

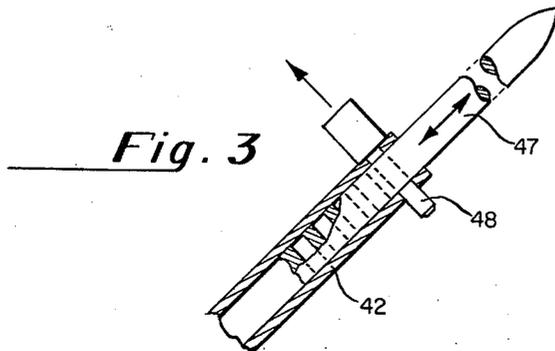
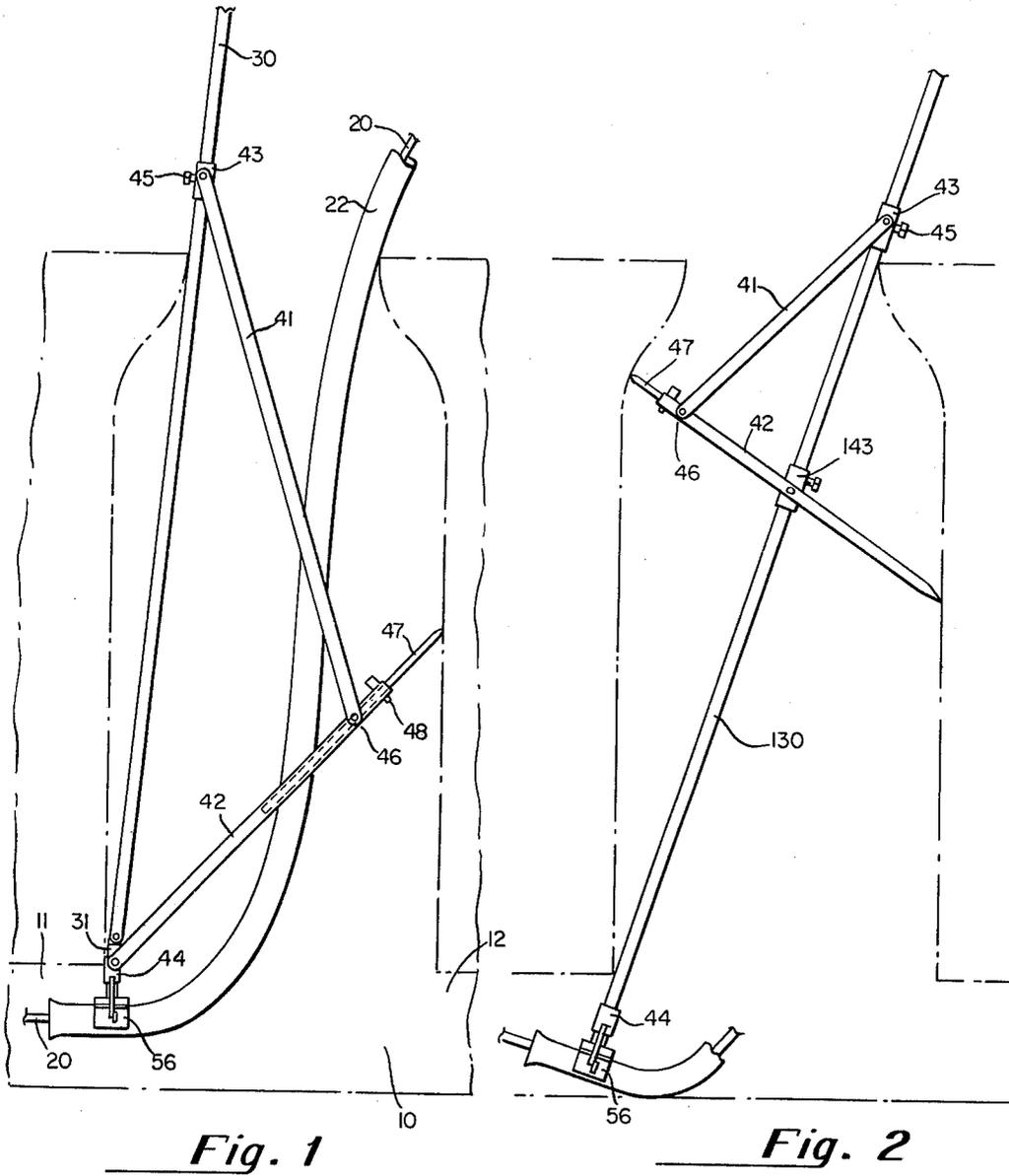
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3,497,899

