March 12, 1968 R. F. DI ILIO 3,372,418

PIVOTING BRUSH

Filed July 18, 1967

Fig. 1

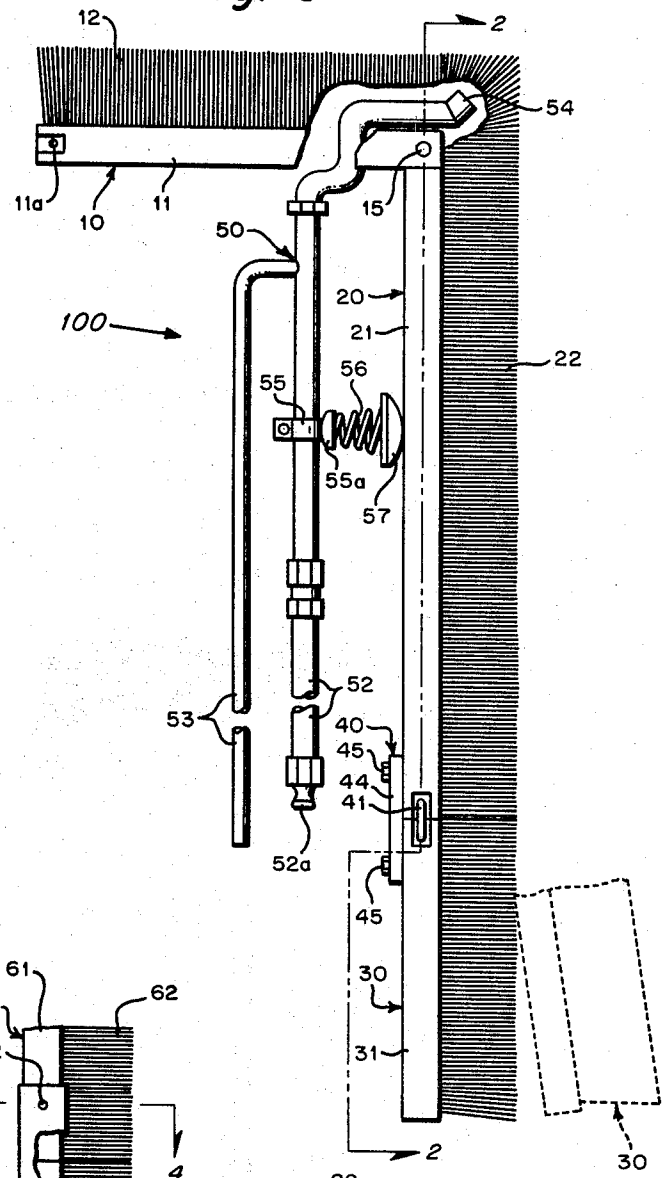
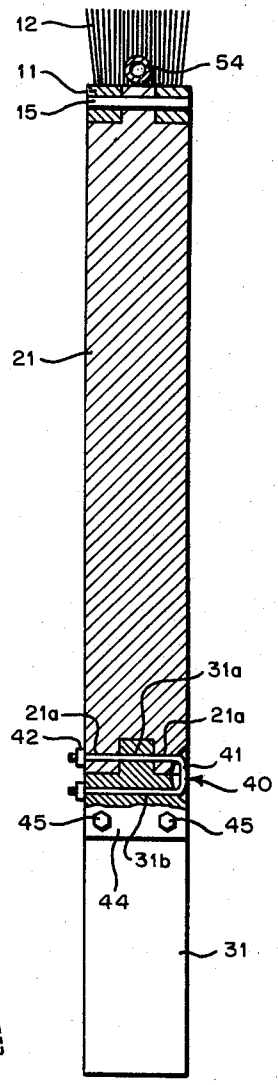


