July 18, 1933. G. W. BUNGAY 1,918,686

VACUUM CUP

Filed June 3, 1932

Fig. 1.

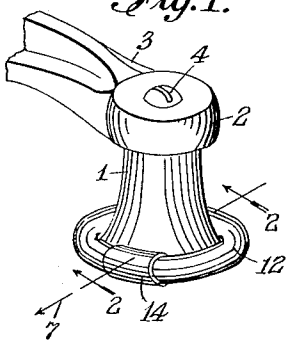


Fig. 2.

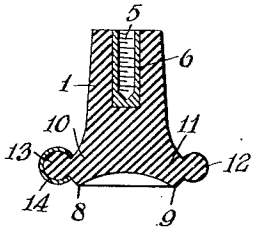
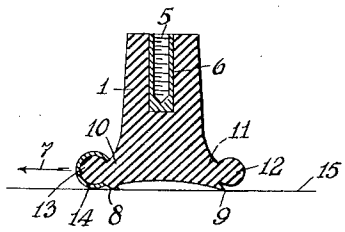


Fig. 3.



George W. Bungay INVENTOR

BY

Wm. S. Cuteland ATTORNEY

Patented July 18, 1933 1,918,686

UNITED STATES PATENT OFFICE

GEORGE W. BUNGAY, OF PLAINFIELD, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HOUSEHOLD FIELD CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

VACUUM CUP

Application filed June 3, 1932. Serial No. 615,261.

This invention relates to a vacuum cup, and more particularly to a vacuum cup for use on a can opener.

This invention is an improvement on the invention disclosed in my Patent No. 1,863,531, granted on June 14, 1932.

One object of this invention is to provide an improved vacuum cup adapted to slide on a surface without losing its suction grip on the surface.

The above and other objects will appear from the following description, appended claims and accompanying drawing forming a part of this specification and in which:

Figure 1 is a fragmental, perspective view illustrating the end of the vacuum cup support or arm of the can opener disclosed in my Patent No. 1,863,531 with the improved vacuum cup attached thereto.

Figure 2 is a central vertical section of the vacuum cup on line 2—2 of Figure 1 prior to the vacuum cup being applied to the end surface of a can.

Figure 3 is a sectional view similar to Figure 2 illustrating the vacuum cup applied to a surface, such as the end of a can, and sliding thereon.

Referring to the drawing wherein one embodiment of the invention is illustrated and wherein like reference numerals designate like parts, a vacuum or suction cup 1 is secured within a cap-shaped end 2 of a support or arm 3 by means of a screw 4, which engages in a screw-threaded hole 5 in a metal insert 6 of the vacuum cup.

The vacuum cup 1 is preferably made of rubber or other suitable material. It is customary to wet the suction-producing face of a vacuum cup with water or the like prior to applying it to a surface, and when so treated, the vacuum cup will readily slide along a surface, such as the surface of the end of a can that is being opened by a can opener, such as disclosed in my Patent No. 1,863,531, and the vacuum cup will usually slide over raised letters or corrugations in the can end without losing its vacuum grip. At times, however, there is a tendency for the vacuum cup to lose its suction grip under these conditions.

When a vacuum cup of rubber slides along a surface 15 (Figure 3), such as the end of a can, in the direction indicated by an arrow 7 (Figures 1 and 3), there is a tendency for the forward portion 8 of the annular engaging face or lip 9 to strike against raised letters encountered and cause the forward portion 10 of the annular rim 11 to curl under and cause the vacuum lip to lose its suction grip on the can end. To overcome the tendency of the vacuum lip to cause the rim of the vacuum cup to curl under and result in loss of the suction grip on the can end, I provide an annular bead 12 surrounding the outside of the vacuum lip 9 and give the forward portion 13 of the bead 12 a suitable low-friction quality so that it will slide readily upon the can end without curling under and will act as a shoe which rides on the surface 15 and prevents the portion 10 of the rim 11 from becoming deformed and curling under, even when the vacuum cup is dry. Since the rim 11 and the bead 12 are prevented from being deformed, the lip 9 is held in place on the can end and is prevented from curling under or being elevated sufficiently to break the suction. The soft material of the lip 9 consequently rides over the raised letters or corrugations without deformation other than that required to pass the raised portions of the can end.

