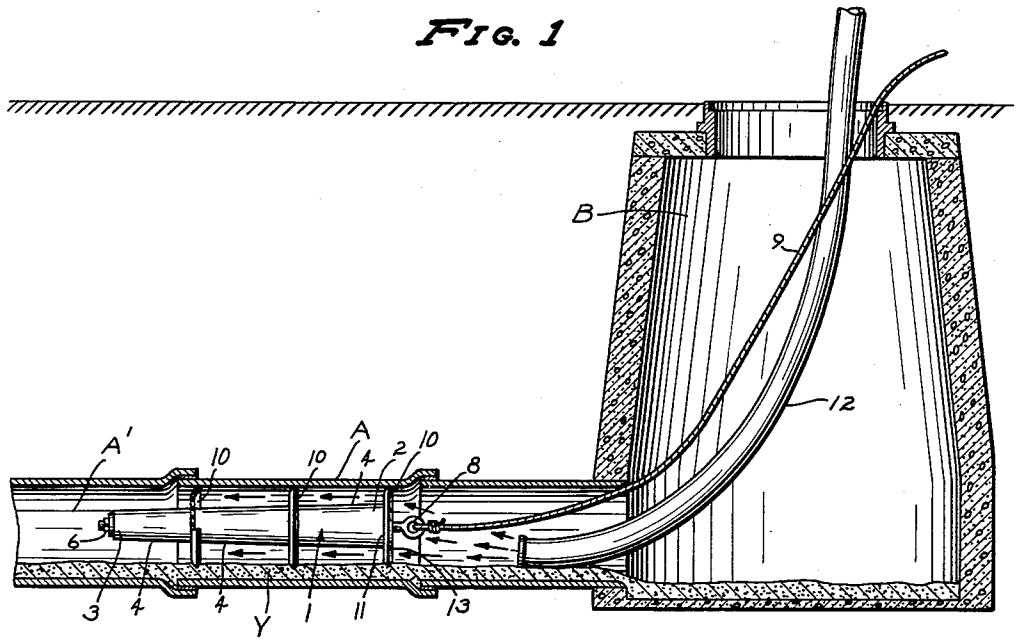
April 18, 1961 K. M. LITTLEFIELD 2,980,399

FLOW PROPELLED SEWER OR PIPE THREADER

Filed June 30, 1958

FIG. 1



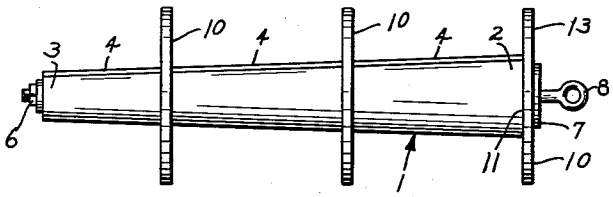


FIG. 2

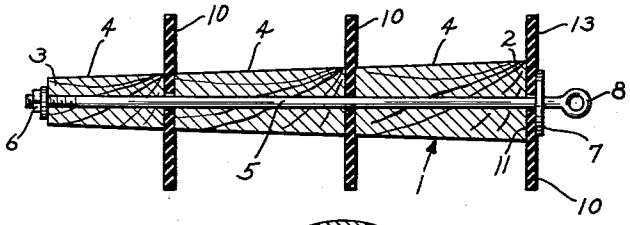


FIG. 3

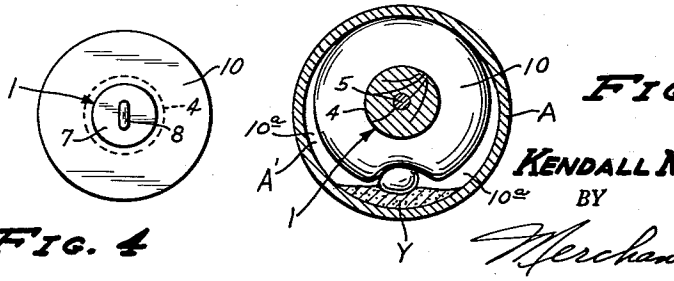


FIG. 4

FIG. 5

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FLOW PROPELLED SEWER OR PIPE THREADER

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Filed June 30, 1958, Ser. No. 745,353

1 Claim. (Cl. 254—134.4)

My invention relates to devices for the threading of sewer pipes and the like between spaced outlets, as a preliminary step to the cleaning of such pipes.

With the passage of time, residue accumulates in the bottoms of sewers. This residue must periodically be cleaned out to prevent total clogging. Such cleaning requires that heavy ropes or cables be extended through the sewer pipes between spaced outlets, conventionally known as manholes. Cleaning buckets are attached to such ropes or cables; and the task of threading them through such pipes has always been a time consuming, difficult and objectionable one.

The primary object of my invention is the provision of a novel device for relatively quickly and efficiently threading such sewer pipes initially with relatively flexible rope for the subsequent attachment thereto and threading through the sewer pipe of a heavy duty rope or cable.

A further object of my invention is the provision of a device of the class immediately above described which may be propelled through the sewer by means of fluid under pressure projected thereagainst from the end of a hose or the like, and to this end I provide an elongated buoyant core-like body having a plurality of axially spaced flexible resilient discs thereon, said discs projecting radially outwardly therefrom in concentric relationship thereto and being of a diameter only slightly less than the diameter of the sewer pipe or the like through which they are intended to be forced.

