No. 812,361. PATENTED FEB. 13, 1906.

A. PICKLES & P. R. SEWELL.

TUBE, CONDUIT, AND PIPE CLEANER.

APPLICATION FILED OCT. 8, 1903.

Fig. 1.

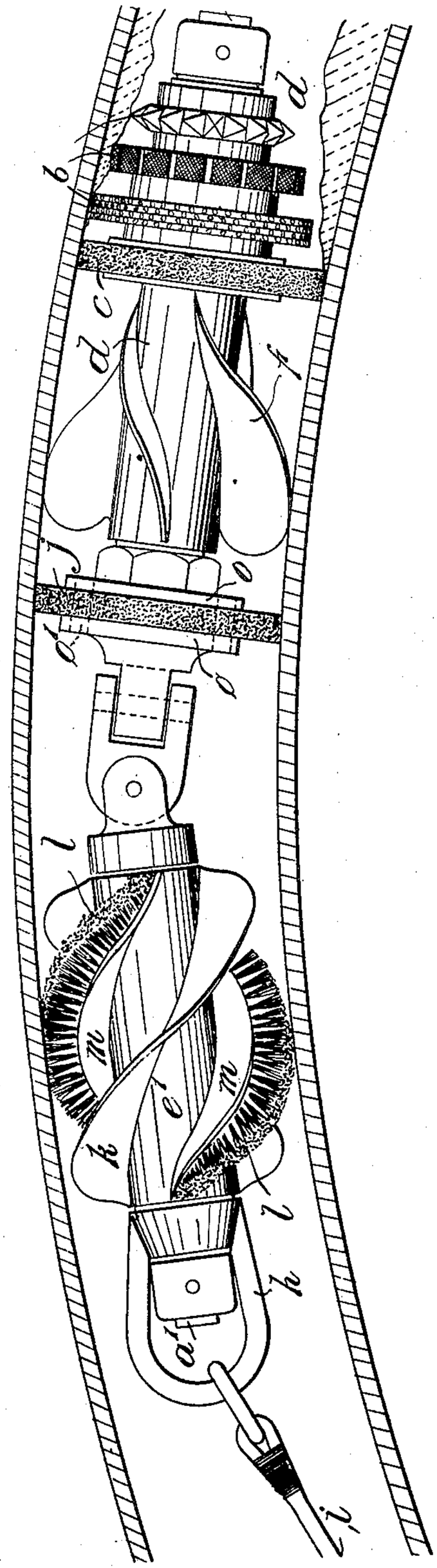
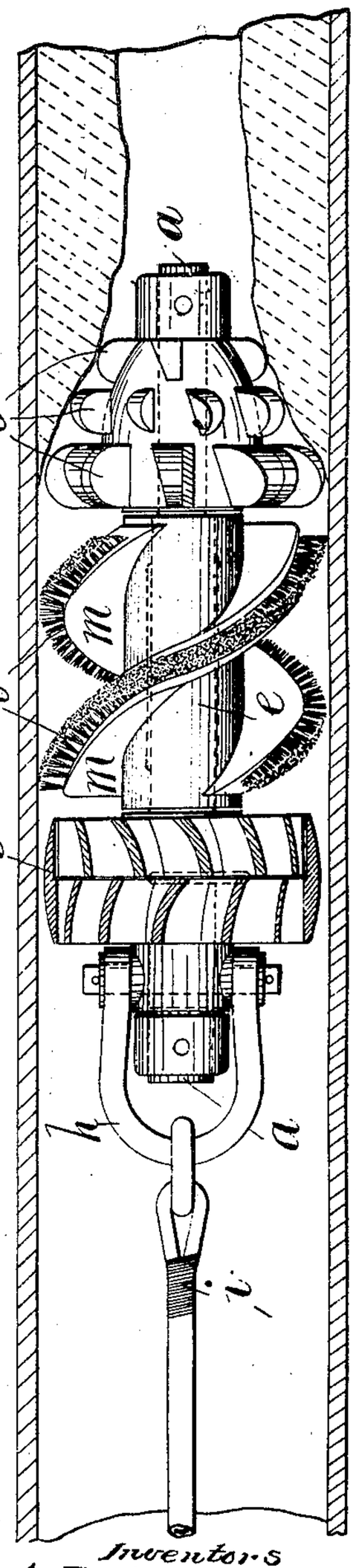


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALFRED PICKLES, OF WAKEFIELD, AND PERCY RAGLAN SEWELL, OF BRADFORD, ENGLAND.

TUBE, CONDUIT, AND PIPE CLEANER.

No. 812,361. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed October 8, 1903. Serial No. 176,287.

To all whom it may concern:

Be it known that we, ALFRED PICKLES, residing at 3 Stoneleigh Terrace, Belle Vue, Wakefield, and PERCY RAGLAN SEWELL, residing at 41 Sunbridge road, Bradford, in the county of York, England, subjects of the King of Great Britain and Ireland, have invented certain new and useful Improvements in Connection with Tube, Conduit, Pipe, and the Like Cleaners, (for which we have made application for Letters Patent in Great Britain, No. 27,445, dated December 12, 1902,) of which the following is a specification.

