J. J. B. LA MARSH.

DEVICE FOR CLEANING WATER MAINS.

APPLICATION FILED NOV. 3, 1914.

1,185,688. Patented June 6, 1916.

Fig. 1.

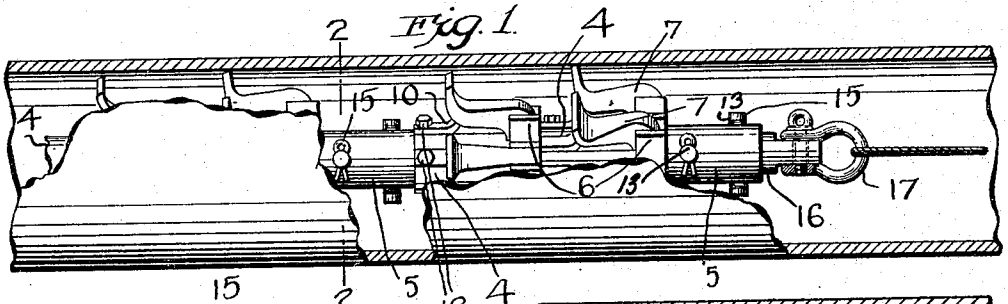


Fig. 2.

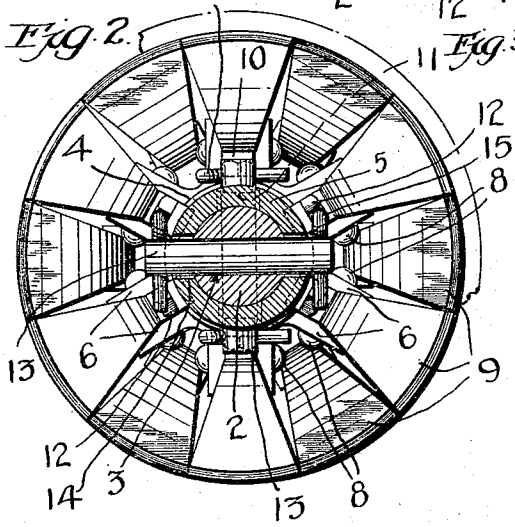


Fig. 3.

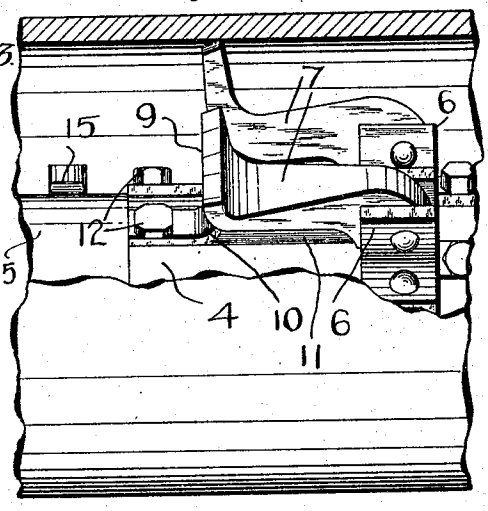


Fig. 4.

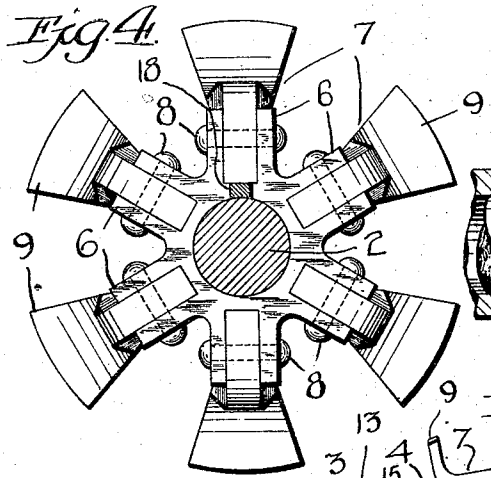


Fig. 5.

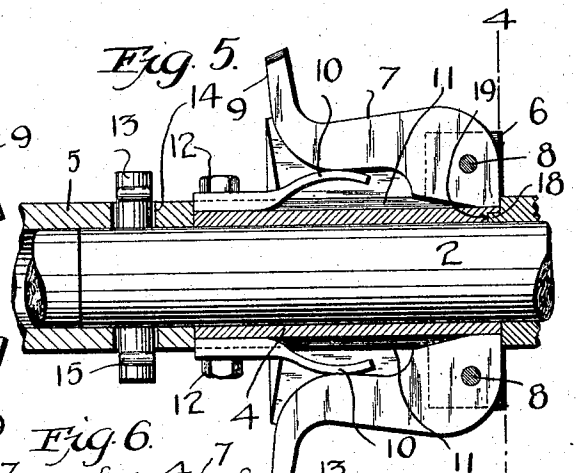
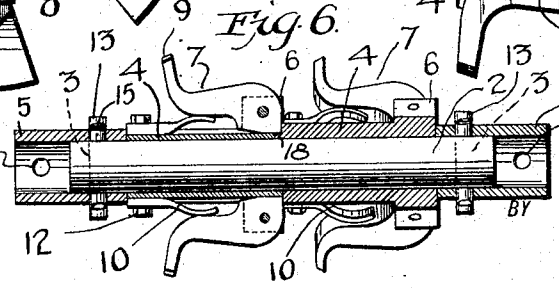


Fig. 6.



WITNESSES

Geo. A. Lemon

G. H. Lupfer.

INVENTOR

Joseph J. B. La Marsh

BY

Clarence Gilbert

ATTORNEY

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH J. B. LA MARSH, OF BROOKLYN, NEW YORK.

DEVICE FOR CLEANING WATER-MAINS.

1,185,688. Specification of Letters Patent. Patented June 6, 1916.

