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BOTTLE BRUSH AND MOUNTING THEREFOR

Filed May 31, 1930

FIGURE 1

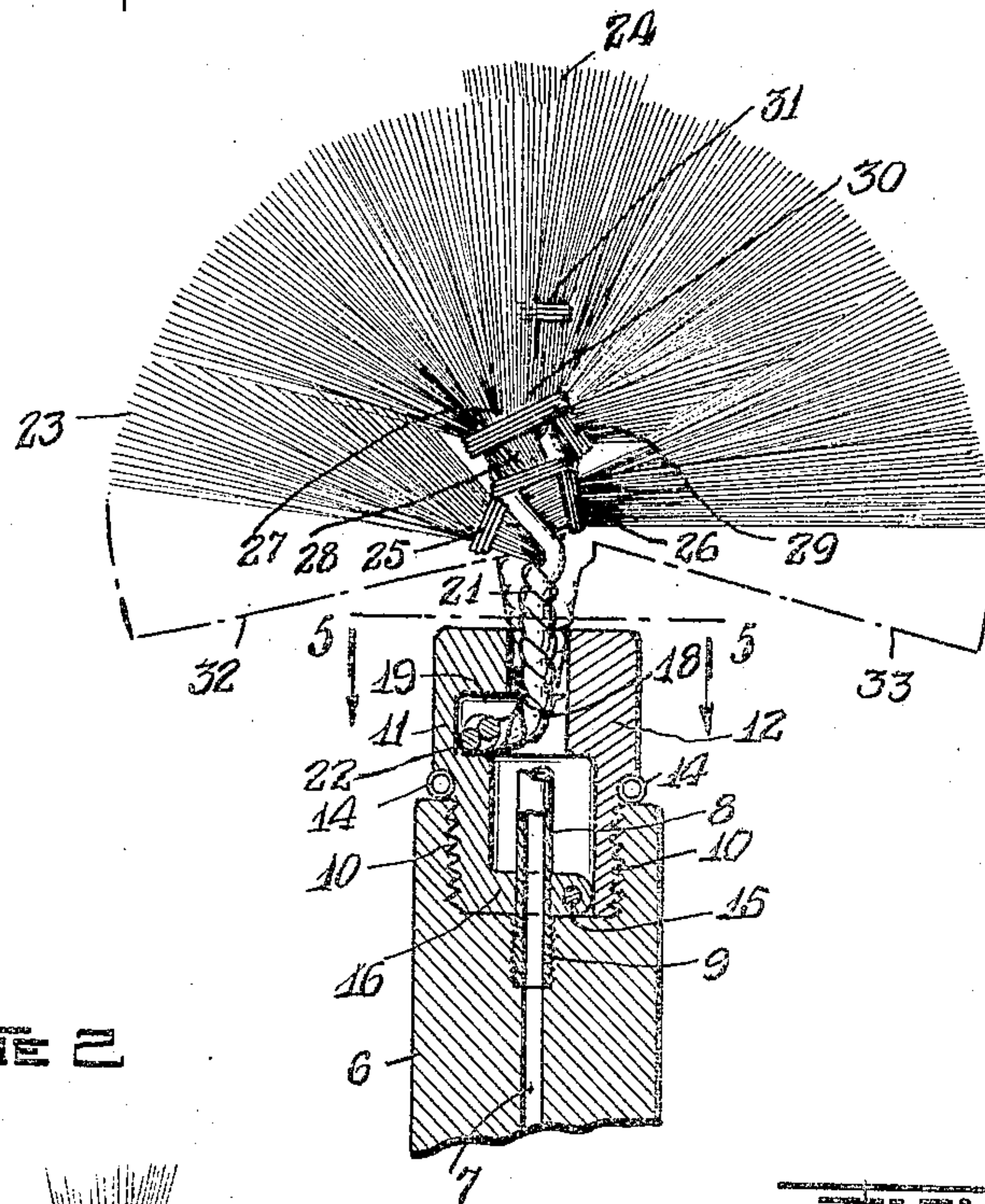


