

Fig. 3.

UNITED STATES PATENT OFFICE.

GEORGE W. PRINGLE, OF BENICIA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO L. B. MIZNER, OF SAME PLACE.

SEWER-CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 345,804, dated July 20, 1886.

Application filed January 20, 1886. Serial No. 189,223. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. PRINGLE, of Benicia, Solano county, State of California, have invented an Improvement in Sewer-Cleaning Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus for expeditiously cleaning sewers.

It consists of an endless chain extending down through the sewer, passing over guides and driving-pulleys, and adapted to carry plows or scrapers, which travel through the material collected within the sewer, so as to loosen and remove it.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1, Sheet 1, is a perspective view, partly in vertical longitudinal section, showing a portion of the interior of a sewer with my apparatus and the driving-pulleys and engine on the surface. Fig. 2 is an enlarged detail showing a portion of the chain and one of the scrapers. Fig. 3 is a plan or top view looking into the man-hole, and showing the arrangement of the pulleys for changing the direction of the chain. Fig. 4 is a longitudinal section of the sewer, showing the means of elevating the carrier with its load so as to discharge above the surface.

A is a section of a sewer showing man-holes at B B, which open to the surface of the street.

In order to clean the sewer from accumulations, I employ an endless chain, C, the lower part of which is allowed to drag along the bottom of the sewer, into which it passes vertically through one of the man-holes B, from a driving-pulley, D, situated above the surface of the street, and mounted upon a shaft, E. At the farther or discharge end the chain may pass over a pulley, F, by which its direction is changed so that it returns through the the upper part of the sewer, passing over guide-pulleys, as shown at G. The intermediate pulleys may be supported at intervals by means of a frame-work, H, suspended within the man-holes of the sewer, as shown. At the point where the chain is to emerge from the man-holes through which it originally entered, so as to pass over the driving-pulley D, is fixed a pulley, G′, around which it passes a quarter of a turn, so as to change its direction to lead it up to the driving-pulley D. As the tension upon the chain by the action of the driving-pulley D comes upon the upper portion of it, it will keep the part which travels through the upper part of the sewer reasonably tense, and the part which descends from the pulley D through the man-hole will form a curve where it changes its direction from the vertical to the horizontal line in passing along the bottom of the sewer, as shown at I. This allows the scrapers or buckets J to be attached to the chain at intervals by an attendant. These scrapers may either be cylindrical hollow tubes, having the rear end closed and the front end open so as to become loaded with the material, or they may be flat plates, as shown in Fig. 2, having a stem or pin projecting upward at K, so that it will engage a link in the chain, and the scrapers thus be dragged along the bottom of the sewer with the chain. The rear end of the scraper is turned up, so as to form a fork or slotted back, L, between the sides of which the chain passes, and this serves to keep the scraper in place, and cause it to be drawn along squarely on the bottom of the sewer as long as the chain engages it. As the chain passes over the return-pulley F after having traversed the desired distance, the link simply lifts off the straight pin K, leaving the scraper at this point, where it may be removed by an attendant, so as to be carried by a cart on the surface of the ground to the starting-point, to be used again. When the sewer is so constructed that it can be emptied at the lower end, these scrapers will carry the material to the mouth of the sewer, where the scrapers and material will pass out, the scrapers being recovered and returned, as before described. If, however, it is necessary to raise the material to the surface, the chain, instead of passing over the pulley E within the sewer, is allowed to pass up through a man-hole at the discharge-point, and over a pulley, F′, supported upon a frame-work at a sufficient height above the man-hole so that the scrapers or buckets may be lifted out. In this case the scrapers will be made, as shown in Fig. 4, of

a cylindrical form, having a pin, K′, adapted to engage the links of the chain, and they may have sockets to receive handles M, by which they can be guided by an attendant who follows the scrapers or buckets as far as they have to travel, holding the handles like those of a plow. When the chain reaches a point where it is to pass up through the man-hole, the attendant simply removes the handles, and allows the bucket to pass up with the chain. This bucket is provided with a hinged end at N, with any suitable clasp or fastening, so that when it reaches a point sufficiently high above the surface to be discharged, a cart may be backed under it, and the gate or door opened, so as to allow the contents to drop into the cart. The bucket or scraper may then be removed and returned, as before described. In this case the driving-shaft would be provided with a fast and loose pulley, so that the chain could be temporarily stopped when the bucket had reached the height at which it was desired to discharge it, and after it was unhooked and removed from the chain the latter could be started again. In order to drive this chain and carry on the work in streets where there are lines of cars traveling, and without interfering with these cars, I set the engine O (which may be of any portable form) at one side of the street. The belt from the engine-shaft passes over a pulley, P, upon the end of the shaft E, which carries the chain driving pulley D. This shaft is supported at such a height above the street that the cars may pass beneath it at any time, and as the line of the sewer and the man-holes are situated between the lines of track the chain may descend at this point without interfering with the travel of the cars. One end of the shaft E may be supported in a journal-box upon a suitable standard or frame-work, Q, at the side of the street. The other end of the shaft has its journal-box upon a vertical timber, R, which extends down to the bottom of the sewer, and has one of the journal-boxes of the pulley G′ fixed to it below the surface of the street. The other journal-box of this shaft is fixed to a shorter post, S, which also rests upon the bottom of the sewer, and extends up to a point about even with the top of the man-hole. These two posts are strongly braced by struts or braces Q, which extend from the posts to the side of the man-hole, being driven in tight enough to hold the posts steady. By this construction the work can be carried on without interfering with the traffic of the streets, and the material either discharged at the mouth of the sewer or raised to the surface, as may be desired.

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

1. The endless chain having one part traveling along the bottom of the sewer and the other part returned over direction and guide pulleys in the upper part, in combination with a sprocket or driving wheel over which the two parts of the chain pass above the surface of the ground, substantially as herein described.

2. An endless chain passing over guide and direction pulleys within a sewer, and the man-hole through which it passes up over a sprocket or driving wheel, in combination with an elevated frame-work, and boxes in which the driving shaft is supported at a height above the street-cars, and an engine situated at the side of the street from which power is conveyed to said shaft, substantially as herein described.

3. A vertical post supporting one end of the elevated driving-shaft, and extending to and resting upon the bottom of the sewer through a man-hole, in combination with a short parallel vertical post, and a direction-pulley, G′, journaled between these posts near the upper line of the sewer, and braces by which the posts are steadied within the man-holes, substantially as herein described.

4. The endless traveling chain with guide and direction pulleys within the sewer, and an exterior driving-pulley, as shown, in combination with scrapers or buckets J, having pins or spurs by which they may be engaged by that portion of the chain which travels upon the bottom of the sewer, substantially as herein described.

5. The scrapers or buckets J, having the guide flanges or handles by which they may be kept upright, and pins or spurs projecting upwardly from them, in combination with an endless traveling chain moving within the sewer so that the links of said chain may engage and carry along the scrapers upon the bottom of the sewer, substantially as herein described.

In witness whereof I have hereunto set my hand.

GEORGE W. PRINGLE.

Witnesses:
S. H. NOURSE,
H. C. LEE.