

Nov. 10, 1931.

L. F. DENSMORE

1,831,099

PIPE CLEANER

Filed Jan. 8, 1930

2 Sheets-Sheet 1

Fig. 1.

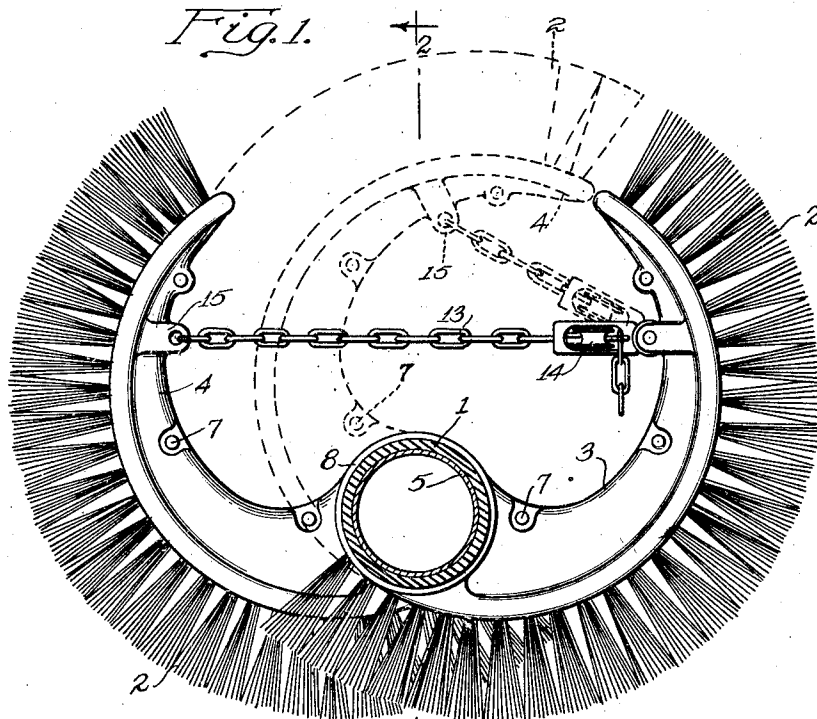


Fig. 2.

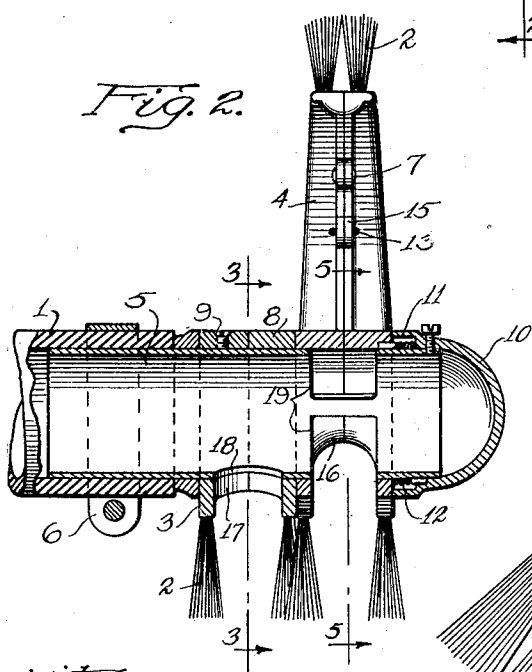
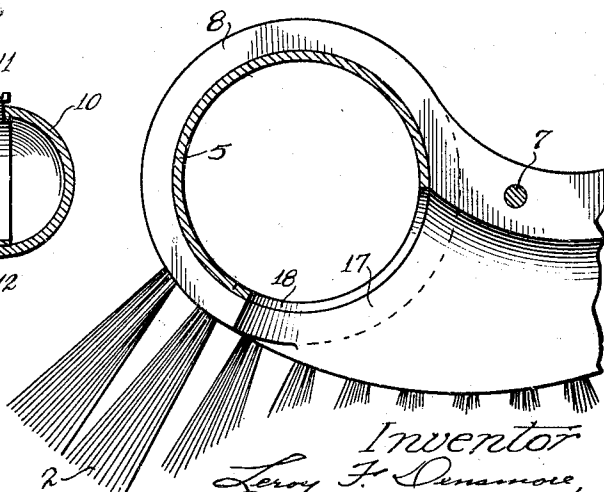


Fig. 3.



