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F. E. JINNETT

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PIPE CLEANER

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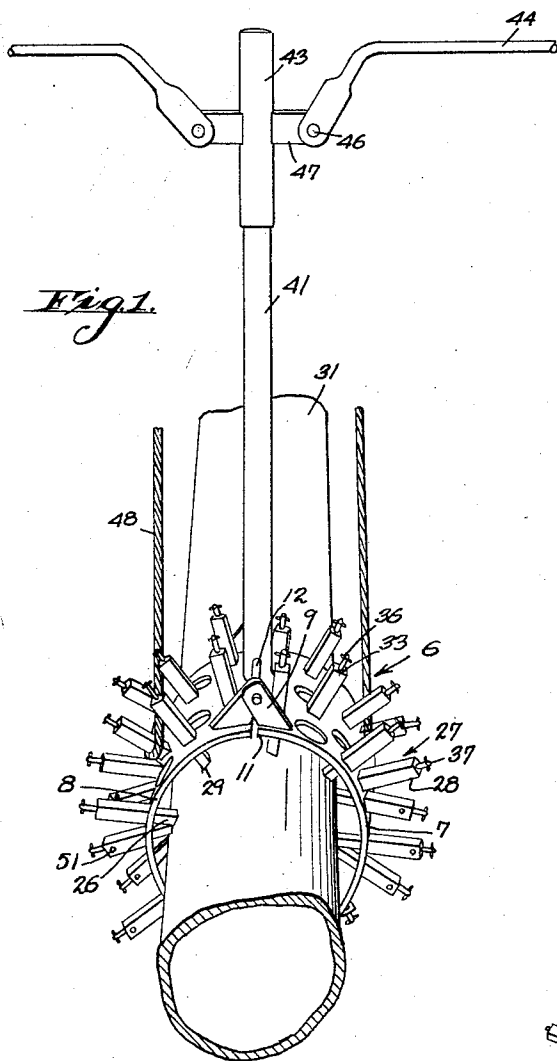


Fig. 1.

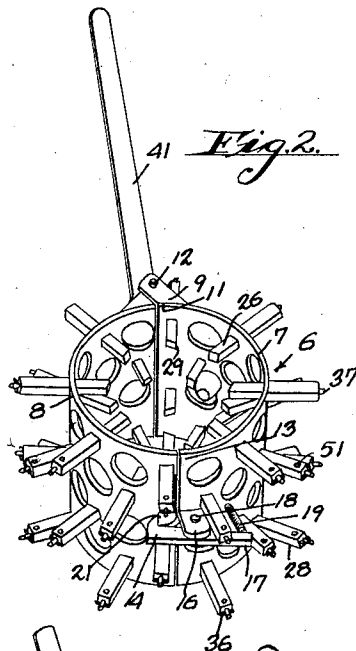


Fig. 2.

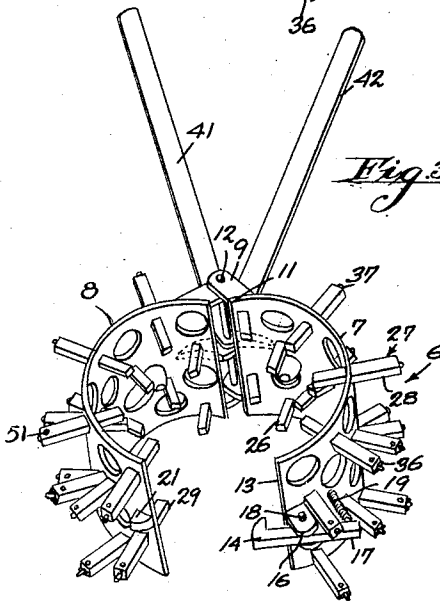


Fig. 3.

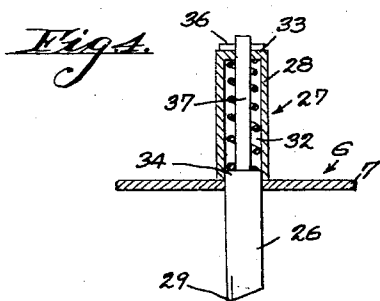


Fig. 4.

Inventor
Francis E. Jinnett
By *J. J. J. J. J.*
Attorneys

UNITED STATES PATENT OFFICE

FRANCIS E. JINNETT, OF VENTURA, CALIFORNIA

PIPE CLEANER

Application filed November 7, 1930. Serial No. 494,054.

This invention relates to pipe cleaning machines, and has for an object the provision of a device by means of which pipes or similar objects may be cleaned, regardless of whether the article to be cleaned is of relatively short length or made up into a continuous long pipe or the like.

