June 30, 1942. R. F. THERRIEN 2,287,916

CLOGGED SEWER CUTTING HEAD

Filed Nov. 8, 1939

FIG. 1

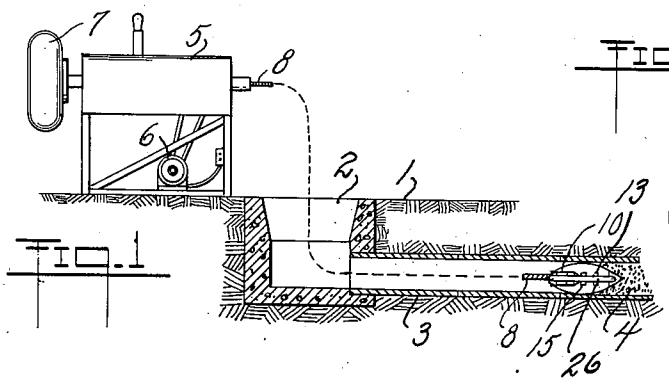


FIG. 2

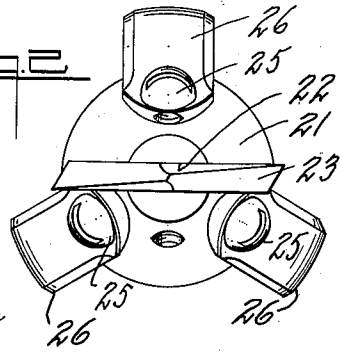


FIG. 3

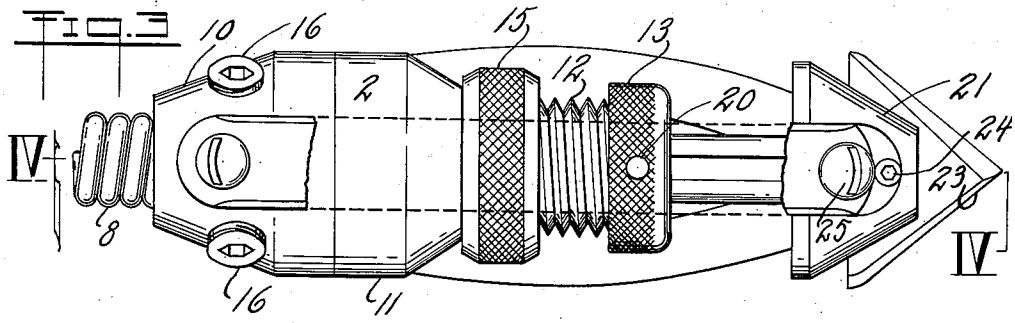


FIG. 4

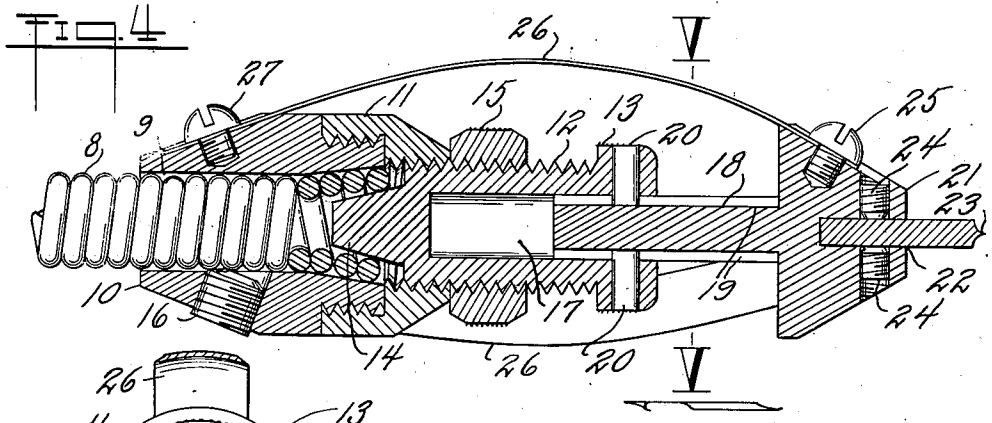
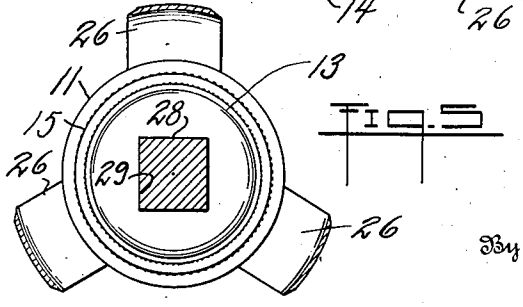


FIG. 5



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CLOGGED SEWER CUTTING HEAD

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Application November 8, 1939, Serial No. 303,394

1 Claim. (Cl. 15—104.30)

This invention relates to passage-clearing devices.