MANHOLE BRACE FOR SEWER ROD GUIDE TUBE

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MANHOLE BRACE FOR SEWER ROD GUIDE TUBE

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807,034

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3 Claims

ABSTRACT OF THE DISCLOSURE

A clamp and brace assembly is provided for use in manholes for holding the sewer rod flexible guide tube stationary against reaction forces which are set up when the forwardly driven sewer rod encounters an obstruction. The assembly comprises an elongated pole having a clamp at the bottom adapted to be tightened about the guide tube by rotation of the pole. A brace, having upper and lower legs connected together at a hinge joint, is secured to the pole. The lower leg of the brace is adjustably extendible to accommodate to different widths of manholes. When the upper end of the upper leg of the brace is pushed slidably downward on the pole, the hinge moves away from the pole toward a wall of the manhole. When the end of the extended lower leg abuts against the manhole wall, the clamp and brace assembly is wedged against dislodgement.

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of application Ser. No. 689,920, filed Dec. 12, 1967, and now Patent No. 3,444,578 entitled "Manhole Brace for Sewer Rod Guide Tube."

FIELD OF THE INVENTION

The invention relates to sewer rodding equipment and particularly to the provision of an auxiliary tool for improving the operation of the sewer rodding equipment at the point where it is fed down into the manhole and into the sewer pipe which is to be cleared of obstruction.

DESCRIPTION OF THE PRIOR ART

In the prior art, a guide tube or hose has been employed to guide the continuous or coupled steel spring rod from the rodding machine down into the manhole and into the sewer pipe to be cleared. When, however, during the forward drive of the rod into the sewer, an obstruction is encountered, a reaction force is set up in the rod which causes the guide hose to move rearwardly at the bottom of the manhole and introduces thereinto a sharp bend making it difficult to continue to drive the rod forwardly.

SUMMARY OF THE INVENTION

The present invention provides a clamp and brace assembly the function of which is to prevent the guide hose from moving rearwardly in response to the reaction force of the sewer rod when it encounters an obstruction. A clamp located at the lower end of a pole is placed about the forward end of the guide hose and tightened. A brace, hinged at the center and joined to the pole at each end, is operable from the upper portion of the pole to change the brace from an in-line position to an angular position in which the hinge is moved outwardly from the pole toward a wall of the manhole. In my earlier filed application, Ser. No. 689,920, filed Dec.

12,1967, the hinge itself abutted against a wall of the manhole to provide the bracing action. However, there are considerable variations in the widths of manholes, and it was found that in some cases good bracing could not be achieved. In some cases, the manhole was so narrow that the legs of the brace could not be spread sufficiently, while in other cases the manhole was so wide that the legs of the brace had to be opened to such an angle that the upper and lower legs of the brace approached parallel relation before the hinge would abut against the wall of the manhole. One solution to this problem is, of course, to have braces of different sizes. To avoid this necessity, the present invention proposes that one of the legs of the brace, preferably the lower leg, be extendible, as by making it of telescopic construction, so that by adjustably extending the length of this leg of the brace, the brace can accommodate to various widths of manhole.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagrammatic elevational view showing one form of pole clamp and brace assembly according to the present invention;

FIG. 2 is a diagrammatic elevational view showing another form of pole brace and clamp according to the present invention;

FIG. 3 is a view, partly in section, showing one way in which the extension member may be adjustably secured to the lower leg of the brace.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGURE 1, a manhole 10 is shown having a sewer section 11 extending toward the left and a sewer section 12 extending toward the right. Extending forward from a rodding machine not shown on the street surface is a flexible guide tube 22 which may be supported by a stand not shown. The guide tube 22 extends downwardly into the manhole 10 and the flared forward end of the guide tube is directed into the sewer section 11. A rod 20, which may be a couple steel rod or which may be a continuous steel rod, has a tool not shown at the forward end.

In well known manner the rodding machine drives the steel rod 20 forwardly toward the obstruction (toward the left as viewed in FIG. 1) and at the same time rotates the rod on its own axis to rotate the tool. When the rotating tool encounters the obstruction, the forward movement of the rod 20 will be opposed and will slow down. As a result, the flexible guide tube 22 will tend to move rearwardly at the bottom of the manhole (toward the sewer section 12) and a sharp or small radius bend would be introduced into the guide tube 22 which would make it difficult to apply sufficient forward force to the tool against the obstruction.

To prevent the condition described above from happening, the present application proposes the employment of a pole clamp and brace assembly of the type illustrated in FIGS. 1 and 2.

