

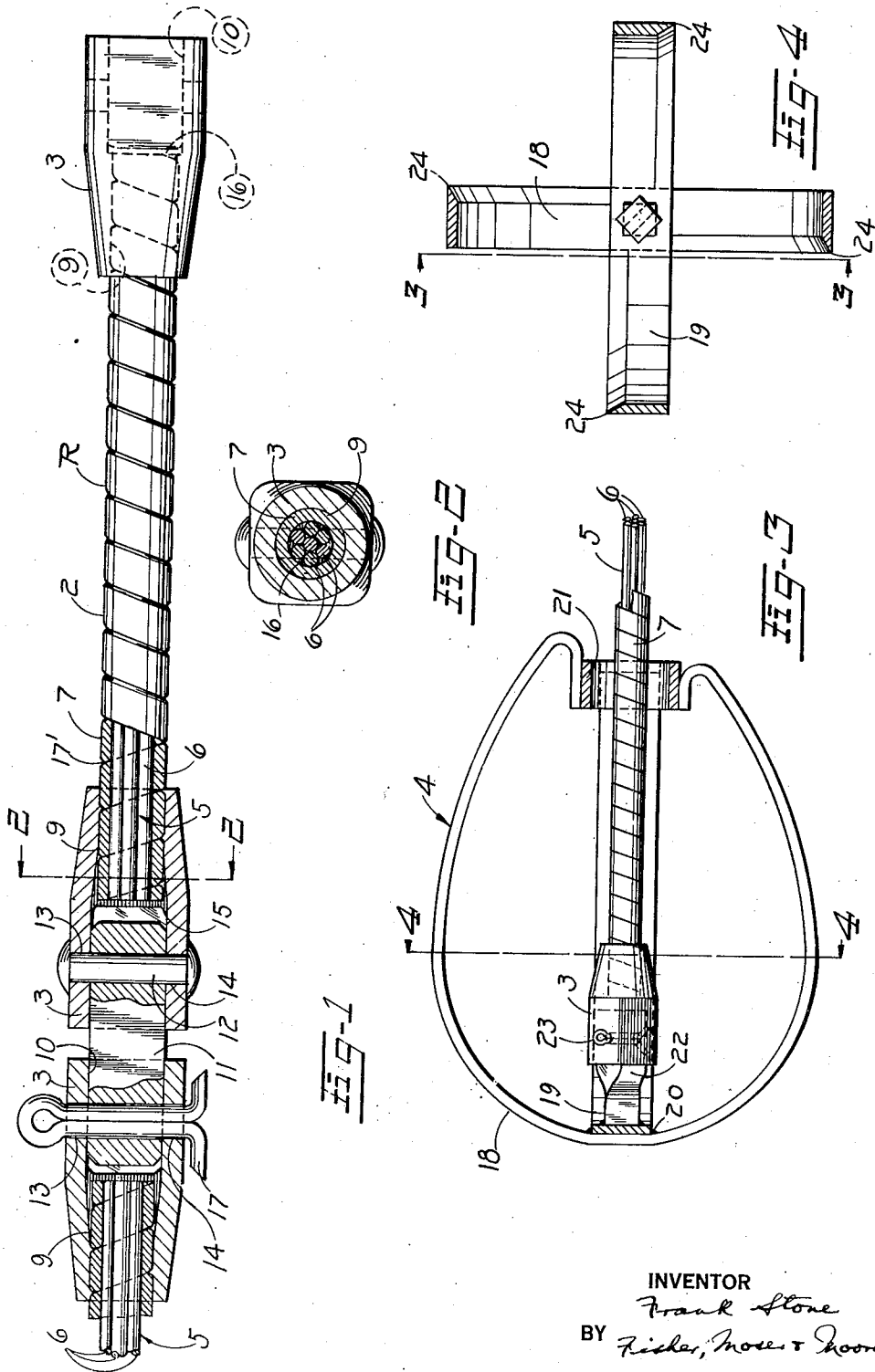
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TOOL

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TOOL

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2 Claims. (Cl. 287-76)

My invention relates to improvements in tools for use in cleaning sewer pipes, drains or the like, which have become clogged due to the accumulation of foreign material, such as roots, dirt, etc.

The general object of the invention is to provide an improved tool, the connecting rod of which is of sufficient flexibility to permit of the same being forced around bends in the sewer pipe which will not whip, kink or coil up in the sewer pipe and which has a tendency to straighten out and become more or less rigid when rotated.

A further object of the invention is to provide a semi-rigid drive rod having a spirally wound outer casing which serves as the driving member for the rod which tends to keep the rod straight in the sewer.

Other objects and advantages of the invention will be apparent as the specification is considered in connection with the accompanying drawing, in which:

Figure 1 is a fragmentary side view of the invention partly in section and partly broken away showing one complete section of semi-rigid rod and a portion of another section, the cutter being omitted;

Figure 2 is a section on the line 2-2 of Figure 3;

Figure 3 is a section on the line 3-3 of Figure 4; and

Figure 4 is a section taken on the line 4-4 of Figure 3.