This invention has utility when incorporated in multi-blade carrying, adjustable diameter, rotary cutter head for cleaning clogged sewers through a flexible drive shaft actuator therefor.

Referring to the drawing:

Fig. 1 is a side elevation, with parts broken away, of an embodiment of the invention in operating position as to a sewer to be cleared;

Fig. 2 is an end view of the cutter head from the nose or forward portion thereof;

Fig. 3 is a side elevation of the cutter head of Fig. 2;

Fig. 4 is a section on the line IV—IV, Fig. 3, showing the cutter head assembly parts; and

Fig. 5 is a section on the line V—V, Fig. 4, through the blades but with a rectangular slide instead of a spline for the stem as mounting the nose.

From the ground level 1 there may be a manhole 2 having a sewer pipe 3 therefrom. Accumulation of sediment, growths, or other matter 4 in the sewer 3 may impede liquid flow to an extent requiring attention. To this end, a device or equipment 5 having a motor 6 may, from a supply reel 7, provide a flexible drive shaft 8 to be rotated. This drive shaft 8, at its free end or forward terminus, may enter a socket 9 in a follower 10. This follower 10 has a section 11 threaded therewith as a coupling. This threaded section 11 is shown as internally threaded to engage a stem 12 having a knurled head 13 at one end and a taper portion 14 at the other end entering the socket 9. This tapered end 14 is accordingly a spread for the end of the flexible shaft 8, and as such spreading or locking is effected, a lock nut 15 on the member or stem 12 may be adjusted into holding engagement with the follower section 11. Furthermore, a plurality of set screws 16 may be thrust into further binding or locking relation for holding the follower into rotation engagement with the drive shaft 8.

This stem 12 is shown as having aligned with the shaft 8 a way 17 for a stem 18 having spline ways 19 to receive spline pins 20, thereby holding a nose 21 against rotation relatively to the follower 10, 11. The nose 21 has cross slot 22 in which may be thrust a V-cutting blade 23 and there anchored by set screws 24. The nose is accordingly an effective cutting tool for positive rotation angularly with the drive shaft 8. To hold this nose from being clear of the follower and still yieldably thrust such nose into work, screws 25 in the nose 21 anchor thin double-edged cutting blades 26 to bow in their extension to the follower 10, wherein such blades are anchored with the follower 10 by screws 27.

Due to the telescopic operation permitted by the spline assembly of the stem 18 as to the hollow stem 17, thrusting action of this flexible shaft 8 during rotation, when severely resisted, tends to bow the flexible blades 26 for increasing the cutting diameter in the operation hereunder. The extent of this bowing, as increased, means the increased diameter for the cutting tool operation. This has exceptional value in practice, for as the cutting operation is completed or the desired feed-in distance has been worked, the withdrawal of the cable 8 and the head means that this head will automatically contract for easy exit through the way which it has traversed in effecting cutting.

In practice, the maximum collapse distance for the blades 26 should be such that the stem 18 for the nose does not clear the way 17. With such range paramount, the blades 26 may be selected in controlling different diameters for cutting.

In lieu of the stem 18 and its spline, there may be a stem 28 (Fig. 5) as the key member to be guided in its reciprocation in a way 29 in lieu of the way 17. There is thus holding for common rotation of the follower with the nose. The blades, whether for the nose or bow, are readily substituted as requiring sharpening or replacement due to damage. In the event there be trouble in the tool, say as to breaking of the cable 8, it is not necessary to wreck the head as such may be removed. The course to adopt is to slack off the set screws 16, and if the release of the stem 12 be not effective, the coupling section 11 may be removed from the section 10, thus permitting driving out of the remnants of the flexible shaft 8 without mutilating the thread portions of this cutter head.

What is claimed and it is desired to secure by United States Letters Patent is:

A passage-effecting tool comprising a nose, a rotary follower, a coupling from the follower to the nose including a splined connection providing telescopic means between the follower and nose, whereby the distance therebetween may be varied, and spring strip means fastened directly to the nose and follower, said spring strip means bowing outwardly from the rotation axis between the nose and follower upon resistance to progress of the nose.

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