In FIG. 1, the pole 30 has at its lower end a relatively short extension externally threaded and flexibly connected to the pole 30, preferably by a universal joint, so as to allow the clamp to sit astride the guide tube 22 while at the same time allowing the pole 30 to extend angularly upwardly therefrom. The clamp at the lower end of the pole 30 may be similar to that shown and described in my copending application, Ser. No. 689,920, and need not be further described in the present continuation-in-part application. It will be sufficient to say that when the pole 30 is rotated, as by a square handle not shown at the upper end, the collar 44 moves upwardly or downwardly on

the pole extension 31, according to the direction of rotation, thereby to loosen or tighten the clamp jaws 56.

Slidably mounted on pole 30 at the upper portion thereof is a collar 43 having therethrough a set screw 45 for fixing the position of collar 43 on the pole. Secured, as by pins to the collar 43, is the upper leg 41 of a two-legged hinged brace the lower leg of which is identified as 42. Both of the legs 41 and 42 may preferably be channel members connected together at their adjacent ends by the hinge 46. The lower end of the lower leg 42 is shown pinned to the collar 44 but could be otherwise connected. The lower leg 42 is provided with an extension member 47 which has a sliding fit within the channel of leg 42 and which may be extended and retracted manually and fixed at the desired length as by the pin 48 insertable into and through registered holes in the leg 42 and extension 47.

When the brace is to be used, the extension member 47 is manually set, before the brace is lowered into the manhole, to an extended length estimated to be right, or approximately right, for the width of the particular manhole. The lower end of the pole is then lowered into the manhole, and the clamp jaws 56 at the lower end thereof are placed on the hose 22, and tightened.

With the clamp jaws 56 tightly grasping the forward end portion of the guide tube 22, the pole is moved to the position shown in FIG. 1. The set screw 45 at the upper collar 43 is then loosened and the collar 43 is pushed down by the attendant standing on the street surface of the manhole. This action causes the hinge 46 to move away from the pole 30 (toward the right in FIG. 1). As the downward movement of the collar continues the hinge continues to move to the right until the rearward end of the extended member 47 becomes firmly abutted against the rear wall of the manhole. The set screw is then tightened to lock the pole clamp and brace in the position shown. It will be seen that when the tool at the forward end of the rod 20 encounters a tree root or other obstruction and the reaction force in the rod 20 tries to move the lower end of the guide tube 22 rearwardly away from the sewer section 11 and toward the sewer section 12, such movement is prevented by the pole clamp and brace assembly shown, described and claimed herein. Thus, an undesirable short-radius bend in the guide tube 22 will be avoided.

The brace of the invention may also be used as illustrated in FIG. 2. In FIG. 2, the pole 130 extends rigidly all the way down through the lower collar 44 where it connects to the clamp assembly. The pole 130 is placed inclined between the forward lower edge of the manhole and the rearward upper edge, as viewed in FIG. 2, and the hinge 46 of the two-legged brace is forward, rather than rearward of the pole 130. Leg 41 terminates at the pole at a slidable collar 43. Leg 42 extends in both directions from the pole and passes through a slidable collar 143. Each of the slidable collars 43 and 143 is capable of

being adjustably set at a selected position on the pole 130 as by a set screw. With the lower collar 143 set, it will be seen that as the collar 43 is moved slidingly downward on the pole, the hinge 46 and the leg 42 move outwardly until the forward end of the adjustably extended member 47 abuts against the forward wall of the manhole and the rearward end of the leg 42 abuts against the rearward wall.

While I have shown the extension member 47 to be adjustable by means of a locking pin 48 insertable into registered holes, other known means for achieving such adjustment may, of course, be used.

Also, while I have shown the lower leg 42 of the brace to be provided with the extension member, it may be desirable in some cases to provide the upper leg 41 with the extension.

What is claimed is:

1. A pole clamp and brace assembly for use with underground pipe clearing apparatus having a supply of sewer rod and means for driving said rod forward, and in which a guide tube is used to guide the sewer rod down into the manhole and forwardly into the underground pipe to be cleared, said assembly comprising:

- (1) an elongated pole;
- (2) a clamp assembly at the lower end of said pole for clamping about the guide tube;
- (3) a hinged two-legged brace comprising an upper leg and a lower leg hinged together at their junction;
- (4) said upper leg being secured to said pole for movement therealong;
- (5) said lower leg being supported by said pole;
- (6) and an extension member adjustably secured to at least one of said legs for extending the effective length of said leg beyond the hinged junction,
- (7) whereby when said legs are moved toward one another to decrease the angle therebetween, the hinged junction is moved toward one of the walls of the manhole until the remote end of the extension member comes into engagement therewith.

2. Apparatus according to claim 1 characterized in that said extension member is adjustably secured to said lower leg.

3. Apparatus according to claim 2 characterized in that said lower leg is also secured to said pole for movement therealong.

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