Referring more particularly to the drawing, 1 denotes the improved tool as a whole, comprising a semi-flexible sectional rod R formed of a series of semi-rigid sections 2, preferably of approximately ten foot lengths, connected together by means of any suitable connections such as coupling members 3. This sectional rod is provided at its outer end with a cutter 4, and is driven from its inner end by any suitable means, such as an electric motor, not shown.

Each section 2 of the semi-rigid rod comprises a core 5 formed of a plurality of longitudinally disposed relatively heavy steel wires or strands 6, tightly inclosed within a casing 7. The casing 7, consisting of a strip of spring steel spirally wound around each core 5, imparts rigidity to and serves as the driving member of the tool when the latter is rotated by hand or mechanical power, or is pushed or driven into or through a sewer by the application of force in a longitudinal direction. The opposite ends of the semi-rigid sections each carry a female coupling member 3.

rod and permits of foreign material and great lengths of rod, frequently as much as three hundred feet, being pulled from the sewer pipe without damage to the rod.

The female coupling members 3 are formed at one end with a round socket 9 for receiving the ends of the rod lengths or sections 2, and at their other end are formed with a square socket 10 adapted to snugly receive one end of a squared bar 11. One of the members 3, of each section 2, is provided with a bar 11 to facilitate the coupling of one section to another. A pin 12 extending through openings 13 and 14 in the members 3 and bars respectively is used to permanently secure the bars 11 in place. However, in joining one section 2 with another section 2, readily insertible and removable cotter pins 17 are employed.

After the ends of a section 2 are inserted in sockets 9 of coupling members 3, the ends of the strands 6, core 5 and casing 7 are connected together by brazing, welding or the like and to the coupling member 3, as indicated at 15 and 16 respectively. Then in order to join two sections together, the male member 11 of one section 2 is then inserted in the square socket 10 of another section, these operations being repeated until a sufficient number of sections are joined together. The couplings just described are sufficiently short to permit of being forced around pipe angles of approximately forty-five (45) degrees. As the strands of the core are arranged in a longitudinal direction, the core is somewhat flexible and capable of being twisted to some extent. The core, which will withstand great longitudinal stresses, is relied upon to pull obstructions from the sewer pipe, while the spirally wound steel strip employed in forming the casing 7 being adapted to withstand unusually heavy torsional or twisting strains, serves exclusively as the driving member. When the rod R is being forced in a longitudinal direction or under rotation in a clockwise direction the adjacent edges 17' of the steel strip forming the casing 7 will engage each other and constitute in effect a rigid tube.

By virtue of the specific construction of core and casing just described, it has been found possible in actual practice to manually drive upwards of two hundred foot lengths of sectional rod R, into and through a sewer pipe or the like. The application of longitudinal force to the inner or rear end of the rod, by means of an ordinary sledge hammer, in an obvious manner, is sufficient to accomplish the desired results.

The cutter 4 comprises two bowed blades 18

and 19 connected together intermediate their ends by welds 20, the extremities of the blades being suitably connected to a ring 21. An angular supporting member 22, somewhat similar to bars 11 is welded to the blade 19 adjacent its point of attachment to the blade 18. The outer end of the semi-rigid rod R is inserted through the ring 21, and member 3 at that end is placed over the supporting member 22 and fixed thereto by means of a cotter pin 23. The blades 18 and 19 are provided with cutting edges 24 which are adapted to bore and cut through roots and the like when the cutter is rotated in a clockwise direction.

15 Having thus described my invention:

What I claim is:

1. A coupling for flexible rods, comprising a short coupling socket having a rectangular opening in one end terminating in a round opening gradually diminishing in diameter and extending through the opposite end of the socket, a flexible rod extending into said round opening and brazed therein around its ends through the rectangular opening, a rectangular coupling bar secured in the rectangular opening and extending beyond the end of the socket, a second short coupling socket having a rectangular opening to receive the rectangular coupling bar and said opening terminating in a round opening gradually di-

minishing in diameter and extending through the opposite end of the socket, a flexible rod entering said round opening and brazed therein around its end through the rectangular opening and a transverse removable pin passing through openings in the socket and the coupling bar.

2. A coupling for flexible rods, comprising a short coupling socket having a rectangular opening in one end terminating in a round opening gradually diminishing in diameter and extending through the opposite end of the socket, a flexible rod extending into said round opening and brazed therein around its end through said rectangular opening, a rectangular coupling bar in said opening and secured therein by a transverse pin and extending beyond the socket, a second short coupling socket having a rectangular opening to receive the rectangular coupling bar and said opening terminating in a round opening gradually diminishing in diameter and extending through the opposite end of the socket, a flexible rod entering said round opening and brazed therein around its end through the rectangular opening and a transverse removable pin passing through openings in the socket and the coupling bar.

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