

(No Model.)

H. J. I. BILTON & T. TIMMINS.

APPLIANCE FOR SCRAPING INTERIORS OF WATER MAINS OR PIPES.

No. 576,425.

Patented Feb. 2, 1897.

Fig. 1.

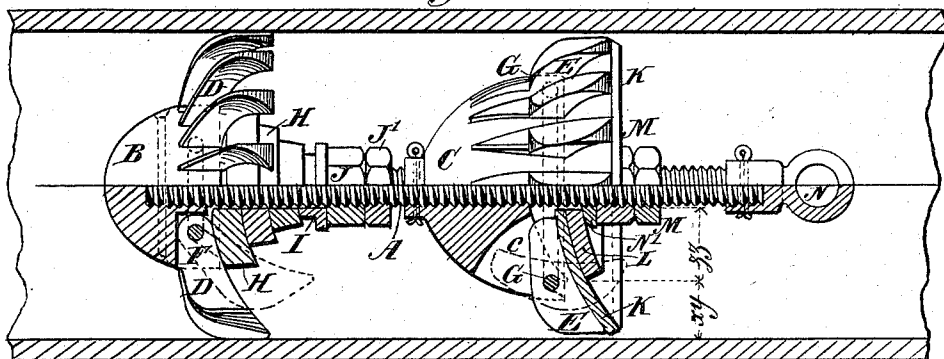


Fig. 2.

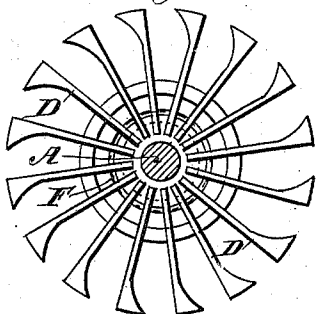


Fig. 3.

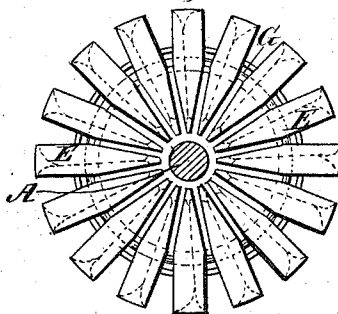


Fig. 4.

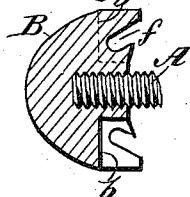


Fig. 6.

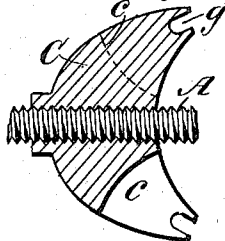


Fig. 7.

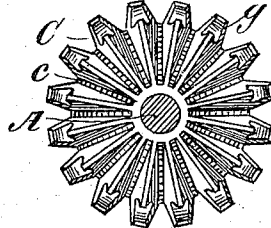


Fig. 5.

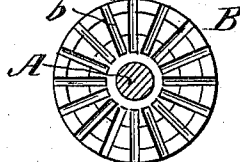


Fig. 8.

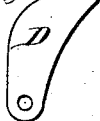


Fig. 9.



Fig. 10.

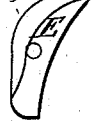


Fig. 11.



Witnesses,
Robert G. Smith,
Thos. A. Green

Inventors:
Henry J. I. Bilton,
Thomas Timmins,
 By *James L. Norris,*
Atty.

UNITED STATES PATENT OFFICE.

HENRY JOHN INWOOD BILTON AND THOMAS TIMMINS, OF MALVERN,
VICTORIA.

APPLIANCE FOR SCRAPING INTERIORS OF WATER MAINS OR PIPES.

SPECIFICATION forming part of Letters Patent No. 576,425, dated February 2, 1897.

Application filed September 12, 1893. Serial No. 605,669. (No model.)

To all whom it may concern:

Be it known that we, HENRY JOHN INWOOD BILTON, civil engineer, of No. 29 Edsall Street, and THOMAS TIMMINS, civil engineer, of 5 Thanet Street, Malvern, near Melbourne, in the British Colony of Victoria, subjects of the Queen of Great Britain, have invented an Improved Appliance for Scraping the Interior of Water or other Mains or Pipes, of which the following is a specification.

This appliance is intended for insertion into water and other mains or pipes and is capable of cleaning them of any accumulated rust, silt, or other deposits and of passing any ordinary permanent obstruction, of going around 15 any ordinary bend, and of being set to any scraping power required, limited by the setting of certain regulating-nuts and the pressure of the fluid in the pipe behind it. It may be forced through the pipes by the ordinary pressure in them or by a force-pump using either air or any other fluid.

