Dec. 21, 1937. S. V. ROLLAND 2,102,917

SEWER ROD

Filed Sept. 19, 1934

Fig. 1.

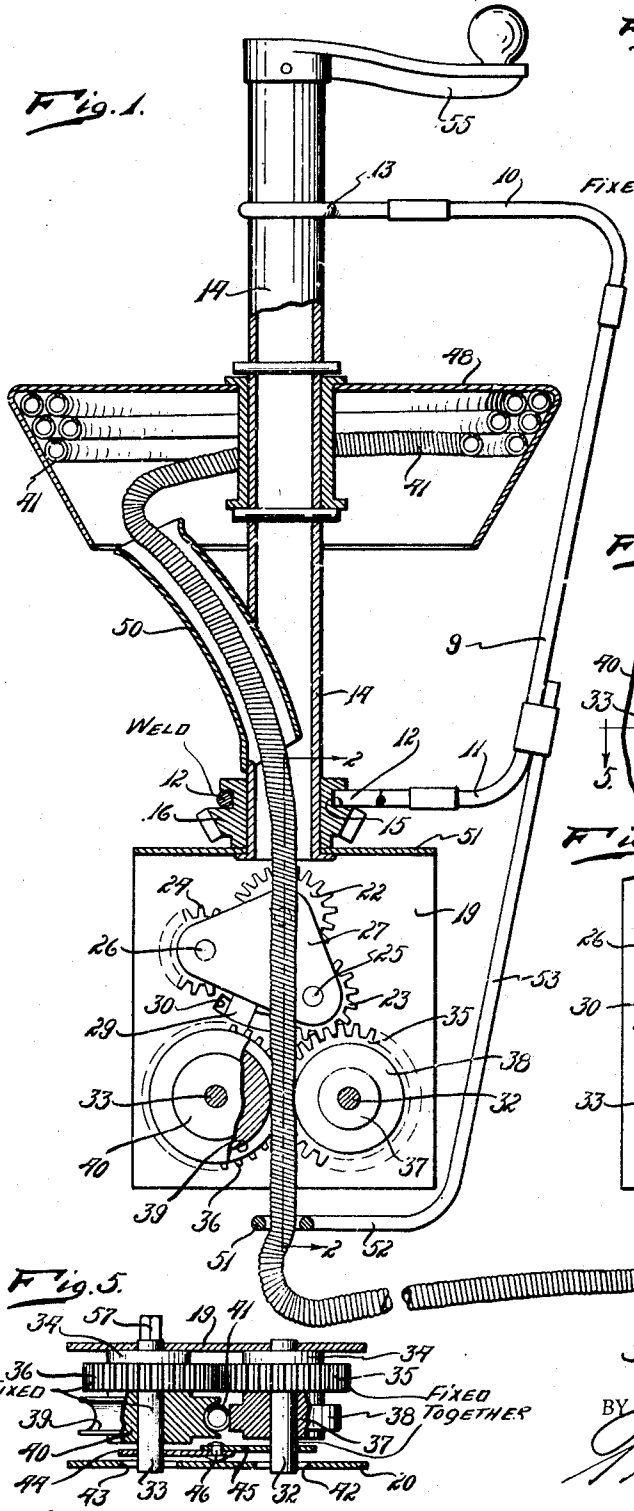


Fig. 2.

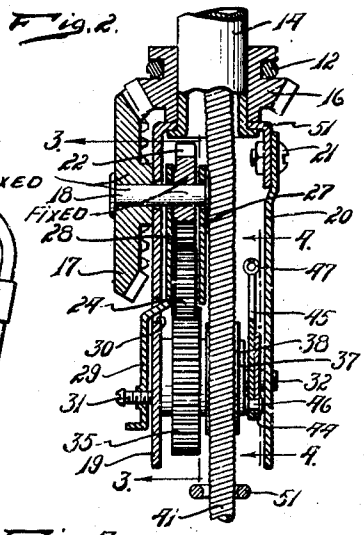


Fig. 4.