Witnesses

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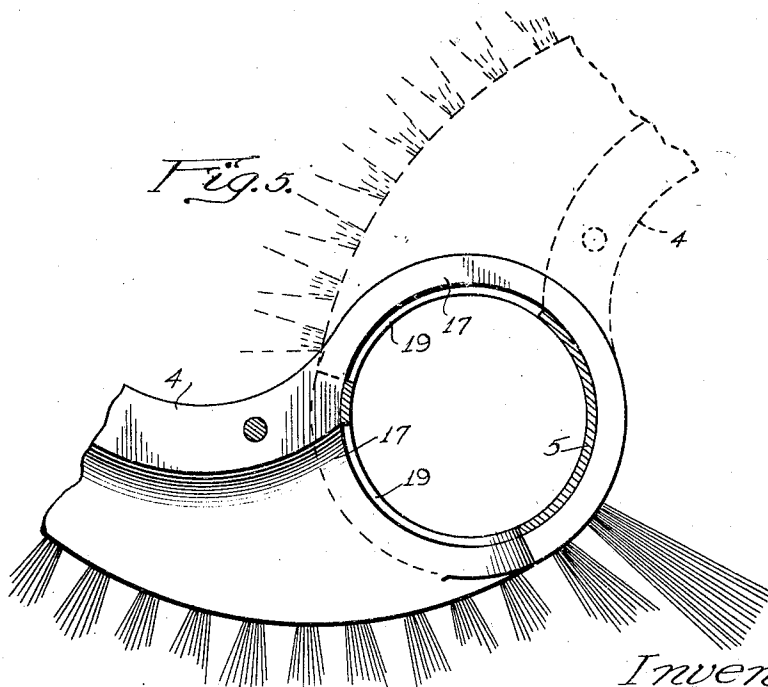
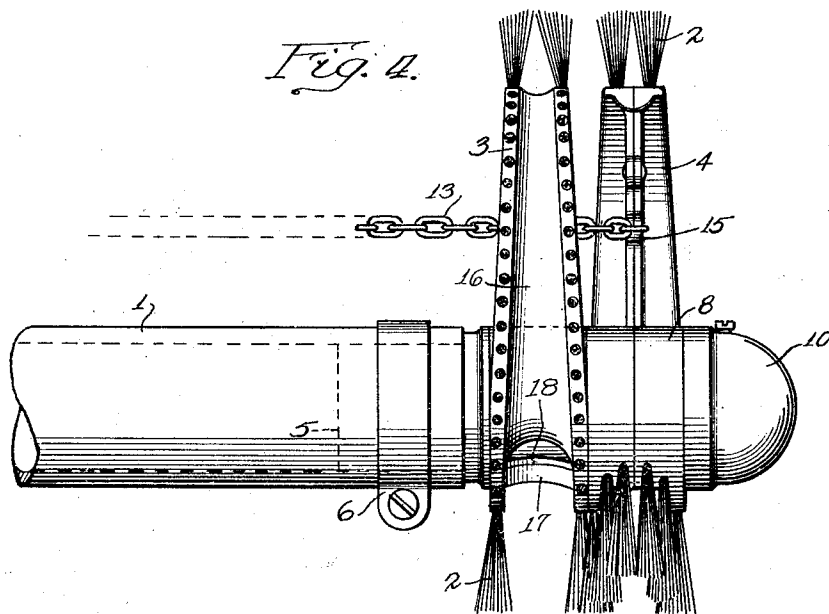
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PIPE CLEANER

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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PIPE CLEANER

Application filed January 8, 1930. Serial No. 419,387.

The main objects of this invention are to provide an improved form of brush which is particularly adapted for cleaning the hot-air pipes of furnaces; to provide a pipe cleaner which is expansible and contractible so as to be adapted for use in pipes of different diameters; to provide a brush of this kind having improved means for expanding the brush; to provide improved manually operable means for contracting the brush to facilitate its insertion into and removal from the pipe; and to provide an improved brush of this kind which is adapted for use as the nozzle of a vacuum cleaning apparatus.

An illustrative embodiment of this invention is shown in the accompanying drawings, wherein:—

Figure 1 is an end elevation of the brush in its expanded position; the hose and sleeve being shown in section and the dotted outline representing the movable section in contracted position.

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary section of one part of the brush, the view being taken on the line 3—3 of Fig. 2.

Fig. 4 is a side elevation, taken from the right of Fig. 1, part of the bristles being omitted.

Fig. 5 is an enlarged fragmentary section, taken on the line 5—5 of Fig. 2, the dotted lines representing the movable part in contracted position.