The device of the present invention comprises an improvement over the pipe cleaning machine disclosed in my copending application Serial No. 452,274, filed May 14, 1930.

A more detailed object is the provision of an improved and simplified pipe cleaning machine which is intended to be operated manually, in contradistinction to the pipe cleaning machine of my aforementioned copending application, which is intended to be operated by mechanical motive power.

Another object is to provide improved and simplified means for releasably interconnecting the sections of the annular cutter head, whereby the operations of mounting the head upon the pipe to be cleaned, and removal of the head therefrom are materially facilitated, either of these operations being possible without having to slip the cutter head over an end of the pipe or other article being cleaned.

A further object is to provide a lever upon each of the two arcuate sections comprising the annular cutter head and means for releasably locking these levers together when the cutter head is assembled in annular form. Moreover, this locking means provides an easy means of attaching handles to the device, whereby manual operation thereof may be effected.

The invention possesses other objects and advantageous features, some of which, with those enumerated, will be set forth in the following description of the invention's particular embodiment which is illustrated in the drawing accompanying and forming a part of the specification.

Referring to the drawing:

Fig. 1 is a perspective view showing the improved pipe cleaner of the present invention in operative position upon a pipe, portions of the figure being broken away to reduce its size.

Fig. 2 is a perspective view of the pipe cleaner alone.

Fig. 3 is a perspective view similar to Fig. 2, but showing the cutter head opened.

Fig. 4 is an enlarged detail view in vertical section taken through one of the scrapers and the adjacent portion of the cutter head to show the method of mounting the scrapers therein.

The pipe cleaner of the present invention comprises a cutter head, indicated in its entirety at 6 and made up of a plurality, preferably a pair, of arcuate sections 7 and 8 which are pivotally connected at one end of each and adapted to be releasably joined at the other ends to assemble them in annular form. Hence, in the present modification the two sections 7 and 8 are of substantially semi-circular configuration, and each is provided with a pair of brackets 9 adjacent one end thereof, these brackets 9 inclining outwards from the sections 7, 8 and beyond the end 11 of the section with which they are associated. This permits the outer ends of all the brackets 9 to be brought into registry with each other, so that a pintle pin 12 may be passed therethrough to hingedly join the ends 11 of the two sections 7 and 8.

The other ends 13 of the sections 7, 8 are adapted to be releasably joined in abutment with each other through the expedient of a hook 14 which is pivotally mounted upon one of the sections, say the section 7, adjacent the end 13 thereof. This is accomplished through the expedient of a pair of spaced lugs 16, between which the shank 17 of the hook 14 extends to receive a pin 18 which extends through both lugs 16 and the shank 17 of the hook 14. A spring 19 is under compression between the arcuate section 7 and that end of the shank 17 which is remote from the hook 14, with the result that the hook 14 is continually urged radially inwards toward the center of the head 6. Arranged adjacent the end 13 of the other section 8 in position to cooperate with the hook 14 is a shoulder 21, behind which the hook 14 may engage when the sections 7 and 8 are moved together into arcuate form. Obviously, the spring 19 will retain the hook 14 in shoulder-engaging

position until sufficient upward force is exerted against its shank 17 to overcome the force exerted by the spring 19, with the result that the hook 14 is capable of retaining the sections 7 and 8 rigidly together until intentionally released.

A plurality of cutters or scrapers 26 are carried by the head 6, each of these scrapers extending radially inwards from the section 7, 8 upon which it is mounted. A socket 27 is provided for the mounting of each of the cutters 26, each of these sockets being in the form of a tube 28 extending outwards from the head 6 and preferably rectangular in cross section. Each socket 27 opens into the interior of the head 6, so that the cutter 26 which is mounted within the socket 27 may extend into the opening defined by the annular head to permit the cutting edge 29 formed at the inner end of the cutter 26 to make contact with the outside surface of a pipe 31, rod, or similar article which is to be cleaned. By using cutters 26 which are complementary in cross sectional configuration to their respective sockets 27, rotation of the cutters within their sockets is permitted, even though the cutters fit sufficiently loosely within their sockets to permit them to slide longitudinally, i. e., radially with respect to the cutter head 6. Means are provided for pressing the cutters 26 inwards to insure scraping engagement of the cutting edges 29 thereof with the pipe 31 or the like, this means being preferably in the form of a spring 32 which is under compression between the outer end 33 of the associated socket 27 and a shoulder 34 on the associated cutter 26. A pin 36 through the outer end of the cutter 26 is adapted to engage the outer surface of the end 33 through which a reduced portion 37 of the cutter 26 passes, and thus limit inward motion of the cutter 26.