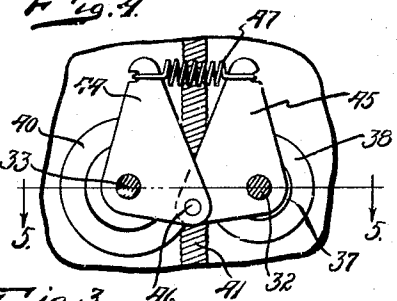


Fig. 3.

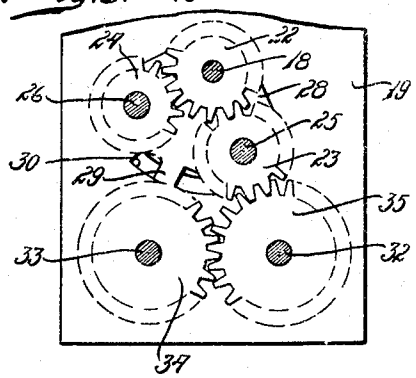


Fig. 5.

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UNITED STATES PATENT OFFICE

2,102,917

SEWER ROD

Samuel V. Rolland, Flint, Mich.

Application September 19, 1934, Serial No. 744,633

5 Claims. (Cl. 15—104.30)

My invention relates to a new and useful improvement in a sewer rod adapted for use for cleaning roots, fibrous growth and similar obstructions from the sewer pipe. In devices of this kind it is customary to project into the sewer pipe or drain pipe a flexible element which is termed a rod and on the end of which is a suitable entangling head or set of cutters which will serve to entangle itself in the obstruction or cut them loose.

It is an object of the present invention to provide a device of this kind in which there is provided a mechanism for projecting the flexible element into the sewer pipe while rotating it in one direction and for withdrawing it from the sewer pipe while the rotation continues in the same direction.

It is another object of the invention to provide in a device of this kind a pair of feed rollers for feeding a flexible element into a pipe provided with a driving mechanism actuated by a rotating part which during actuation will also serve to rotate the element and also provided with means whereby the feed rollers may be operated to feed in either direction at will.

It is another object of the present invention to provide a device of this class which will be simple in structure, economical of manufacture, durable, compact, light and easily and quickly operated.

It is another object of the invention to provide in a device of this kind a pair of feed rollers for driving the flexible element and so arranged and constructed that a slipping of the element is prevented, while at the same time the rollers are floatingly mounted in relation to each other to accommodate obstructions which may be present on the flexible element.

Other objects will appear hereinafter.

The invention consists in combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawing which forms a part of this specification and in which,

Fig. 1 is a central, longitudinal, sectional view of the invention.

Fig. 2 is a fragmentary, sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4.

The invention comprises a supporting standard or hand hold 9 having the ends 10 and 11 angularly turned and provided with eyelets 12 and 13. The eyelet 13 embraces the operating tube or rod 14 and the eyelet 12 engages in the peripheral groove 15 formed in the bevel gear 16 which is held against rotation by the eyelet 12 which is welded or otherwise suitably secured thereto, the rod or tube 14 being rotatably projected through the gear 16. This gear 16 meshes with a bevel gear 17 which is fixedly mounted on the shaft 18. This shaft 18 projects through the side wall 19 of a gear housing, this side wall being spaced from the side wall 20 which is removably secured in position by the bolt 21. Fixedly mounted on the shaft 18 between the plates or side walls 19 and 20 is a pinion 22. This pinion 22 meshes with the idler pinions 23 and 24 which are mounted on the shafts 25 and 26 respectively. These shafts project through and are carried by the plate 27 through which the shaft 18 also projects. These shafts 25, 26 and 18 also project through the plate 28. Projecting outwardly from one edge of the plate 28 is an arm 29 which extends through a slot 30 formed in the side wall 19. This arm is of sufficiently rigid material that by threading the set screw 31 tightly against the outer face of the side wall 19, a swinging of the arm 29 may be prevented. When this set screw is loosened the arm 29 may swing through the distance of the slot 30 so that the plates 27 and 28 will be rocked on the shaft 18 as a pivot and thus cause the gears 23 and 24 to swing into different positions.