In the specific construction herein shown, the improved pipe cleaner to which this invention is applied comprises a substantially circular articulate brush mounted on one end of the suction hose 1 of a vacuum cleaning apparatus, not shown. In addition to being the conduit through which the dirt from the brush is withdrawn, the hose 1 also serves as the handle by which the improved brush is manipulated within the pipe. The articulate brush is expansible and contracti-

ble, so as to be adapted for use in connection with pipes of various diameters.

In the form shown, the improved brush comprises flexible bristles 2 mounted on the outer peripheries of a pair of arcuate back segments 3 and 4, which are supported on a tubular coupling 5, to which the conduit 1 is secured by a clamp 6.

The segments 3 and 4 are preferably metal castings of substantially similar construction. To facilitate the casting of the brush backs, each segment is preferably made in two separate parts which are rigidly secured together by rivets 7 or other suitable fastening means.

Formed on the inner ends of the segments 3 and 4, are hubs 8 which embrace the tubular coupling 5. The hub of the segment 3 is rigidly secured to the coupling 5 by a screw 9 or other suitable fastening means and the hub of the segment 4 is rotatable on the coupling to permit expansion and contraction of the brush.

The segment 4 is secured against outward axial movement by a cap 10 which is rigidly secured to the outer end of the coupling 5. Formed in the inner surface of the cap 10 is a recess 11, in which is seated a helical spring 12 having its two ends connected respectively to the segment 4 and cap 10 so as to normally urge the segment 4 to the position shown in full outline in Fig. 1 for expanding the brush.

The brush is adapted to be manually contracted against the action of the spring 12 by means of a flexible cable 13. The cable 13 slidably engages a pulley 14 secured to the segment 3 and its end is secured to a lug 15 mounted on the segment 4.

In order to adapt the improved brush for use as a vacuum cleaner nozzle, the outer peripheries of the segments 3 and 4 are recessed to provide air passages 16, which communicate with openings 17 formed in the hubs 8. The opening 17 of the segment 3 registers with a port 18 in the coupling 5 and the open-

ing 17 of the segment 4 is adapted to register with a pair of ports 19 in the coupling so as to permit the passage 16 of the segment 4 to communicate with the hose 1 in the expanded and contracted positions of the brush.

In operation, the hose 1 and cable 13 are held by the operator and, by pulling the cable 13, the brush is contracted sufficiently to permit insertion in the pipe which is to be cleaned. After the brush has been inserted, the cable 13 is released so as to permit the brush to conform to the pipe. By reason of the flexibility of the bristles, the brush will readily conform to the pipe when the segments 3 and 4 are urged outwardly under the action of the spring 12. The dirt which is removed from the pipe by the bristles of the brush is drawn through the passages 16 to the hose 1.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A pipe cleaner comprising an elongated handle, a pair of arcuate brush segments arranged to form a substantially circular brush, one of said segments being fixed on said handle, the other of said segments being hinged on said handle, the axis of the hinge and the axis of said brush extending longitudinally of said handle, means for normally swinging said hinged segment outwardly to expand the brush, and manually operable means extending longitudinally of said handle for swinging said hinged segment inwardly to contract the brush.

2. A pipe cleaner comprising a suction conduit, and a plurality of arcuate brush segments arranged to form a substantially circular brush having air passages communicating with said conduit, said brush segments being relatively movable to permit expansion and contraction of the brush.

3. A pipe cleaner comprising a suction conduit, a pair of arcuate brush segments mounted on said conduit and forming a brush having air passages communicating with said conduit, said brush segments being movably connected together to permit expansion and contraction of the brush, means normally expanding said brush, and manually operable means for contracting said brush.

4. A pipe cleaner comprising a tubular coupling, and a pair of brush segments movably connected together to form an articulate circular brush having air passages communicating with ports formed in said coupling, one of said segments being fixed on said coupling, the other of said segments being rotatable on said coupling to permit expansion and contraction of the brush.

5. A pipe cleaner comprising an elongated

handle, a pair of brush segments arranged to form a substantially circular brush, one of said segments being fixed on said handle, the other of said segments being hinged on said handle on an axis coincident with the longitudinal axis of said handle, a spring for normally swinging said hinged segment outwardly to expand the brush, and a cable connected to said hinged segment and extending longitudinally of said handle for swinging said hinged segment inwardly to contract the brush.

Signed at Chicago this 6th day of January, 1930.

LEROY F. DENSMORE.