Fig. 2



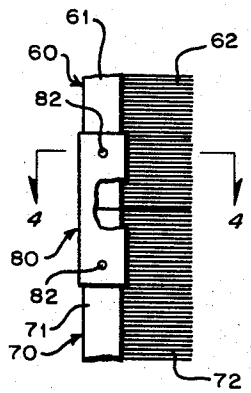


Fig. 3

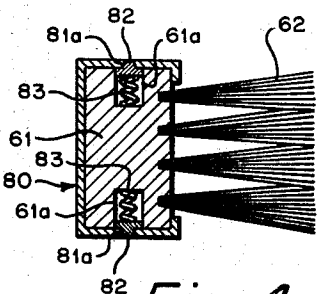


Fig. 4

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PIVOTING BRUSH

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ABSTRACT OF THE DISCLOSURE

A brush having a pivoted spring-loaded arm and a water supply. The brush is provided with specific mounting and water supply connecting means. The pivoted structure permits the brush to accommodate the inside of containers of different tapers and it is intended to be a part of a can cleaning apparatus.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to the brush art, and in particular, it relates to the application of cleaning the interiors of containers. More particularly, it relates to a brush having a water or other cleansing liquid supply source and adapted to be removably mounted on a can cleaning apparatus, where it automatically conforms to the inside contour of containers, usually refuse cans.

Description of the prior art

The Di Ilio Patent 3,264,675, discloses a can cleaning apparatus in which a removable brush having a water supply is provided, but the brush in that patent is not automatically adjustable to conform to the interior of cans. The present invention contemplates a brush which would replace the brush as shown in FIGURE 4 of Patent 3,264,675. Other known brushes include those shown in the following patents: Aho, 2,602,177; Myszkowski, 2,420,260; and Mathews, 2,922,174. These patents are typical of the state of art of adjustable brushes. None of them include the concepts of quick mounting and automatic orientation, quick water supply coupling and decoupling, automatic adjustability to fit different tapers, and means to provide selective brush lengths, all of which are on the other hand found in the present invention.

Summary of the invention

It is an object of this invention to provide a pivoted brush.

It is another object of this invention to provide a brush having two sections pivoted together at an angle, at least one of the sections being provided with a selectively attachable brush extension and means to attach said extension, at least one of said arms being resiliently biased outwardly, and water supply means and attaching and orienting means being provided on said brush.

Other aims and objects of the invention are made apparent in the following specification and claims in which like reference numerals refer to like parts.

Brief description of the drawing

FIGURE 1 is an elevation view, partly fragmented showing one form of the invention;

FIGURE 2 is a cross-sectional view taken along line 2—2 of FIGURE 1;

FIGURE 3 is a fragmented plan view showing another form of brush extension attaching means; and

FIGURE 4 is a cross-sectional view taken along line 4—4 of FIGURE 3.

Description of the preferred embodiments

The pivoting brush of the invention is generally designated by numeral **100**. A first brush arm **10** is provided. This brush arm includes a first brush back **11** and a first brush bristle 12. A second brush arm generally designated **20** is provided, and this includes a second brush back **21** and a second brush bristle **22**.

The first and second brush arms are pivoted together at pivot **15**.

A mounting means for the brush arms generally comprises a pipe **52** and a lock extension **53** together with associated parts. The pipe **52**, as best shown in FIGURE 1, is affixed to the first brush arm **10** and passes through the first brush back **11** into the interior of the bristle. The pipe **52** terminates in a nozzle **54**. As shown, this nozzle preferably terminates as near as may be to the pivot **15**. That is, the nozzle is located at or close to the point of junction of the first and second brush arms. The exact shape of pipe **52** as it passes into the first brush arm **10** is not in itself critical, but it is seen that the shape as shown permits the brush arm to be securely fastened to the pipe so that the entire set of brush assemblies is securely mounted. The mounting means is generally designated **50**.

The lock extension **53** is a rod or pipe that runs substantially parallel to the pipe **52** and is affixed to it. This lock extension has a keying or orientation function as it is explained below. The pipe **52** terminates in a quick disconnect fitting **52***a*. This fitting is of a standard and well-known nature in the pipe and hose art. Many types of such fittings are known and the exact nature of the fitting is not essential to this invention. Preferably it is of the type of fitting that makes a coupling when pressed against a matching or adaptive fitting, which can be released by pulling on the collar and then separating the pipe **52** from the pipe to which it is to be attached.