FIGURE 2

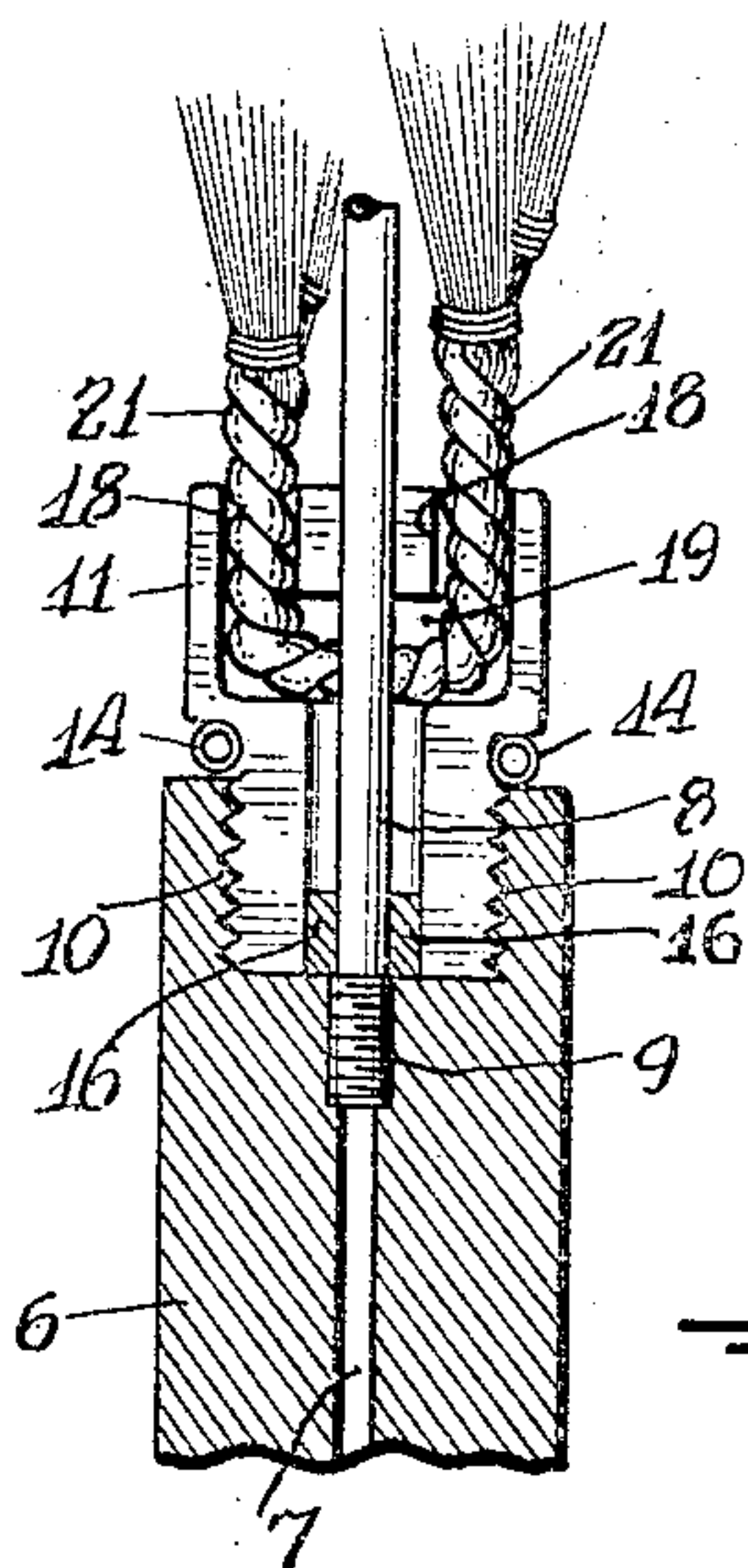