Levers 41 and 42 are formed rigidly on the sections 7 and 8 respectively, these levers extending substantially radially outwards therefrom and being attached adjacent the ends 11 of the sections 7 and 8, so that the pintle pin 12 may pass through the levers 41 and 42, as well as through the brackets 9. The parts are so proportioned and arranged that when the ends 13 of the sections 7 and 8 are brought into abutment with each other, i. e., when the cutter head 6 is closed to annular form, the levers 41 and 42 will lie in superimposed relationship, permitting the reception of a cap 43 upon their outer ends, whereby the levers 41 and 42 may be releasably locked together. This cap 43 also serves as a convenient means for connecting operating handles 44 to the levers 41 and 42. These handles 44 extend laterally from the levers and are preferably pivotally connected to the cap 43 by means of pins 46 which extend through the inner ends of the handles 44 and

through projections 47 extending from the sides of the cap 43.

Inasmuch as it frequently occurs that the pipe 31 or other object to be cleaned lies within a trench, I prefer to construct the levers 41 and 42 of sufficient length to permit operators standing or walking upon the surface of the ground outside the trench to operate the handles 44. Inasmuch as operation of the pipe cleaner requires reciprocatory rotary motion of the cutter head 6 about the axis of the pipe 31 which is encircled by the head 6, the effort required on the part of each of two operators is alternate pushing and pulling upon his handle 44; and inasmuch as the handles 44 are pivoted to the levers 41 and 42, instead of being rigid therewith, this pushing and pulling need not be accompanied by lifting and lowering, with the result that each operator may hold his handle at that elevation which causes the greatest convenience to him. Advance of the pipe cleaner is effected preferably by the efforts of a third operator who pulls upon a pair of ropes 48, or the like, secured to the cutter head 6.

I prefer to provide one or more apertures 51 in each of the sockets 27 which is arranged on the lower half of the cutter head 6, the purpose being to permit material scraped from the pipe and falling within these sockets 27, which open upwards, to work its way out of the sockets through the holes 51, and thus avoid the possibility of binding of the cutters 26 within their respective sockets 27.

Inasmuch as the two sections 7 and 8 of the cutter head 6 may easily be disengaged at their lower ends 13 by release of the hook 14, positioning of the cutter head 6 upon the pipe 31 or other object to be cleaned, and removal of the cutter head therefrom, may be accomplished very easily, and without the necessity of slipping the annular head over an end of the pipe. This is an important factor when considered in connection with the cleaning of long pipe lines such as those commonly employed for the transportation of gas, oil, and its derivatives. These pipes, which are frequently several hundred miles in length, are usually laid underground, and require thorough cleansing and painting of their exterior surfaces every three or four years, and it is for the performance of this servicing of pipe lines that the device of the present invention has been primarily designed.

It is to be understood that the details of the invention as herein disclosed, are subject to alteration within the spirit or scope of the appended claims.

I claim:

1. In a pipe cleaning machine, a cutter head comprising a pair of arcuate sections hingedly joined adjacent one end of each, means for releasably connecting said sections at their other ends with said head in annular form, a plurality of scrapers carried by said

head and extending inwards thereof, a lever rigid with each of said sections and extending outwards therefrom, said levers being in superimposed relationship when said sections are joined in annular form, a cap receivable upon said levers to lock them together, and handles carried by said cap and extending therefrom laterally with respect to said levers.

2. In a pipe cleaning machine, a cutter head comprising a pair of arcuate sections hingedly joined adjacent one end of each, means for releasably connecting said sections at their other ends with said head in annular form, a plurality of scrapers carried by said head and extending inwards thereof, a lever rigid with each of said sections and extending outwards therefrom, said levers being in superimposed relationship when said sections are joined in annular form, a cap receivable upon said levers to lock them together, and handles pivotally mounted upon said cap and extending therefrom laterally with respect to said levers.

3. In a pipe cleaning machine, a cutter head comprising a pair of arcuate sections, a hinge joining said sections together at one end, means for releasably connecting said sections at their other ends with said head in annular form, a plurality of scrapers carried by said head and extending inward thereof, and a pair of levers adjacent said hinge, there being a lever rigid with each of said sections and extending radially outwards therefrom, said levers being in superimposed relationship when said sections are joined in annular form.

4. In a pipe cleaning machine a pair of semi-cylindrical sections, a hinge joining said sections together, a plurality of scrapers carried by said sections, a pair of levers adjacent said hinge and independent of each other, there being a lever rigid with each of said sections and extending outwards therefrom for manually imparting rotary motion thereto about the axis of a pipe to be cleaned.

In testimony whereof I have signed my name to this specification.

FRANCIS E. JINNETT.