Feb. 14, 1933. W. F. ALBRIGHT 1,897,381

BRUSH

Filed July 28, 1932

Fig. 1.

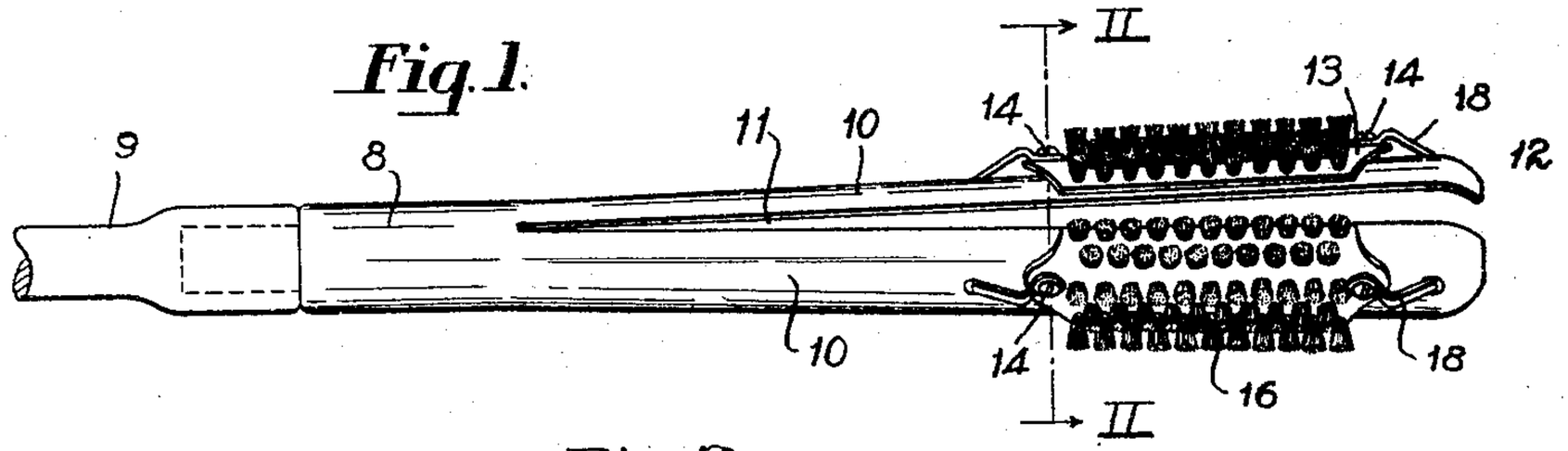


Fig 2.

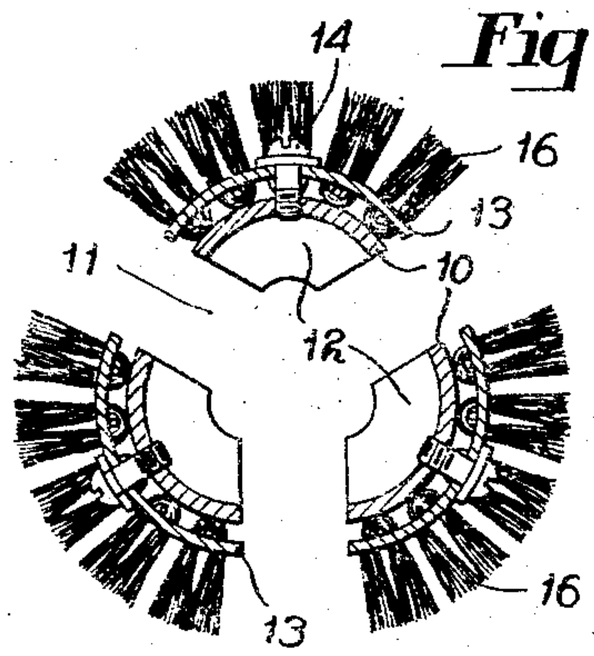


Fig. 3.