A still further object of my invention is the provision of a device of the class immediately above described wherein the buoyant core-like body tapers progressively from its rear end to its front end, whereby the discs (of uniform diameter) are progressively more flexible toward the forward end and thus offer progressively less resistance to accumulated material in the bottom of the sewer pipe, from the rear end of the core to the front end thereof.

A further object of my invention is the provision of a device of the class above described which is inexpensive to produce and which is relatively simple and easy to install and remove from a given section of sewer pipe.

A still further object of my invention is the provision of a device of the class described which is rugged and durable in construction.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claim and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

Fig. 1 is a fragmentary view in vertical section of a manhole and sewer pipe, showing my novel device in side elevation in operation therein, and its method of use;

Fig. 2 is a view in side elevation of my novel device;

Fig. 3 is a view in vertical section of the structure of Fig. 1;

Fig. 4 is a view in rear end elevation; and

Fig. 5 is an enlarged view in section of a portion of Fig. 1 and showing one of the flexible discs thereof in operation in passing over of an obstruction.

Referring with greater particularity to the drawings, the numeral 1 indicates an elongated body which preferably and as shown tapers from its rear end portion 2 to its front end portion 3 and is formed to provide a plurality of axially aligned sections 4. The body 1 is formed from wood or other relatively light-weight buoyant material, for a purpose which will hereinafter become apparent. Extending axially through the several core sections 4 is a clamping rod 5 having a threaded, nut-equipped forward end 6 and a flange-equipped rear end 7. Rearwardly of the flange 7 is a loop-equipped extension 8 for the reception of a rope or the like 9 to be threaded through a sewer pipe A, as indicated in Fig. 1.

Also received on the clamping rod 5 and interposed between the sections 4 are a plurality of flexible resilient discs 10 formed from molded rubber or the like. It will be noted that the rearmost disc 10 is interposed between the rear end portion 11 and the clamping flange 7 carried by the clamping rod 5. In this manner the discs 10 may be quickly replaced in the event of excessive wear thereon due to use.

The use of my novel device is illustrated in Fig. 1. As there shown, the operator climbs down into the manhole B and manually inserts my novel device into the sewer pipe A with the tapered body 1 extending axially of the pipe A. Note that a flexible cord or rope 9 is secured to the loop 8 on the rear end portion of the clamping rod 5. Also note that the diameter of the flexible resilient discs 10 is somewhat smaller than the diameter of the pipe A, preferably about two inches smaller than a conventional sewer pipe in which it is to be used. With this arrangement, the discs 10 rest upon the accumulated material Y in the bottom of the sewer pipe A and either frictionally engage or come close to the inner surface A' of the pipe A, so as to limit or restrict the flow of fluid under pressure thereabout. Thus, when fluid under pressure emanating from the end of a hose 12 is directed against the rear surface 13 of the rearmost disc 10, it imparts a driving force to the core 1. The water or other fluid escaping between the peripheral edge of a given disc and the inner surface A' of the pipe A is temporarily impeded and caused to accumulate between said disc 10 and the next disc 10 immediately forwardly thereof. This accumulation of fluid encompasses, at least in part, the buoyant body 1, thereby reducing the frictional engagement of the device upon the accumulated material Y.

Another important feature of my invention resides in the relative transverse thickness or diameter of the forwardly tapered buoyant body 1 with respect to the diameter of the several flexible resilient discs 10, longitudinally spaced thereon. Thus it is the foremost disc 10 which initially engages the accumulated material Y within the sewer pipe A. Consequently, in order to pass thereover, such disc 10 must flex more easily than those rearwardly disposed with respect thereto. Therefore, I have found that the diameter of the most forwardly disposed disc 10 should be not less than three times that of the diameter of the core 1 immediately adjacent thereto, whereas the diameter of the most rearwardly disposed disc 10 is most efficient when it is only one-third greater than the core 1 adjacent thereto. Fig. 5 illustrates the flexible resilience of the rubber-like discs 10 in passing over a high point in the accumulated material Y in the pipe A. Fig. 5 also shows the small spacing between the peripheral edges 10*a* of the discs 10 and the inner surface A' of the pipe A which permits sufficient water under pressure from the hose 12 to accumulate between the discs 10, thereby permitting the water to exert a forward force

on each of the discs 10 in driving of my novel device from one manhole B to another manhole B. After this has been accomplished, of course the core 1 with discs 10 attached thereto is removed and a heavier workrope or cable is attached to the rope 9 and pulled through the spaced manholes B and connected sewer pipes A.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects and while I have shown a preferred embodiment thereof, I wish it to be specifically understood that same is capable of modification without departure from the scope and spirit of the appended claim.

What I claim is:

A device for threading a cable through a sewer main comprising an elongated tapered buoyant core having a plurality of axially spaced radially projecting normally flat resilient flexible discs attached thereto, the diameters of said discs being slightly less than the diameter of the main in which the device is being used, the core tapering from its rearward end toward its forward end so that the unsupported areas of the foremost disc is materially greater than that of subsequent rearward discs to permit greater flexing of said foremost disc whereby to pass more easily over silt and obstructions in said main and reduce drag therein, said rearmost disc being exposed to the full force of fluid pressure for driving said device through the main, and means at the larger end of the core for attaching a cable to be drawn through the main.

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