FIGURE 3

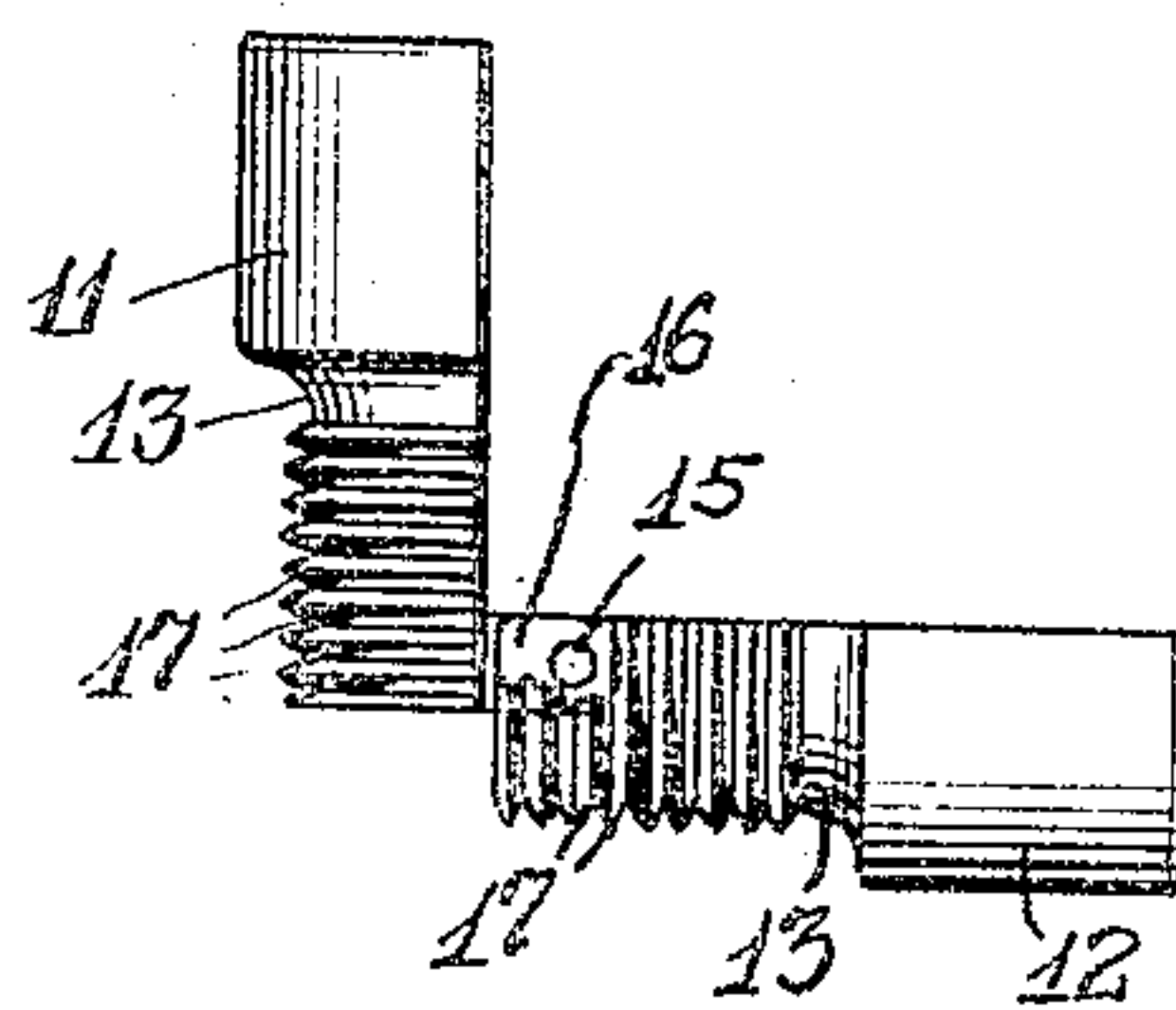


FIGURE 4