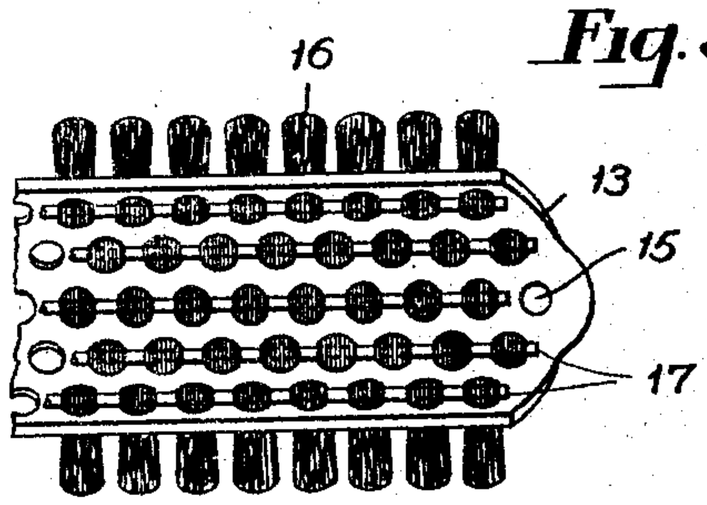
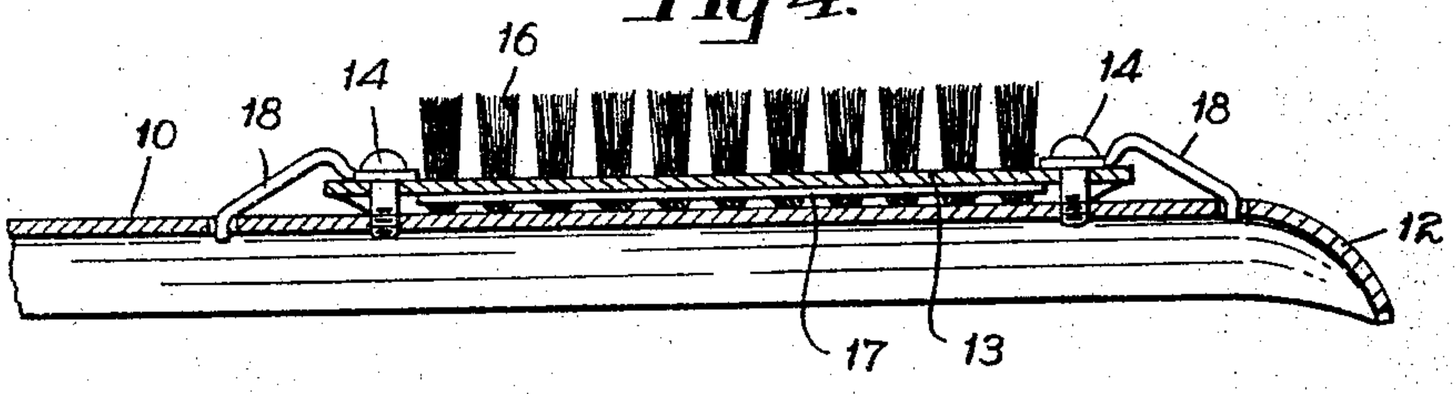


Fig 4.



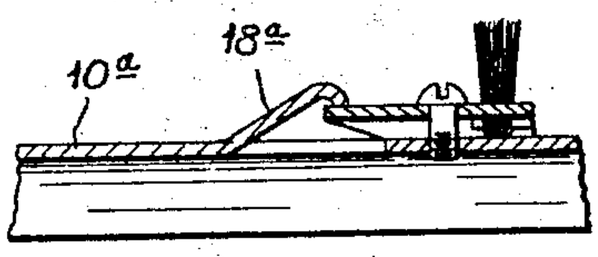


Fig. 6.

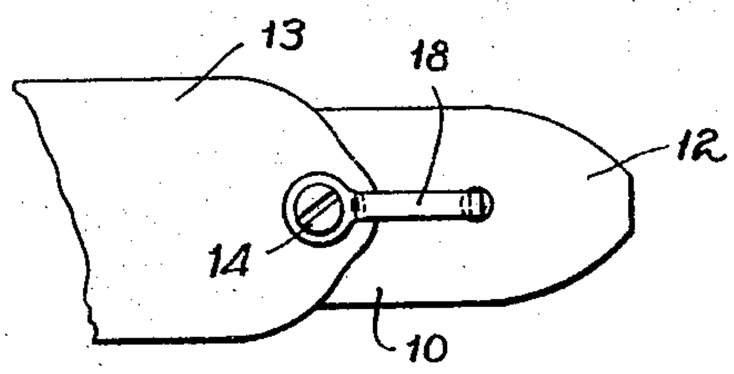


Fig. 5.

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UNITED STATES PATENT OFFICE

WILLIAM FREDRICK ALBRIGHT, OF PITTSBURGH, PENNSYLVANIA

BRUSH

Application filed July 28, 1932. Serial No. 625,275.

My invention relates to brushes, and more particularly to those of the type employed in the cleaning of tubes, such as boiler tubes, etc.

My invention has for one of its objects the provision of a brush of simple form which will readily accommodate itself by radial expansion and contraction to tubes of various diameters.

Another object of my invention is to provide a brush that has guiding surfaces so arranged that it will not become caught on obstructions, or the ends of tubes, when being inserted or passed through tubes in either direction.

Still another object of my invention is to provide a brush structure wherein bristle-carrying members can be readily applied to and removed from their holder.