The purpose of the lock extension **53** can now be understood in connection with the quick disconnect for pipe **52**. A can cleaning apparatus or some other base which has a water supply pipe which connects to pipe **52** also has provided in its structure a hole into which lock extension **53** drops. It is apparent that when the quick disconnect fitting **52***a* is connected and lock extension **53** drops into its matching hole, the brush **100** is properly oriented. A mount of this type, insofar as the lock extension and quick disconnect pipe are concerned, is shown in the Di Ilio Patent 3,264,675, in its mounted environment.

The length of pipe **52** may be selectively altered as required and for this purpose, preferably the pipe **52** is broken with a quick disconnect union. This fitting is shown just above the fragmented portion of pipe **52** in FIGURE 1. Thus, when there is an extension brush added to the second brush arm **20**, as described below, the pipe **52** is extended to its full length, and when the extension brush is not used, the pipe **52** may be shortened by removing the terminal section.

A spring **56** is provided to bias the second brush arm **20** outwardly away from the mount **50**. The biasing effect of spring **56** is to make the angle form between the brush backs **11** and **21** more obtuse.

Spring **56** is mounted in a spring mount **55***a* which in turn is fastened to pipe **52** by clamp **55**. At the other end of the spring, it is provided with an arm bumper **57** against which the brush back **21** bears. In FIGURE 1,

the brushes are shown with a spring in what is normally its most compressed position in use. The relationship between the first and second brush arms is shown as approximately a right-angled one. This contour would be the one automatically obtained in cleaning the interior of a can whose bottom and walls were at right angles. The spring **56** tends to bias the second brush arm **20** outwardly to the position shown in the fragmented phantom outline designated with numeral **30** and a phantom line pointer.

For cans having varying sizes, the effective length of either or both of the brush arms may be changed. This is accomplished by the selective addition of brush arm extensions. In FIGURE 1, the second brush arm **20** is shown provided with a brush arm extension **30**. This extension has a back **31** that is provided with bristles like those of the basic brushes. The means by which the brush arm extension **30** is provided is best seen in joint consideration of FIGURES 1 and 2. The second brush back is provided with a recess **21***a*. Into this recess fits a matching tongue or extension on brush extension back **31**. A pair of holes are provided transversely across both back **21** and back **31**, passing on each side of the dividing line between the two backs, one of the holes passing through the tongue on back **31**. A U-pin **41** is inserted through these holes. The base portion of the U remains of course on one side, and as best shown in FIGURE 2, a hollowed section is provided on the side of the backs so that the base portion of the U-pin may be set into this hollow and not protrude beyond the borders of the backs.

A first pin arm **31***a* of the U-pin **41** extends through the tongue and recess, and a second pin arm **31***b* extends through the back **31**. These arms **31***a* and **31***b* form the legs of the U-pin **41**. Each of these arms is threaded at its extreme end and U-pin nuts **42** are provided to hold the U-pin in position.

A keeper plate **44** is provided over the junction between the second brush arm and the extension arm and is held in place with keeper plate bolts **45**.

The brush arm extension connecting means is generally designated **40**.

At the upper lefthand corner of FIGURE 1 is shown a U-pin hole **11***a* at the outer end of the first brush arm **10**. This is of course part of the connecting means that would be used to fasten a brush extension on the first brush arm. For the purposes of illustration, only brush arm extension **30** is shown, it being apparent that either the first brush arm, the second brush arm, or both could have extensions.

An alternate form of the brush arm extension connecting means is illustrated in FIGURES 3 and 4. A brush arm **60** is provided, which includes a brush arm back **61** and a brush arm bristle **62**. To this is attached a brush arm extension **70**, including a brush arm extension back **71** and brush arm extension bristle **72**. The brush extension arm **70** is to be attached to brush arm **60** for the same purposes and in the same environment as was described in connection with the extensions in FIGURES 1 and 2.

The brush arm back **61** is provided at the sides thereof near the extreme end with a pair of spring loaded lugs **82**. Each lug **82** is backed with a spring **83**. As best shown in FIGURE 4, each spring **83** is provided in an aperture or recess in a side of the back **61**, and the spring biases the lug **82** outwardly so that the lug **82** extends beyond the limit of the back **61**. Any convenient retaining or flange means prevents the spring **83** from expelling the lug **82** completely. It is apparent that the lug **82** may be depressed into the recess. As shown in FIGURE 4, one of these spring loaded lugs is provided on each side of the back **61** near its end.

