July 2, 1940. C. RADTKE ET AL 2,206,673

LIQUID SPRAYING APPARATUS

Filed Oct. 17, 1938 2 Sheets-Sheet 1

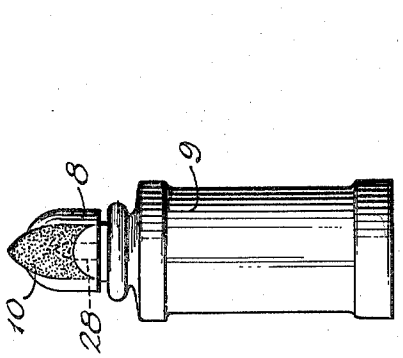


Fig. 3.

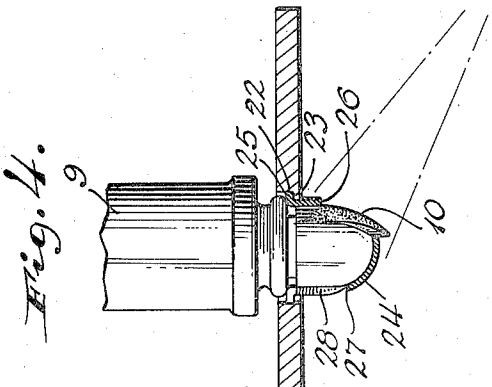


Fig. 4.

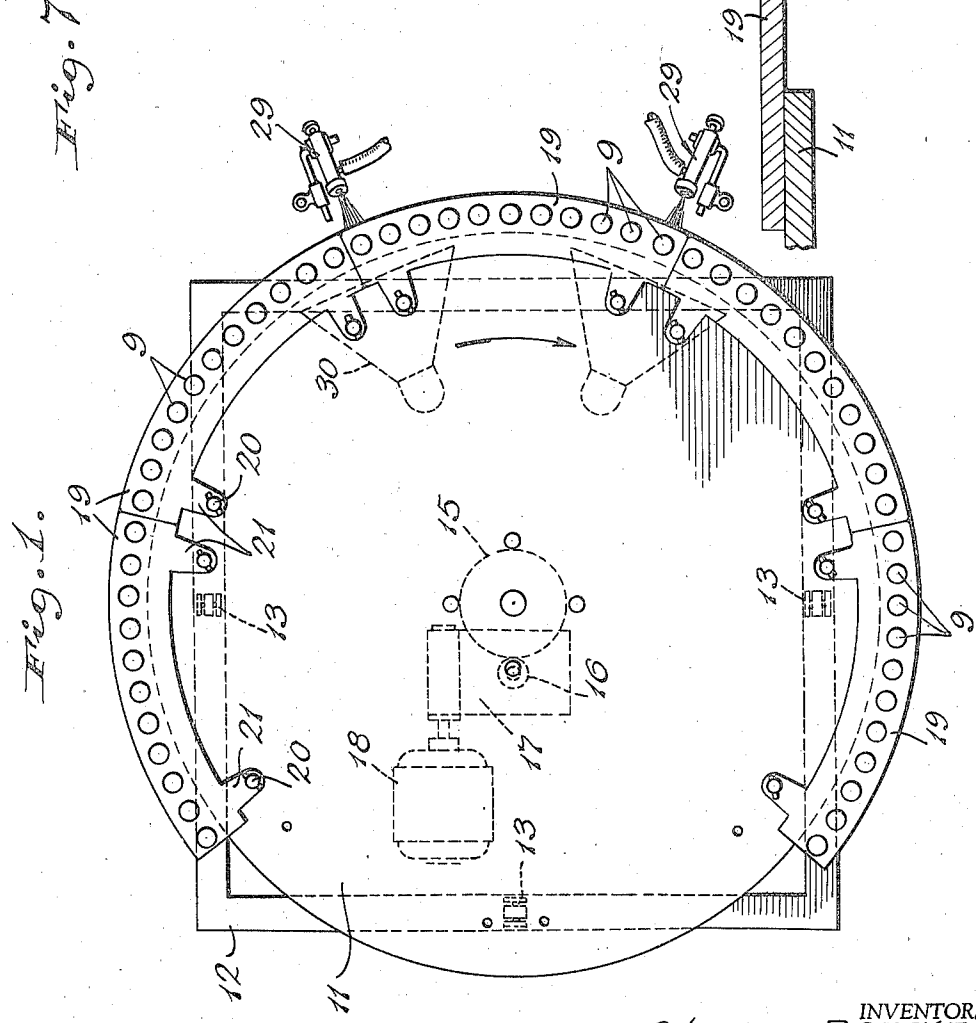


Fig. 1.