Application filed November 3, 1914. Serial No. 870,043.

To all whom it may concern:

Be it known that I, JOSEPH J. B. LA MARSH, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Devices for Cleaning Water-Mains, of which the following is a specification.

This invention is an improvement in devices for cleaning water mains, and its object is to provide a construction which is simple and very strong, extremely effective for its purpose, and made and assembled in such manner as to admit of ready replacement of worn or broken parts, and which permits a large flow of water during the cleaning operation. Various forms of water main cleaners have been devised, but have possessed certain defects which this invention overcomes. In the cleaners as heretofore constructed, reliance was placed on scrapers of flexible resilient character, and these, while conforming readily to the interior of the main, have been comparatively fragile and necessarily so yielding as to be ineffective against the more resisting deposits; moreover, by bending, these members are liable to be rendered inactive through failure to contact with the wall of the pipe or to exert a substantial degree of pressure thereagainst.

In accordance with my invention I propose to employ rigid scraper arms, which are pivotally mounted and rest against semi-rigid supports, which are capable of a slight degree of yielding but in general brace the scrapers with such firmness as to insure the removal of the hardest and heaviest formations which may be encountered. A set of these scraper arms and their supports are carried by a sleeve, which is removably mounted on and lies close to a rod section, the whole construction being such as to constitute a comparatively slight obstacle to the flow of the water, which is a feature of my invention of great importance and distinguishes it from prior devices, wherein the construction is such as to permit of only a limited flow between them and the walls of the main. Each set of pivoted scraper arms, with their supports, I mount on a separate sleeve, and two of these sleeves are assembled on one rod section with the arms on one sleeve opposite the spaces between the arms on the other, there being means of interlocking engagement on the sleeves whereby they are held against rotation relatively to each other. Coupling sleeves, held by transverse pins at the end of the rod section, limit endwise movement of the sleeves and afford means for connection of other scraper units and of a cable connection to enable the whole to be dragged through the main. These and various other features and advantages of the invention will become apparent to those skilled in the art as the specification proceeds.

In the accompanying drawings: Figure 1 is a longitudinal view of a water main, partly in section and partly in elevation, with two units of the cleaner assembled therein; Fig. 2 is a cross-section on the line 2—2 of Fig. 1, a portion of the wall of the main being shown in broken lines; Fig. 3 is a view showing a portion of Fig. 1 on an enlarged scale; Fig. 4 is a section on the line 4—4 of Fig. 5; Fig. 5 is a longitudinal section through a portion of a unit; and Fig. 6 is a longitudinal section through a complete unit.

Each unit of the device comprises a plain cylindrical rod section 2 having transverse apertures 3 near its ends. On this rod section and lying close to it are sleeves 4, preferably two in number, with their adjacent ends in abutting relation and their remote ends confined by coupling sleeves 5. Each of the sleeves 4 is formed at one end with a circular series of radiating wings 6, arranged in pairs and receiving between them the inner ends of rigid scraper arms 7, which are connected to the wings by pivots 8. These arms comprise shank portions, which in operation extend rearwardly with respect to the direction of movement of the device, and are relatively narrow transversely, though of substantial depth between their front or outer and back or inner faces. The extremities of the arms broaden out into blade portions 9, extending outward at an abrupt or substantially right angle to the wall of the pipe and having arcuate working edges. The scrapers, as thus constructed, are exceedingly strong and effective, yet obstruct the interior of the pipe as little as possible. As the device is dragged through the pipe the scraper arms rest against and are braced by semi-rigid supports 10, consisting of heavy stiff spring tongues fixed to the tubular portion of the sleeve 4 adjacent the end thereof remote from the wings 6, and projecting toward

the latter with their free ends in contact with the under surfaces of the shank portions of the arms. For greater strength and in order to prevent lateral displacement, the fixed portions of the springs are seated in longitudinal grooves 11 cut in the outer surface of the sleeve, and so mounted are reliably, yet removably, held in place, each by a single screw 12.

The coupling sleeves 5 are conveniently and simply held in place by transverse pins 13 passing through the apertures 3 and other apertures 14 in the couplings. Cotters 15 fasten the pins and permit their ready removal. One of the couplings is shown receiving the end of the rod section of an adjacent unit, of which any desired number may be assembled in the same manner, while the coupling at the forward end of the front unit receives a plug 16 fastened by a similar pin and cotter 13, 15 and carrying an eye 17 for attachment to the coupling.

Relative rotation of the arm-bearing sleeves on each rod section is prevented by means of a projection 18 on the end of one sleeve entering a recess 19 on the adjacent end of the other sleeve, the construction and arrangement of the parts being such that the two sets of arms are in staggered relation and between them operate upon the complete internal circumference of the pipe.

What I claim as new is:

1. A water main cleaner, comprising the combination of a rod section, sleeves removably mounted on and lying close to said rod section, means on the ends of the rod section for confining the sleeves thereon, wings on the sleeves, rigid scraper arms pivoted to said wings, spring tongues for supporting the scraper arms in operative position, and means of interlocking engagement on the proximate ends of the sleeves holding the sleeves against relative rotation with their arms respectively in staggered relation.

2. A water main cleaner, comprising the combination of a rod section, sleeves removably mounted thereon, rigid scraper arms pivoted on the sleeves, stiff spring supports for said arms, coupling sleeves on the ends of the rod section confining the arm-bearing sleeves against endwise displacement, transverse pins connecting said coupling sleeves to the rod, a plug received in and similarly connected to one of the coupling sleeves, and an eye for the attachment of a cable on said plug.

In witness whereof, I have hereunto set my hand this 28th day of October, 1914.

JOSEPH J. B. LA MARSH.

Witnesses:

G. H. EMPEY,

S. J. GIBSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."