Journaled in the plates 19 and 20 are the shafts 32 and 33. Each of these shafts carries a spacing collar 34. Fixedly mounted on the shaft 32 is a pinion 35 which meshes with the pinion 36 which is fixedly mounted on the shaft 33. Fixedly mounted on the shaft 32 is a roller 37 which is provided with the centrally locked reduced peripheral extension 38. This extension 38 is in alignment with a groove 39 formed in the roller 40 which is fixedly mounted on the shaft 43. This construction is such that the peripheral portion 38 of the roller 37 will serve to press into the groove 39 the flexible element 41 which is drawn therethrough. As clearly shown in Fig. 5 the shafts 32 and 33 project through slots 42 and 43 respectively formed in the plate 20 so that a loose fit is thus provided. These shafts also project through the adjusting plates 44 and 45 which are pivotally connected together by the pin 46. The ends are connected by the spring 47. As shown in Fig. 4 the pin 46 is out of line with the shafts 32 and 33 so that when these plates 45 are drawn

toward each other by the spring 47 the feed rollers 37 and 40 move into approach, and when an obstruction or projection on the element forces the feed rollers apart the plates 45 will rock outwardly of each other on the pin 46 as a center against the tension of the spring 47.

Mounted rotatably on the rod or tube 14 is a reel housing 48 in which is coiled the flexible element 41 which projects from the housing through the guide tube 50 and into the gear housing through the rear wall 51. This element is projected between the rollers 37 and 40 so that the peripheral portion 38 of the roller 37 will serve to press this element 41 so that a rotation of these rollers will cause a movement or feeding of the flexible element. This element leads from the gear housing and projects through an eyelet 51 which is formed on the angularly turned portion 52 of the guide rod 53 which projects forwardly of the hand hold 9. A head 54 is formed on the end of the flexible element which may serve to entangle itself in the vegetable growth or foreign material encountered in the pipe. This head will also serve as a holder or anchorage for a suitable cutting tool or plate which it may be desired to mount thereon and project into the sewer pipe to be cleaned.

In operation when the device is assembled as shown in Fig. 1 and it is desired to project the flexible element into a sewer pipe the head 54 with or without its attachments as desired would be inserted into the opening leading to the sewer pipe. The hand hold 9 would then be held stationary and the member 14 rotated by means of the crank 55. In this rotation the gear housing would travel around the stationary gear 16 thus effecting a rotation of the idlers 23 and 24. By swinging the arm 29 to proper position the gear 23 would be brought into mesh with the gear 35 so that the feed rollers would be rotated in one direction. By swinging the arm 29 to its other position the pinion 24 would be brought into mesh with the pinion 36 to rotate the feed rollers in the opposite direction. In the meantime the tube 14 would carry with it the member 50 and the flexible element 41 would be rotated. It is believed obvious that by the use of the mechanism described the feed roller may be fed off of the reel by the feed rollers or fed onto the reel by the feed rollers while the rotation of this flexible element in the same direction continues. This is important in a device of this kind because as the flexible element is fed into the sewer pipe while it is being rotated it will thread or bore its way into the obstruction and when sufficient amount of this member has been fed into the pipe it may be withdrawn from the pipe while rotating in the same direction so that a disentangling of the foreign material will not be effected. This is quite important where a cutting element is used on the device, as after cutting its way into the foreign material, it could not be withdrawn free from rotation and in view of the fact that such cutting blades are generally sharpened on a single edge it could not be withdrawn while rotating in the reverse direction. Consequently with a cutting element used the cutting and entangling will be effected both on the inward travel and the outward travel of the element 41.

It is believed that the simplicity of operation of the device is apparent from the description given and the swinging of the idlers to either position is an operation which may be easily performed and which would require a minimum of time.