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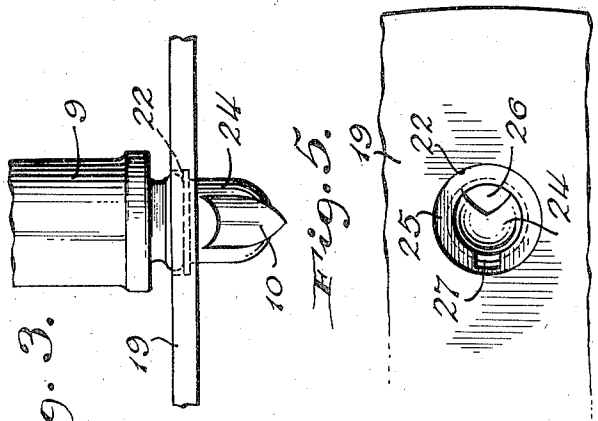


Fig. 3.

Fig. 5.

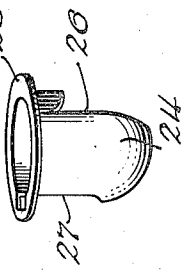


Fig. 6.

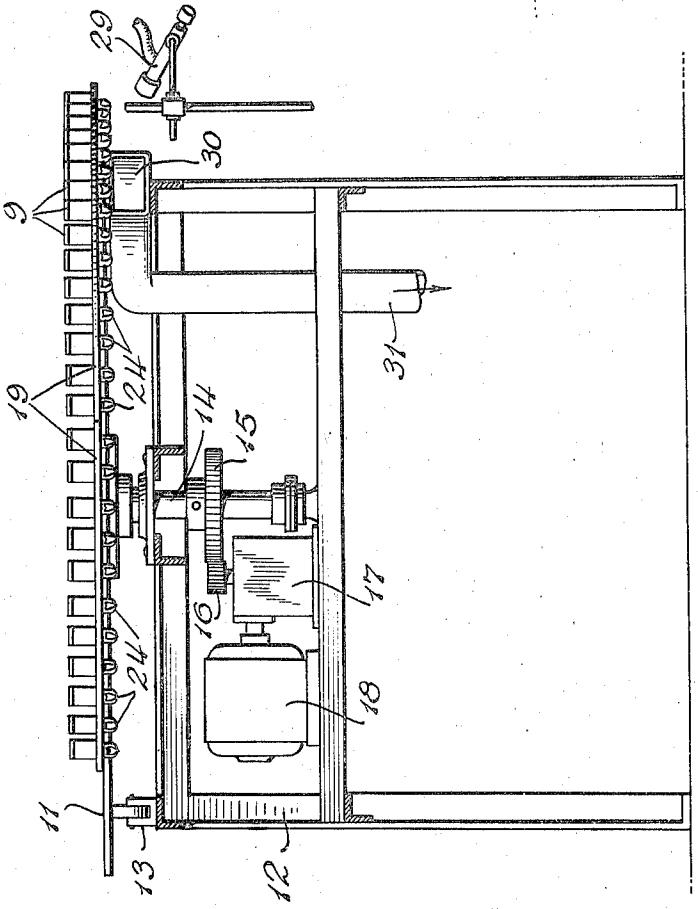


Fig. 2.

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Patented July 2, 1940

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UNITED STATES PATENT OFFICE

2,206,673

LIQUID SPRAYING APPARATUS

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Application October 17, 1938, Serial No. 235,438

2 Claims. (Cl. 101—114)

This invention relates to improvements in spraying apparatus more especially employed to apply a coloring substance to a portion of the surface of an article such as a container or its closure.

More specifically, the apparatus is adapted for the application of vari-colored liquid finger-nail polishes or lacquers to parts of bottle stoppers each shaped to simulate a finger-nail, said part on each stopper to be sprayed with a liquid colored the same as that to be enclosed in the container so that prospective purchasers may determine the color or tint of the contents of said container by observance of the nail simulation on the stopper thereof.

An object of the invention is to provide an improved apparatus of simple and practical construction by means of which a liquid polish or lacquer may be rapidly applied to only a certain defined area of an article such as a container or its closure.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the acompanying drawings which illustrate a preferred embodiment of the inventive idea.

In the drawings:

Figure 1 is a fragmentary top plan view of an apparatus constructed in accordance with the invention.

Figure 2 is a fragmentary side elevation thereof, partly in section.