The particular way I have illustrated for giving this low-friction quality to the forward portion 13 of the bead 12 consists in applying a clip 14 which may be of any suitable material having a sufficiently low coefficient of friction when sliding on a surface on which it is to be used, such as a can end, to prevent deformation of the bead 12. This clip 14 may, for example, be made of aluminum or alloy if desired, or of other material having a coefficient of friction less than that of the vacuum cup itself. It will also be obvious that the clip 14 may be made of any desired diameter and length, and any desired number of clips may be attached on the bead 12. The clip shown in the drawing is attached by bending it around into clamping position on the bead, but it will be appreciated that the clip may be attached in any other suitable

way. Also, a low-friction surface of metal or other material on the lower side of the bead 12 may be provided in any suitable way without necessarily having this surface as part of what may be called a clip.

Since it is obvious that various changes and modifications may be made in the above description without departing from the nature and spirit thereof, this invention is not restricted thereto except as defined in the appended claims.

I claim:

1. A vacuum cup having a bead and a vacuum lip adapted to engage a surface and means associated with said bead adapted to slide on a surface and to prevent said vacuum lip from curling under in response to sliding movement of the vacuum cup on said surface.

2. A vacuum cup having a resilient vacuum lip adapted to engage a surface, a rim adjacent said lip, and means associated with said rim adapted to contact with said surface to prevent said vacuum lip from disengaging with said surface upon sliding the vacuum cup over said surface.

3. A vacuum cup comprising a resilient rim having a vacuum lip adapted to slide over a surface, and means interposed between said rim and said surface in position to engage said surface when said rim is depressed, said means being adapted to freely slide over said surface and to prevent said lip from deforming sufficiently to break the vacuum in response to sliding movement of said cup.

4. A vacuum cup comprising a resilient rim having a vacuum lip adapted to slide over a surface, and a metallic member interposed between said rim and said surface and adapted to engage said surface when said rim is depressed and to freely slide thereover to thereby prevent said lip from deforming sufficiently to break the suction.

5. A vacuum cup comprising a resilient rim having a vacuum lip adapted to slide over a surface, and a member having a lower coefficient of friction than said resilient material carried by said rim in a position to engage said surface when said rim is depressed and to slide freely over said surface to thereby prevent said lip from deforming sufficiently to break the suction.

6. A vacuum cup comprising a rim of resilient material having a vacuum lip adapted to slide over a surface, and a metallic member located on the forward part of said rim in the direction of sliding movement and interposed between the rim and said surface and adapted to engage said surface when said rim is depressed and to freely slide over said surface to thereby prevent said lip from deforming sufficiently to break the suction in response to the sliding friction of said resilient material.

7. A vacuum cup adapted to slide over a surface comprising a rim having a vacuum lip and a bead adjacent the lip, and means on the bead adapted to engage said surface when said bead is depressed and to slide over said surface so as to prevent the bead from curling under and thereby permitting the vacuum lip to lose its suction grip on the surface.

8. A vacuum cup adapted to slide over a surface comprising a rim having a vacuum lip and a bead adjacent the lip, and a metal member on the bead adapted to engage said surface when said bead is depressed and to slide over said surface so as to prevent the bead from curling under and thereby permitting the vacuum lip to lose its suction grip on the surface.

9. A vacuum cup adapted to slide over a surface comprising a rim having a vacuum lip and a bead adjacent the lip, and a metal clip carried on the forward portion of said bead in the direction of sliding movement and adapted to engage said surface when said bead is depressed and to slide over said surface so as to prevent the bead from curling under and thereby permitting the vacuum lip to lose its suction grip on the surface.

GEORGE W. BUNGAY.