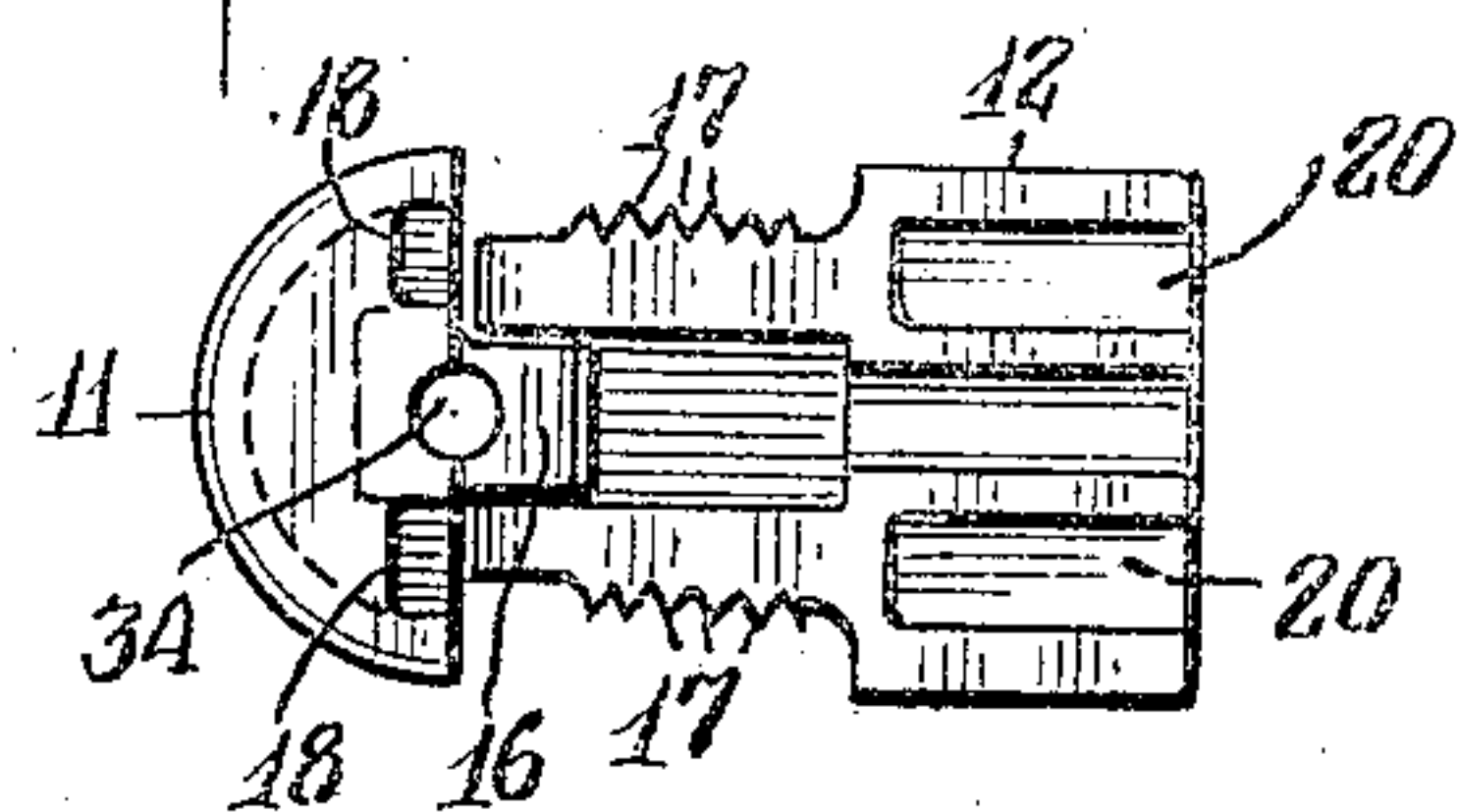
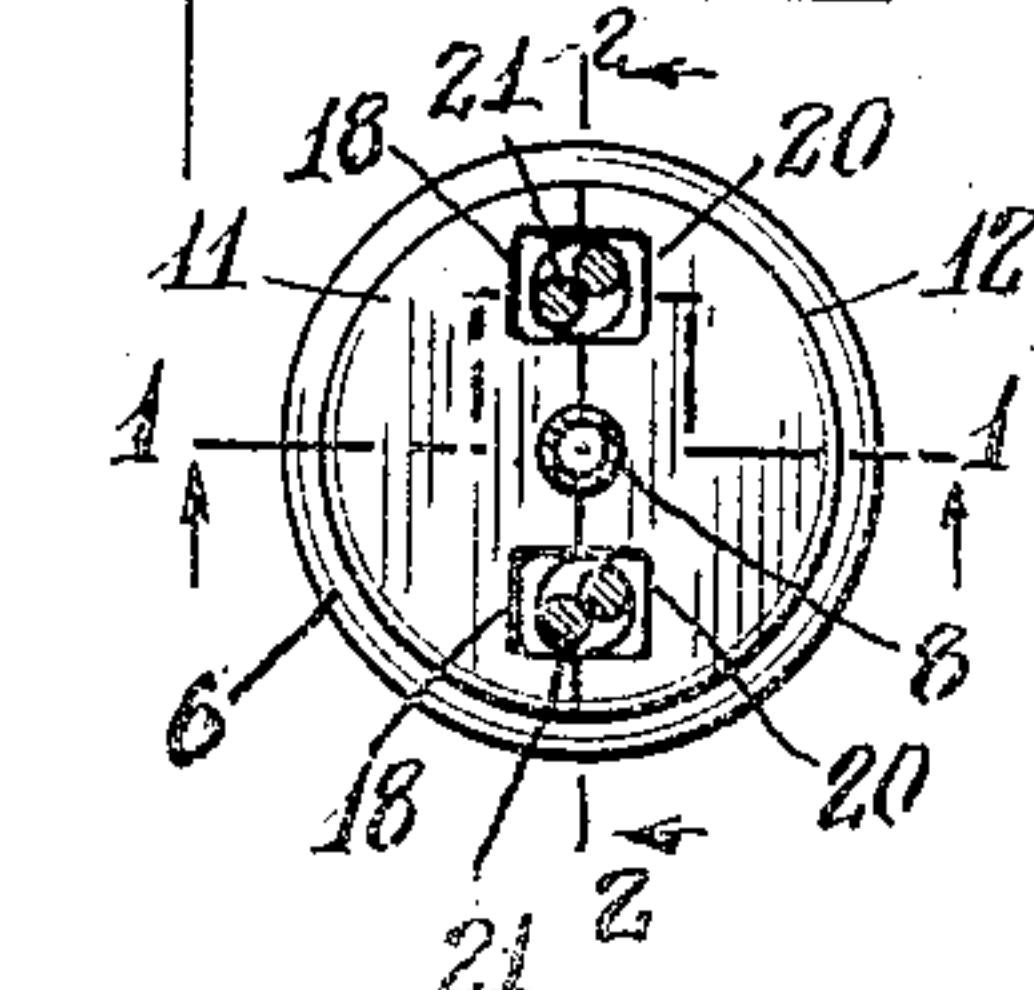