Figure 3 is an enlarged fragmentary elevation showing a container and its closure or stopper in the position on the turntable of the apparatus in which liquid is to be sprayed onto a portion of said closure.

Figure 4 is an enlarged sectional view taken at right angles to Figure 3.

Figure 5 is a top plan view of a portion of the turntable showing a mask in position thereon and ready to receive the closure of a container.

Figure 6 is a perspective view of the mask employed, and,

Figure 7 is an elevation of the container and its closure in an upright position after application of a liquid to a portion of said closure.

One of the specific applications of the invention and that which is shown in the accompanying drawings pertains to the spraying of a finger-nail polish or lacquer onto a defined area of the closure 8 of a bottle 9, both of which may be of any design. Preferably, the closure 8 is provided with an offset or raised portion 10 of a shape simulating that of a finger-nail and it is the purpose of the present invention to apply to the surface of said portion 10 a polish the color of which is identical with that to be poured in the container 9.

The apparatus for accomplishing this purpose preferably comprises a turntable in the form of a disc 11 mounted for rotation above a supporting frame 12 and having a bearing upon rollers 13. The turntable 11 carries a vertically disposed shaft 14 mounted in bearings within the frame 12 and provided with a large gear 15. Meshing with said gear is a pinion 16 driven from a conventional gear reduction device 17 to which is connected the prime mover 18 in the form of an electric motor. Through the gear reduction 17, the shaft 14 and turntable 11 are rotated at the desired speed. Provision is made for supporting a plurality of the containers 9 in an inverted position upon the turntable 11 during the spraying operation. For this purpose there is provided a supporting ring consisting of a plurality of sections 19 each of which is individually attached to the upper surface of the turntable 11 by means of wing nuts 20 extending through the latter and the extensions 21 formed at the extremities of the inner edges of said section. This construction enables the various sections 19 to be detached from the turntable 11 whenever it is desired to remove said sections for the purpose of cleansing the same of any accumulation of liquid which may adhere thereto during a spraying operation. Each of the sections 19 is provided with a series of openings 22 for receiving a closure 8 and each opening is reduced at its lower end to form a supporting flange 23 the purpose of which will presently appear.

In order that liquid directed toward the closure 8 will be sprayed only upon the area 10, there is provided a mask 24 shaped substantially to conform to the contour of the closure 8 and adapted to fit over the same when said closure is inserted into an opening 22 in one of the supporting sections 19. At the open end of the mask 24 the same is provided with a laterally extending annular flange 25 which rests upon the flange 23 within the opening 22 so as to support the mask in its normal inverted position, as best shown in Figure 4. The mask is provided in the body portion thereof with an opening 26 shaped similarly to the offset portion of the area 10 so that said portion will be exposed through said opening when the closure 8 is introduced into the mask. Opposed to the opening 26 in the mask there is also provided a slot 27 which ex-

tends through the flange 25 and which is adapted to receive an elongated key 28 projecting from a surface of the closure 8 diametrically opposite the area 10. When the key 28 is inserted into the slot 27 the area 10 is registered with the opening 26 in the mask and said key and slot cooperate to prevent any turning movement of the closure 8 relative to the mask which might otherwise expose a portion of the closure 8 not intended to be sprayed with the liquid.

One or more spraying devices may be arranged about the exterior of the turntable 11 and disposed so as to direct a liquid such as nail polish onto the areas 10 of the various closures as they are rotated relative to said device. As shown, two spraying devices 29 of any standard construction are suitably supported in spaced circumferential relation about the turntable and the nozzles are so arranged as to direct the spray of liquid onto the exposed portions 10 of the closures 8 as the latter are rotated. To prevent excess diffusion of the spray and fumes therefrom, a suction head 30 may be arranged beneath the turntable in opposed relation to each of the sprayers 29 and said heads may be connected to a conduit 31 leading to an air suction fan (not shown).

What is claimed is:

1. In combination, a turntable, a sectional supporting ring carried by said table, with each section of said ring having a series of openings therein for receiving and supporting articles to be sprayed, means to detachably secure each section of said ring individually to said turntable, means to mask a portion of each of said articles, means to spray a liquid onto the unmasked portion of each article, and means to rotate said turntable to move said articles relative to said spraying means.

2. In combination, a turntable, a sectional supporting ring carried by said table, with each section of said ring having a series of openings therein for receiving and supporting articles to be sprayed, means to detachably secure each section of said ring individually to said turntable, means to mask a portion of each of said articles, means to spray a liquid onto the unmasked portion of each article, means to rotate said turntable to move said articles relative to said spraying means, and a suction device opposed to said spraying means.

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