Referring to the accompanying drawings, Figure 1 is a view, half in section and half 25 in elevation, of this improved appliance for scraping the interior of water and other mains and pipes. Fig. 2 is a rear elevation of the front cone of the appliance with the cutters in position. Fig. 3 is a similar view of the back cone, while Fig. 4 is a vertical central section of the front cone, and Fig. 5 is a rear elevation thereof. Fig. 6 is a vertical central section of the rear cone, and Fig. 7 is a rear elevation thereof. Figs. 8 and 9 are side 35 and rear elevations of the cutters on the front cone, shown detached; and Figs. 10 and 11 are similar views of the cutters on the rear cone.

The same letters of reference indicate the same parts in all the figures.

A represents a screw-threaded spindle fitted with two metal cones B and C, constructed, as clearly illustrated in Figs. 4 to 7, with radial grooves *b* and *c*, in each of which is placed a pivoted cutter D or E, constructed 45 as illustrated in Figs. 8 to 11, respectively.

The cutters D D on the front cone are threaded at their inner ends upon a split spring-steel ring F, which is let into a turned 50 groove *f* in the rear face of the front cone B,

while the cutters E on the rear cone are threaded at about their centers upon a larger ring G, let into a groove *g* in the rear face of the rear cone C.

Behind the cutters on the front cone are arranged a set of stout rubber or other resilient washers H H, gradually decreasing in size to the rearmost one, behind which is arranged a metal ring or washer I and behind that again a pair of nuts J J', whereby any desired 60 degree of pressure may be put upon the rubber washers H H, and therefore upon the cutters, so as to force them with any desired degree of pressure against the interior of the pipe.

Behind the cutters E is arranged a leather cup-shaped disk K, of a slightly smaller diameter than the bore of the pipe, while behind said disk is a rubber washer L, similar to the washers H H, and behind that again a pair of adjusting-nuts M M, working upon the screw-threaded spindle A. The rear end of this latter is fitted with a ring N, to which a wire or rod can be attached to withdraw the appliance or whereby the appliance can 75 be conveniently handled, while, if preferred, a bar-magnet may be attached to be used in conjunction with a compass or properly-balanced magnetic needle exterior to the pipe, and thus enable the position of the scraping appliance to be readily located in case it gets jammed in the pipe or main.

The cutters E on the rear cone are arranged in true alinement with the spaces between the cutters D D on the front cone, so that every 85 portion of the perimeter of the pipe will be scraped, and the bevel of one set of cutters is set in the opposite direction to the other set of cutters in order to counteract any tendency of the appliance to rotate.

The scraping power of the cutters on the rear cone is obtained by the excess of pressure of the fluid on the larger area of the outer portion *x y* over that of the inner portion *z z*, which is capable of being regulated 95 by the regulating-nuts M M, bearing on the loose collar N', thereby enabling the cutters on the rear cone also to make a light or heavy cut, as required, the cutting power in this case being obtained by the pressure of the fluid. 100

The number of the cutters is immaterial, subject to a proper support to the disk being obtained.

On passing any ordinary obstruction one
5 or more of the cutters can depress, thus allowing the appliance to pass, after which said cutters are forced again into cutting position by the washers H H and the disk K, which latter is of slightly smaller diameter than the
10 pipe. This, with the inequalities of the pipe, permits the passage of the necessary amount of fluid at a high pressure to scour the pipe clean and drive forward the deposit removed by the cutters, and for this latter purpose the
15 front cone is made smaller than the rear one, thus leaving larger spaces between the cutters for the passage of such sediment or chips.

Having now particularly described and ascertained the nature of our said invention and
20 in what manner the same is to be performed, we declare that what we claim is—

1. In an appliance of the kind herein de-

scribed for scraping the interior of water or other mains or pipes the combination of a series of radial pivoted cutters with one or more
25 resilient washers or disks together with an adjusting nut or nuts in the manner and for the purposes substantially as set forth.

2. In an appliance of the kind herein described for scraping the interior of water or
30 other mains or pipes the combination with a series of pivoted radial cutters of a leather disk forced against said cutters by the pressure of water or other fluid in the pipe or main whereby said fluid is used to force the cut-
35 ters outward against the interior of said pipe or main in addition to its ordinary use as a propelling force substantially as set forth.

HENRY JOHN INWOOD BILTON.
THOMAS TIMMINS.

Witnesses:

EDWARD WATERS,
WALTER SMYTHE BAYSTON.