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 enlarged view, taken on the line II—II of Fig. 1; Fig. 3 is an inverted plan view of one of the brush elements of Fig. 2, on an enlarged scale; Fig. 4 is a sectional view, on an enlarged scale, of a portion of the apparatus of Fig. 1; Fig. 5 is a fragmentary plan view thereof, and Fig. 6 is a longitudinal sectional view of another form of brush structure.

Referring first to Figs. 1 to 5, I show a brush stock or holder 8 that may be formed from a piece of tubular stock, and which may have threaded connection with a handle or other supporting member 9. The tube is divided for a portion of its length into three segments 10, by drilling or cutting slots 11 therein. The outer ends of the segments 10 are sprung apart, so that the metal will take a set which tends to hold them flared relative to one another, as shown in Figs. 1 and 2, and the extremities are curved inwardly to form guide nose portions 12 that serve as guiding surfaces to facilitate entry of the cleaner into a tube. The stock 8 is, of course, of spring metal so that the segments 10 will yield in radial directions.

The bristle-supporting plate 13 is detachably secured to each of the segments 10 by means of machine screws 14 that extend through holes 15 in the plate 13, and have threaded engagement with the segment. The plates 13 are curved to approximately the contour of the segments, and contain perforations through which bristles 16 of wire, hair, or fibrous material extend. Each group of bristles is looped or folded intermediate its ends, and wires or retaining rods 17 extend through the folds and lie against the inner walls of the plate 13, to retain the bristles in place.

The screws 14 are, of course, turned down with sufficient force to press the folded ends of the bristles against the outer surfaces of the segments 10, thereby holding the parts in snug-fitting relation.

A pair of guide clips 18 is provided for each brush plate 13, such clips having perforated ends lying beneath the heads of the screws 14, and having their other ends extending into holes in the segments, as shown more clearly in Figs. 4 and 5. The clips 18 serve as guides to supplement the guide surfaces 12, thereby preventing the plates 13 and the screw heads 14 from being caught against the ends of tubes being cleaned, or against projections within the tubes.

It will be seen that the bristles may be readily replaced, either by replacing a worn set of bristles with a plate containing new bristles, or some of the bristles on a single plate can be replaced by simply sliding out one of the rods 17 and then inserting another tuft of bristles.

In Fig. 6, I show a structure similar to that in Figs. 1 to 5, but wherein retaining clips 18*a* are struck up from the segments 10*a*. These clips 18*a* serve as guide clips in sub-

stantially the same manner as do the clips 18.

The stock 8 may be made of spring steel, and the bristles 16 of wire, in those cases where the tool is to be employed as a boiler tube brush. For dairy use, and in other cases, where steel or iron is unsuitable, brass or copper or other material may be used instead of steel, and bristles of fiber or hair may be employed instead of metallic bristles.

It will be understood that instead of making the stock 8 by slitting a tubular bar, the stock may be formed from a solid cylindrical bar that is slitted to divide the same into segments.

I claim as my invention:—

1. Brush structure comprising a stock of generally tubular form split at one end to form integrally-connected segments, and bristle-carrying plates detachably connected to said segments.

2. Brush structure comprising a stock of generally tubular form split at one end to form integrally-connected segments, and bristle-carrying plates detachably connected to said segments, the plates being curved coaxially of the said segments.

3. Brush structure comprising a stock of generally cylindrical form split at one end to form integrally-connected segments, the forward extremities of the segments being curved forwardly toward the axis of the stock, and cleaning elements secured to the segments at points rearwardly of said curved portions.

4. Brush structure comprising a stock of generally cylindrical form and of spring-like material, split at one end to form integrally connected segments, and a bristle-carrying plate detachably connected at its ends to each of said segments.

5. Brush structure comprising a stock of generally cylindrical form and of spring-like material, split at one end to form integrally connected segments, a bristle-carrying plate detachably connected at its ends to each of said segments, and guide clips extending into the said segments and overlying the adjacent ends of said plates.

6. Brush structure comprising a stock of generally-cylindrical form and of spring-like material, split at one end to form integrally-connected segments, a bristle-carrying plate detachably connected at its ends to each of said segments, and guide clips extending into the said segments and overlying the adjacent ends of said plate, the said guide clips being detachably held in position by the said connecting means.

7. Brush structure comprising a stock of generally-cylindrical form, but divided into segments at one end thereof, brush-carrying plates disposed against the outer sides of said segments, and attaching screws extending through said plates and into the stock.

8. Brush structure comprising a stock of generally-cylindrical form, but divided into segments at one end thereof, brush-carrying plates disposed against the outer sides of said segments, attaching screws extending through said plates and into the stock, and clips extending into the segments and overlying the ends of said plates, the clips being bowed outwardly adjacent to said screw heads.

In testimony whereof I, the said WILLIAM FREDRICK ALBRIGHT have hereunto set my hand.

WILLIAM FREDRICK ALBRIGHT.