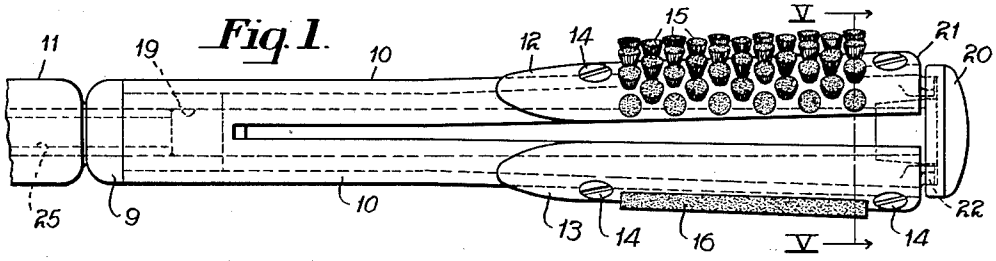
Oct. 30, 1934. W. F. ALBRIGHT 1,978,853

BRUSH

Filed Jan. 24, 1933

Fig. 1.



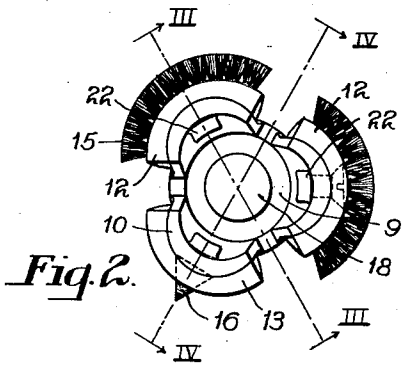


Fig. 2.

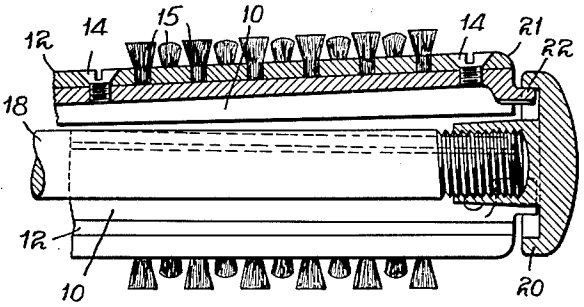


Fig. 3.

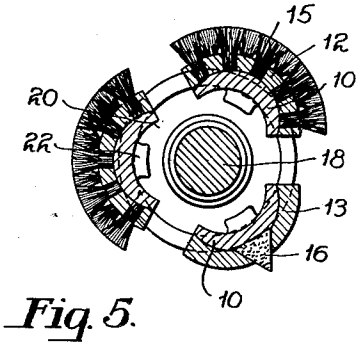


Fig. 5.

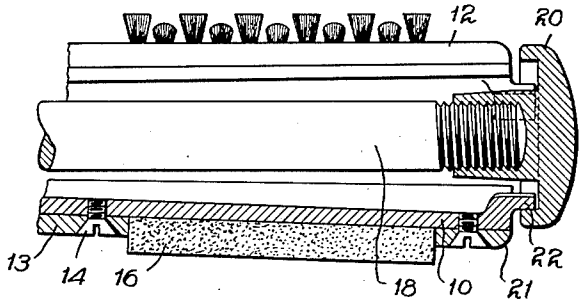


Fig. 4.

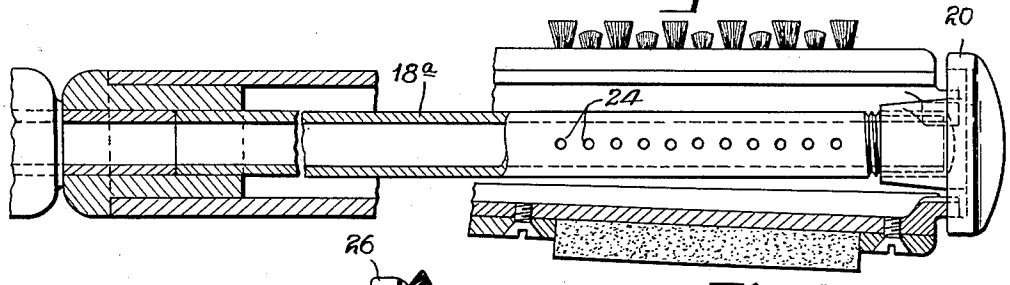


Fig. 6.

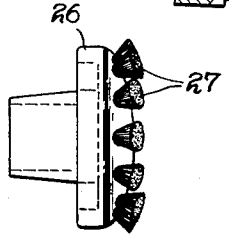


Fig. 7.

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UNITED STATES PATENT OFFICE

1,978,853

BRUSH

William Fredrick Albright, Pittsburgh, Pa.

Application January 24, 1933, Serial No. 653,274

2 Claims. (Cl. 15—104.09)

My invention relates to brushes, and more particularly to those of the type employed in the cleaning of tubes, such as boiler tubes, milk pipes, and other receptacles in dairy plants, etc.

My invention has for one of its objects the provision of a brush of such form that it can be more conveniently inserted into the tubes without danger of damaging the brush structure or the tubes.