FIGURE 5



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BOTTLE BRUSH AND MOUNTING THEREFOR

Application filed May 31, 1930. Serial No. 457,896.

My invention relates to bottle brushes and mountings therefor, and is of the general type exemplified in my two Patents No. 1,714,935, dated May 28th, 1929, and No. 1,719,034, dated July 2, 1929.

More particularly stated, my invention relates to a bottle brush and its mountings, as adapted for washing bottles rapidly and in large quantities; and while it is well adapted for use upon bottles of many sizes and of different shapes, it is of special value in connection with the washing of milk bottles.

The purpose of my invention is to so form and arrange the bottle brush and its mounting as to enable the brush to be replaced relatively to the mounting, and to make suitable provision for enabling the brush when mounted in position and while in action to execute a limited swinging or rocking movement back and forth, in a predetermined plane relatively to the mounting, so that the bristles or other scrubbing members of the brush are caused to reach outwardly and to make good scrubbing contact with the inner surface of the bottle.

My invention also contemplates improvements in the construction of the brush and in the form of its mounting, for improving the general efficiency of the washing mechanism.

Reference is made to the accompanying drawing forming a part of this specification and in which like reference characters indicate like parts throughout all of the figures.

Figure 1 is a vertical section showing my improved brush and its mounting, and is taken upon the lines 1—1 of Fig. 5, looking in the direction indicated by the arrows.

Figure 2 is another section through the device, and is taken upon the line 2—2 of Fig. 5, looking in the direction indicated by the arrows.

Figure 3 is a side elevation of the mounting, showing the two shanks as swung apart.

Figure 4 is a plan view of the mounting, showing the two shanks thereof as swung apart.

Figure 5 is a section on the line 5—5 of

Figure 1, looking in the direction indicated by the arrows.

A spindle is shown at 6 and is provided with a water passage 7 extending through it in the direction of its axis.

The spindle carries a nozzle 8, the bore of which coincides in size and position with the water passage.

The nozzle 8 is provided with a threaded portion 9 which is sunk into the spindle 6 as indicated more particularly in Figure 2.

The spindle 6 is provided at its upper end with an opening 10, threaded internally, as indicated in Figures 1 and 2.

A pair of shanks 11, 12, each having a substantially semi-cylindrical form, are fitted neatly together face to face as indicated in Figure 5, and together constitute the brush holder.

This brush holder is provided with an annular groove 13, and detachably fitting into this groove is a resilient ring 14 of spring wire, for normally pressing the shanks 11, 12 together.

The shank 12 carries a pivot pin 15, which extends through a tongue 16, carried by and integral with the shank 11. By this arrangement the two shanks are pivotally connected together, as may be understood from Figures 3 and 4.

The shanks 11 and 12 are each provided with threads 17, 17. By means of these threads the brush holder may be screwed into the top of the spindle 6, and is thus detachable relatively thereto.

The shank 11 is provided with a groove 18 of substantially U-shape, as may be understood from Figure 2. This groove is provided with a portion 19 extending laterally inward from the face of the shank, as indicated from Figure 1, and serves as an undercut pocket.

The shank 12 is provided with a pair of straight grooves 20, 20, sunken slightly into its face and so positioned that when the two shanks 11, 12, are closed face to face, as shown in Figure 5, the grooves 20, 20, are brought into registry with the upper portion of the substantially U-shape groove 18.

My improved brush is provided with a

brush stem 21, having substantially a U-shape, and made preferably of coarse wire, twisted as shown.

The brush stem 21 has its connecting portion 22, bent laterally to the general plane of the brush stem, and thus having the form of a toe portion extending out into the undercut pocket 19. The purpose of the toe portion is to serve as an anchorage, to prevent the withdrawal of the brush stem from the grooves into which it extends; this anchorage, however, being so formed and arranged as not to interfere with the passage of water through the water nozzle 8. That is to say, the toe portion 22 extends around one side of the water nozzle, namely, the side to the left according to Figure 1.

Supported upon the brush stem 21 is a bristle head 23. In the particular instance here illustrated, this bristle head is divided, and has the proximate form of a pair of fans, placed side by side in substantially parallel relation spaced apart face to face.

The bristle head is further provided with a portion 24 extending a little further than other portions.

The bristles are held upon the stem 21 by means of fastenings 25, 26, 27, 28, 29, 30 and 31, made in this instance of windings of small wire. This construction of the bristle portion of the brush is merely illustrative, for the reason that the bristles may be arranged and held in position in many different ways.