The same structure is provided on the end of the brush arm extension **70**, at the end thereof where it is to be coupled to the brush arm **60**. A brush arm connecter keeper **80** is provided. The keeper **80** is a substantially U-shaped metal member which fits around the brush arm backs **61** and **71** across their point of juncture. The side portions of this keeper are provided with two pairs of holes **81***a*, which register with the spring loaded lugs **82**.

It is apparent that the brush arm **60** and the brush arm extension **70** may be joined by sliding the keeper **80** along one of the backs until all four holes **81***a* are registered with their registered matching spring loaded lugs **82**. Alternatively, the keeper **80** may be made with enough resilience so that instead of having to be slid along the back, the legs of the keeper in which the holes **81***a* are located may be spread wide enough apart so that keeper may be simply clipped or slipped over the junction line of the brush arm and brush arm extension directly into position.

It is apparent that the length of one or both of the brush arms may be thus set or chosen to fit the general dimensions of the can to be cleaned. It is also apparent that the spring **56** will press the brush bristles **22** firmly against the side of the can to be cleaned and also that it will permit the second brush arm and its extensions to pivot to maintain firm contact with the side of the can regardless of its degree of taper or lack of taper. Referring to FIGURE 1, the normal useage is to place an inverted can over the assembly as shown. Gravity thus brings the bottom of the can into contact with bristles **12**, and the spring tension as described brings the bristles **22** into contact with the side of the can. Water, preferably mixed with a detergent, or other cleaning liquid is sprayed or propelled through the nozzle **54**, and the can is preferably rotated so that the brushes clean the inside thereof throughly.

The scope of this invention is to be determined by the appended claims and is not to be limited to the foregoing description and drawings which are illustrative.

I claim:

1. A pivoted brush for cleaning the inside of containers comprising,

(a) a first brush arm,

(b) a second brush arm, pivoted at one end thereof to one end of said first brush arm,

(c) a mounting means for said first and second brush arms, said mounting means including a pipe, said pipe being affixed to said first brush arm, and terminating in a nozzle adjacent to said brush arms,

(d) spring means mounted between said mounting means and said second brush arm, said spring means being biased to force said second brush arm away from said mounting means,

(e) at least one of said brush arms having at the end thereof most remote from said pivot, part of a brush arm extension connecting means.

2. A pivoted brush as set forth in claim **1** wherein said pipe in said mounting means is provided with a quick disconnect coupling at the end thereof most remote from said nozzle and a lock extension is provided on said mounting means, said lock extension being affixed to said pipe and extending parallel thereto.

3. A pivoted brush as set forth in claim **1** wherein at least one of said brush arms is provided with a brush arm extension, said brush arm extension being held to an end of said brush arm by brush arm extension connecting means.

4. A pivoted brush as set forth in claim **3** wherein said brush arm extension connecting means includes a U-pin comprising legs being threaded at one end and being connected with a base portion at the other end, a hole through the brush arm extension and a hole through the brush arm, each of the holes being positioned near the respective joined ends of the brushes, and registering with the legs of said U-pin, said legs passing through said holes, and being secured therein by U-pin nuts on said threaded ends, and a keeper plate over said joined ends, said keeper plate being secured to said brush arm and brush arm extension by keeper plate bolts.

5. A pivoted brush as set forth in claim **4** wherein one

of said brush arm and said brush arm extension has a tongue, and the other of said brush arm and brush arm extension has a recess receiving said tongue, and one of said holes through which one of said U-pin legs is provided, passes through said tongue.

6. A pivoted brush as set forth in claim 3 wherein said connecting means comprises a pair of spring loaded lugs on each of said brush arm and brush arm extension means, each said pair being provided near the joined end of said brush arm and said brush arm extension respectively, each said lug being biased outwardly by a spring to an extent that each of said lugs protrudes beyond the side of said brush arm and brush arm extension, and a generally U-shaped keeper plate, said keeper plate fitting over part of both said brush arm and brush arm extension across the joined ends thereof, said keeper plate being

provided with two pairs of holes, registering with said spring loaded lugs and receiving said lugs.

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