Another object of my invention is to provide a brush structure, including an abrading element, of such form that grit and other foreign materials are flushed away from the surfaces being operated upon during a cleaning operation.

Still another object of my invention is to provide an improved arrangement of brush structure embodying the bristle elements and abrading elements.

Some of the forms which my invention may take are shown in the accompanying drawing, wherein Figure 1 is a longitudinal view of a brush structure; Fig. 2 is an end elevational view thereof with the nose portion of the structure removed; Fig. 3 is a view taken on the line III—III of Fig. 2; Fig. 4 is a view taken on the line IV—IV of Fig. 2; Fig. 5 is a view taken on the line V—V of Fig. 1; Fig. 6 shows a modification of the structure of Fig. 1, and Fig. 7 shows still another modification.

Referring first to Figs. 1 to 5, I show a brush holder or stock 9 that may be formed of a piece of tubular material split lengthwise to form segments 10, although the arms 10 may be formed in some other manner, and of spring-like material. The stock and other metal parts may be of steel or other suitable material, although for dairy use, they will preferably be of brass, copper, or other non-corrodible material. A handle or shaft 11 supports the stock 9, and it is by the member 11 that the brush is manipulated. The shaft will in some classes of work be rotated in a suitable manner while moving the brush through a tube or across other surfaces which are being cleaned.

The outer ends of the segments 10 are sprung apart, so that they will take a set which tends to hold them in flared relation to one another, they being yieldable in radial directions. A bristle-supporting plate 12 is secured to each of two of the segments, and a stone-supporting plate 13 is secured to the other segment 10. These plates are curved to conform somewhat to the curvature of the arms 10, and are detachably secured in place by screws 14, so that they can be readily replaced when the bristles and stones become worn. The bristles 15 may be of wire or fibrous material, and fastened to the plates 12 in any suitable manner, as for instance in the manner described in my application, Serial No. 625,275, filed July 28, 1932 (now Patent No. 1,897,381).

The stone 16 may be of emery or other abrading material, its base or inner portion being enlarged, and its narrowed portion extending through the plate 13. The stone, by reason of its enlarged inner side, is held in place by the plate 13.

The bristles, of course, function in a manner usual in connection with devices of this type, while the stone 16 serves to remove hard material, such as "scale", or material such as "milk stone" which is a hardened deposit of butter fat that is found in dairy plants, in hot milk pipes, generator tubes, heaters, etc. It will be understood that more than one stone may be placed in the plate 13, if desired.

A rod 18 is carried by the stock 9, it being supported therein by screw-threading it to the stock at 19 or in some other suitable manner. At its outer end, the rod carries a nose 20 which has screw-threaded connection therewith. The nose 20 serves as a guide, and prevents the end of a tube or the edge of a vessel being caught between the segments 10, thus avoiding damage to the brush structure, or to the apparatus, through careless handling of the brush. The outer ends of the plates 12 and 13 are bevelled or curved at 21 to further facilitate the guiding action of the rounded nose. The outer ends of the segments 10 are offset inwardly at 22 to extend beneath the annular flange that is formed in the nose 20, to limit outward movement of the segments. This is important, particularly when the brush is rotated at high speeds when not within a small tube, to prevent excessive radial displacement and distortion of the segments. The segments will, of course, be sprung inwardly somewhat when the brush is brought against surfaces being cleaned.

In Fig. 6, I show a member 18a which corresponds to the rod 18, except that it is of hollow or tubular form, instead of being solid. The member 18a is provided with a series of perforations 24 which preferably are disposed along lines opposite to the slits or spaces between the segments 10. Water or cleaning fluid will be supplied to the tubular member 18a, through a conduit 25 provided in the shaft 11, and communicating with the rear end of the tube 18a. Liquid which flows through these openings will not only assist in the cleaning operations, but will serve to flush away the particles of grit and

other foreign matter, and prevent the grit from immediately being rubbed against the walls of the tubes or vessels being cleaned.

In Fig. 7, I show a nose piece 26 which corresponds to the nose 20, but is provided with a series of bristles 27 that may be fastened therein in any suitable manner. These bristles can be brought into engagement with surfaces that ordinarily would not be engaged by the bristles 15, as for example, header plates through which tubes extend, bottoms of vessels, etc.

I claim as my invention:—

1. Brush structure comprising a stock, arms carried thereby extending in directions longitudinally of the stock, the arms being disposed and spaced circumferentially of the axis of the stock, cleaning elements carried by said arms, and a fluid conduit disposed centrally of said arms and having discharge orifices in its sides, the said orifices being directed radially and disposed along lines extending between the longitudinal edges of said arms.

2. Brush structure comprising a rotatable shaft having a passageway formed centrally thereof, a stock secured to one end of said shaft, arms mounted on the stock for yieldable movement radially thereof and disposed and spaced circumferentially of the axis of the stock, cleaning elements carried by said arms, and a fluid conduit disposed centrally of said arms and rigidly secured to said stock, the said conduit leading from said passageway and having discharge orifices in its sides and disposed along lines extending between the longitudinal edges of said arms.

WILLIAM FREDRICK ALBRIGHT.