Generally speaking, the bristle portion of the brush, in the form here illustrated, may be considered as substantially fan shaped, and provided with a portion 24 serving as a protruding tuft.

The various parts are so formed, proportioned and arranged that, with the brush mounted in position as indicated on Figure 1, the brush has a limited play relatively to the mounting. That is, the brush may swing slightly in a clockwise direction, and back again in a counter clockwise direction according to Figure 1, the swinging movement being substantially about the toe portion 22 of the stem as a pivot. Where the bristle head is of flat fan shape it preferably stands transverse to the pivotal axis defined by the toe portion 22, and hence edgewise to the direction of the swinging movement, as indicated.

The tongue 16, which serves to some extent as a connecting link between the two shanks of the holder, is provided with an opening 34 through which the nozzle 8 normally extends. This enables the water to pass through the passage 7 and the nozzle 8, at all times while the device is in action, without being obstructed by the stem 21 or by any other part of the brush.

In order to remove the brush, the holder is unscrewed from the spindle 6, and the two

shanks 11, 12 are swung apart, the brush being thus dropped out of position.

In order to replace the brush, the stem 21 is brought into the grooves 18 and 20, so that the toe portion 22 extends laterally out into the undercut pocket 19, as above described.

With the brush in position as indicated in Figure 1, with the spindle turning within a bottle and a stream of water being supplied through the passage 7, the brush has a sufficient amount of play to execute the rocking movements above described and indicated by broken lines in Figure 1.

I have made the discovery that a brush, mounted loosely in a holder and revoluble therewith, when used to scrub the inner surface of a bottle such as a milk bottle, has a marked tendency to rock back and forth in a given plane. I have also found that by so mounting the brush in its holder as to permit a limited movement of the brush relatively to the holder, the brush will rock rapidly, and to the extent permitted it by its mounting.

I have also found that the rocking action is materially improved by making the brush of a fan shape substantially as indicated and by disposing the fan shaped brush to stand edgewise to the direction of the rocking movement.

I have also found, upon actual trial, that by using my improved brush as above described, and by so forming the groove as to allow the brush to execute its aforesaid rocking movements, the bristles of the brush, by making good engagement with the inner surface of the bottle, do much more effective work than would otherwise be the case.

The protruding portion 24 of the brush is thus brought out into the rounded corners of the bottle, and caused to thoroughly clean this portion of its inner surface.

As may be understood from Figure 2 and from the foregoing description, the brush is in reality two distinct brushes, carried upon a single wire stem. These two brushes and the wire stem are so formed and arranged that as a unit they will easily enter the neck of the bottle, although the device carries a larger quantity of bristle than other brushes commonly used for the same purpose.

I find that in my device there is no appreciable wear between the bristles and the mouth of the bottle, for the reason that the bristles are carried by relatively small wires and are free to yield and do in fact yield quite readily.

In my device when the bristle head is worn out or damaged from any cause the holder 11-12 is simply removed from the spindle 6, open, and the bristle head with its stem 21 thrown away and replaced by a new one.

I do not limit myself to the precise con-

struction shown as variations may be made therein without departing from my invention, the scope of which is commensurate with my claims.

5 Having thus described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. As an article of manufacture a bottle brush having a pair of substantially fan shaped bristle members disposed face to face and spaced apart, and a wire stem of substantially U-shape supporting both of said fan shaped bristle members, said stem having a toe portion extending laterally from the general plane of said wire stem.

2. A brush holder made in halves fitted together, each half having grooves so located that the grooves of one half merge into the grooves of the other half, one of said halves being further provided with an undercut pocket, and a brush provided with a stem for extending through the grooves of both halves, said stem having a toe portion extending into said undercut pocket.