This invention relates to improvements in connection with apparatus for cleaning, scouring, and scraping water, steam, gas, and other tubes, pipes, conduits, and mains, the object being to provide in one convenient and simple piece of apparatus means for effectually removing obstructions and impurities from such pipes, tubes, or mains and to cause the apparatus to rotate and travel forward by pressure of fluid within the tubes when in operation.

In the apparatus at present employed for removing obstructions and foreign matter from the interior of tubes or the like the desired rotation and propulsion is commonly obtained by the pressure of the fluid within the tubes which are to be operated upon; but it is frequently found necessary in connection with such forms of apparatus to couple two or more independent members together for the purpose of insuring that the apparatus shall receive sufficient power from the fluid within the tube to cause it to rotate and to travel simultaneously. Our invention is intended to obviate the necessity of employing separate members and independent devices for obtaining the necessary power and to make each piece of apparatus or cleaner self-contained, complete in itself, and capable of rotating and traveling independently while in operation.

In the accompanying drawings, Figure 1 is a sectional elevation illustrating one modification of the improved cleaner within a curved pipe, while Fig. 2 is a similar view showing a cleaner according to another modification of the invention within a straight pipe.

In carrying our invention into effect according to one form, as shown in Fig. 1, a series of cutters *b* are mounted on a sleeve *d*, which is freely mounted on a spindle *a*. A circular brush *c* is also mounted on the sleeve *d*, and a second similar brush *j* is mounted on the opposite end of the spindle *a*, the brushes comprising bristles or the like tightly clamped between disks *o o*. The sleeve *d* is provided with a number of broad helical blades *f*, which under the influence of the current or pressure of water or other fluid in the mains impart a rotational movement to the cutters *b*. These cutters are preferably of varying degrees of fineness and composed of various materials, so as to effectually operate upon the obstructions within the pipe or main. The plates *o o* of the brush *j* are perforated, as at *o'*, to permit the water or other fluid to pass therethrough and impinge upon the blades *f*. The brushes *j* and *c* offer sufficient resistance to the water to enable the latter to impart a forward movement to the apparatus. It will be noticed that the spindle *a* does not necessarily rotate, but that the sleeve *d* freely rotates on the spindle. Attached to the rear end of the spindle *a'* by a universal joint *p* is a second spindle *a'*, terminating in a swiveled shackle *h*, to which a rope or cable *i* is attached to enable the apparatus to be removed from the pipe or main and to enable its speed or travel therethrough to be checked, if desired. A sleeve *e'* is provided with helical brushes, comprising bristles *l*, clamped between plates *m*, and also with helical blades *k* intermediate of the brushes. The sleeve is freely mounted on the spindle *a'*, which, like the spindle *a*, does not necessarily rotate. The object of this brush is to clean the pipe or main from any loose debris left by the cutters *b* and brushes *c* and *j* and which is not carried away by the current of water or other fluid. The brush is rotated under the influence of the fluid acting upon the blades *k* and plates *m*. It will be noticed that there are two distinct parts to the apparatus—namely, a cutting device and a simple cleaning device; but although they are combined into one apparatus, yet the rotation of one does not influence the rotation of the other. They may thus rotate at different speeds, which is desirable, as they obviously effect work of different nature.

In carrying out the invention according to another form, as illustrated in Fig. 2, instead of connecting the cutting device to the simple cleaning device by means of a universal

joint they are arranged upon the same spindle *a*. The cutters *b* are in this case fixed on the spindle, which is rotated by a turbine *g*, comprising a set of rotary blades *g'*, fixedly mounted on the spindle *a*, and a stationary set of directing-blades g^2, fixedly mounted on the sleeve g^3 of the shackle *h*, which sleeve is freely mounted on the spindle *a*. The cleaning device comprises helical brushes formed of bristles *l*, clamped between plates *m*, mounted on a sleeve *e*, which is freely mounted on the spindle *a*. It will thus be seen that the water or other fluid acting on the turbine-blades *g'* rotates the spindle *a*, and therefore the cutters *b*, whereas the rotation of the cleaning-brushes is effected independently by the influence of the fluid on the plates *m*. The cleaning device and cutting device, similarly to the first-described modification, can rotate independently and at different speeds.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for cleaning pipes and the like, the combination with a spindle, of a set of cutters fast to the spindle, a sleeve loosely mounted on the spindle and provided with a set of cleaning-brushes, means for rotating the spindle and means for rotating the sleeve independent of the spindle.

2. In an apparatus for cleaning pipes and the like, the combination with a spindle, of a set of cutters mounted at one end of the spindle and means for rotating the spindle mounted at the other end thereof, a sleeve loosely mounted on the spindle between the cutters and the spindle-rotating means, brushes mounted on the sleeve and means for rotating the sleeve independent of the spindle.

3. In an apparatus for cleaning pipes and the like, the combination with a series of rotary cutters mounted on a spindle a turbine also mounted on the spindle and adapted to rotate the same, a sleeve loose on the spindle, and helical plates provided with bristles clamped between them, mounted on the sleeve.

In witness whereof we have hereunto set our hands in presence of two witnesses.

ALFRED PICKLES.
PERCY RAGLAN SEWELL.

Witnesses:
GEORGE WHITEHEAD,
W. C. RAMSHAW.