It will be noted that the reel 48 is of the internal winding type comprising a sort of hollow drum into which the cable or sewer snake 41 is fed from one side. This in winding and unwinding the cable is an important feature as this flexible element is generally formed from wire or the like and is possessed of a certain amount of spring so that as the coils are being formed they have a tendency to spring outwardly. Because of the internal winding this outward swinging of the coils is resisted by the reel 48.

It is obvious that when the idler gears are drawn into position so that neither the gear 23 nor 24 meshes with either of the feed rollers the cable may be wound and unwound on the reel manually. In this manual winding or unwinding a crank, suitable handle or wrench may be used. To this end the shaft 33 is provided with a flat faced extension 57. It is believed obvious that when the device is normally used the housing 48 is self rotated, that is, it will rotate to permit the unwinding or winding as the flexible element is fed in either direction.

While I have illustrated and described the preferred form of construction I do not wish to limit myself to the precise details of structure shown but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A pipe cleaning device of the class described comprising: an elongated flexible element; a pair of feed rollers, said element passing between said feed rollers, and said feed rollers engaging opposite sides of said element and adapted upon rotation for moving said element longitudinally in either direction depending upon the direction of rotation of said feed rollers; means for rotating said feed rollers; means for determining the direction of rotation of said feed rollers; and means for actuating said feed roller rotating means for effecting a rotation of said element in one direction regardless of the direction of travel of the same in response to the action of said feed rollers.

2. A pipe cleaning device of the class described comprising: a rotatable operating member; a hollow reel loosely mounted on said operating member concentrically thereof; an elongated flexible member windable into coils in said reel concentrically of said operating member and unwindable therefrom, said flexible element upon being unwound extending axially of said operating member; a supporting structure carried by said operating member and rotatable in unison therewith; a pair of feed members carried by said supporting structure and engaging opposite sides of said flexible element; means for operating said feed members upon rotation of said operating member for feeding said flexible element into and out of said reel during rotation of said operating member; and means for determining the direction of rotation of said feed members during the rotation of said operating member in one direction, said feed members being positioned axially of said operating member.

3. A pipe cleaning device of the class described comprising: a rotatable operating member; a hollow reel mounted loosely on said operating member concentrically thereof; an elongated flexible member windable into coils in said reel concentrically about said operating member and unwindable therefrom; means for directing the unwound portion of said flexible element axially of said operating member; a pair of feed members

carried by said operating member and engageable with opposite sides of said flexible element and adapted upon operation for feeding said element into or out of said reel depending upon the direction of operation of said feed members; means for effecting operation of said feed members upon rotation of said operating member; and selective means for determining the direction of operation of said feed members upon rotation of said operating member in one direction.

4. A pipe cleaning device of the class described comprising: a rotatable operating member; a hollow reel mounted concentrically on said operating member and rotatable thereon; an elongated flexible element windable into coils in said reel concentrically of said operating member and unwindable therefrom; means for guiding the unwinding portion of said flexible element to extend axially of said operating member; a gear housing fixedly mounted on one end of said operating member; a pair of feed members mounted in said gear housing and engaging opposite sides of said flexible element and adapted upon operation for feeding said flexible element into said reel or out of said reel depending upon the direction of operation of said feed member; a gear carried by and positioned exterior of said housing adapted upon rotation for operating said feed members; a stationary gear positioned concentrically relatively to said operating member and meshing with said exterior gear for effecting rotation of the same upon rotation of said operating member; and means operable exterior of said housing for determining the direction of operation of said feed members upon the rotation of said operating member in one direction.

5. A pipe cleaning device of the class described comprising: an operating member; a hollow reel mounted concentrically on said member and rotatable thereon; an elongated flexible element windable into coils within said reel concentrically about said operating member; tubular means carried by said operating member and rotatable in unison therewith for guiding said flexible element as it unwinds from said reel to extend axially of said operating member; means for rotating said operating member; a pair of feed members carried by said operating member and engaging opposite sides of said flexible element; and means operable upon the rotation of said operating member for effecting operation of said feed members.

SAMUEL V. ROLLAND.