3. The combination, with a brush holder and a revoluble spindle carrying said brush holder and provided with means for discharging a stream of water, of a bottle brush having a bristle portion substantially in the form of a flat fan radiating from one or more stems which are disposed substantially in line with said spindle and said holder, said bottle brush stems being journaled upon said brush holder and free to rock back and forth in a plane coinciding substantially with the plane of the fan.

4. The combination, with a revoluble spindle carrying a nozzle and provided with means for discharging a stream of water through said nozzle, of a brush holder detachably mounted upon said spindle and made in halves, each half being provided with grooves, one of said halves being further provided with an undercut pocket merging into a groove of that half, and a bottle brush provided with a stem extending through the grooves of the two halves, said stem having a toe portion normally extending into said undercut pocket.

5. The combination with a brush holder and a revoluble spindle carrying said brush holder and provided with means for discharging a stream of water, of a brush having a pair of bristle portions substantially in the form of a flat fan and supported by a U-shaped stem having its branches located on opposite sides of the path of said stream of water and the base of said stem being positioned to one side of the plane of said stream of water, said stem being loosely held and journaled in an opening in said brush holder in a way to permit said stem with said brush thereon freely to rock back and forth relatively to said stream of water when said spindle is revolved.

6. The combination with a revoluble spindle carrying a nozzle and provided with means for discharging a stream of water through said nozzle, of a brush holder detachably mounted upon said spindle and made in halves, pivotally connected together, and a brush held on a stem carried by said brush holder and extending loosely from an opening between said halves, said brush having a bristle portion in the general form of a flat fan, and said stem being so loosely held and journaled in the opening between the halves of said brush holder as to enable said stem with said flat fan thereon to rock edge-wise back and forth when said spindle is revolved.

7. As an article of manufacture a bottle brush having a pair of substantially fan shaped bristle members disposed face to face and spaced apart, and a U-shaped stem member to the two leg portions of which said bristle members are connected respectively, said U-shaped stem member being stiff and serving thereby and by its connection with the bristle members as the sole means to hold said bristle members in position face to face and spaced apart.

8. As an article of manufacture a bottle brush having a pair of separately formed bristle members arranged side by side to constitute a single bristle head, and a U-shaped stem member to the two leg portions of which said bristle members are connected respectively, said U-shaped stem member being stiff and serving thereby and by its connection with the bristle members as the sole means to hold said bristle members in substantially fixed relation to each other.

9. As an article of manufacture a bottle brush having a pair of separately formed bristle members arranged side by side to constitute a single bristle head, a U-shaped stem member to the two leg portions of which said bristle members are connected respectively, said U-shaped stem member being of a character to hold said bristle members in substantially fixed relation to each other, and said two leg portions being bent laterally so that the connecting portion of said U-shaped stem member is disposed in a plane at one side of the general plane of said leg portions.

10. A device of the class described comprising, a brush holder made up of a plurality of separate members at least one of which is formed with a recess adapted to receive a brush stem thereinto, a brush stem positioned between said members and held within said recess, means to hold said members together for retaining said brush stem, said brush stem being of U-shape and consisting of a single substantially rigid member having a pair of spaced leg portions and a connecting portion, the connecting portion being positioned within said recess and

pivotally held therein to rock upon an axis longitudinally of the connecting portion and the two leg portions projecting outwardly from between said members and having
5 bristles at their outer ends respectively, said recess being of a size relative to said two leg portions permitting rocking movement of said leg portions in unison with said connecting portion.

10 11. A bottle brush comprising a stem made of twisted wire and bent substantially into U-shape, said stem being sufficiently stiff and strong to hold itself permanently in said U-shape so that the two leg
15 portions of the U are spaced permanently in fixed relation to each other, two bristle members carried one by each of said leg portions and held thereby in fixed relation to each other, and a brush holder having therein an
20 opening into which the stem is loosely held and journaled so that the stem with said two bristle members thereon is rockable.

Signed at Brooklyn, in the county of Kings and State of New York, this 28th day
25 of May 1930.

HENRY GEORGE VOLCKENING.

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