June 13, 1961 A. VELONIS 2,987,992

ATTACHMENT FOR STENCILLING ARTICLES OF NON-CIRCULAR SECTION

Filed May 15, 1959 2 Sheets-Sheet 1

Fig. 1

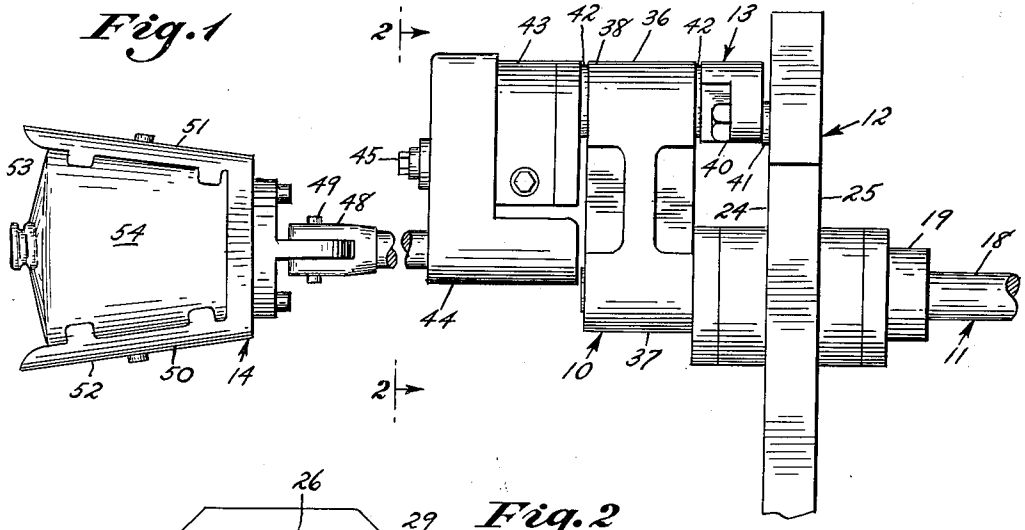


Fig. 2

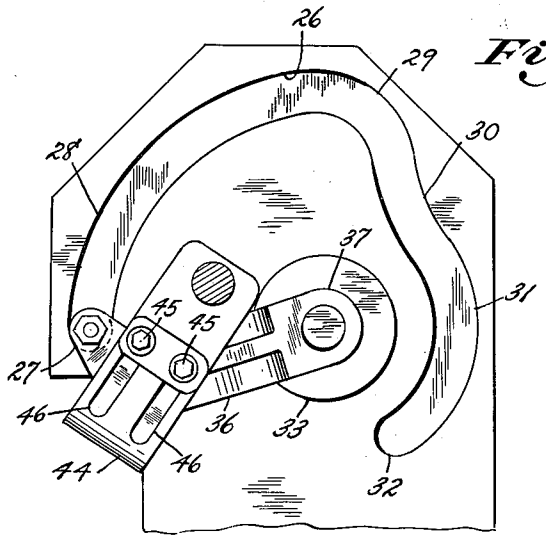


Fig. 3

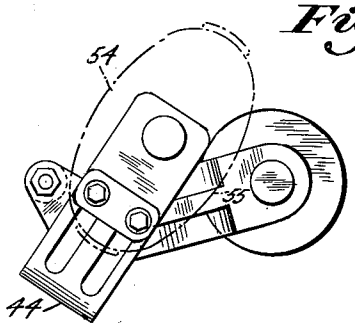


Fig. 5

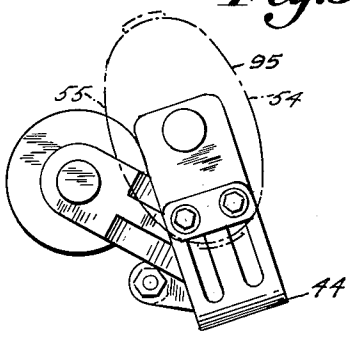
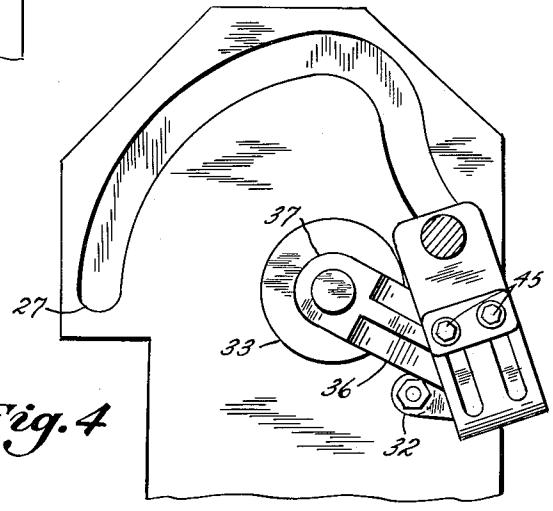


Fig. 4



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ATTACHMENT FOR STENCILLING ARTICLES OF NON-CIRCULAR SECTION

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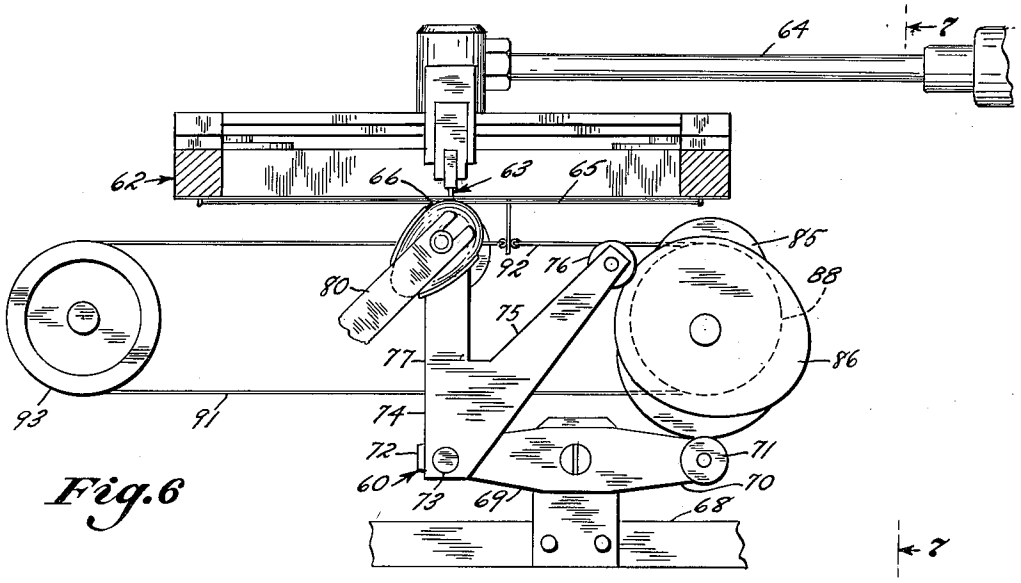


Fig. 6

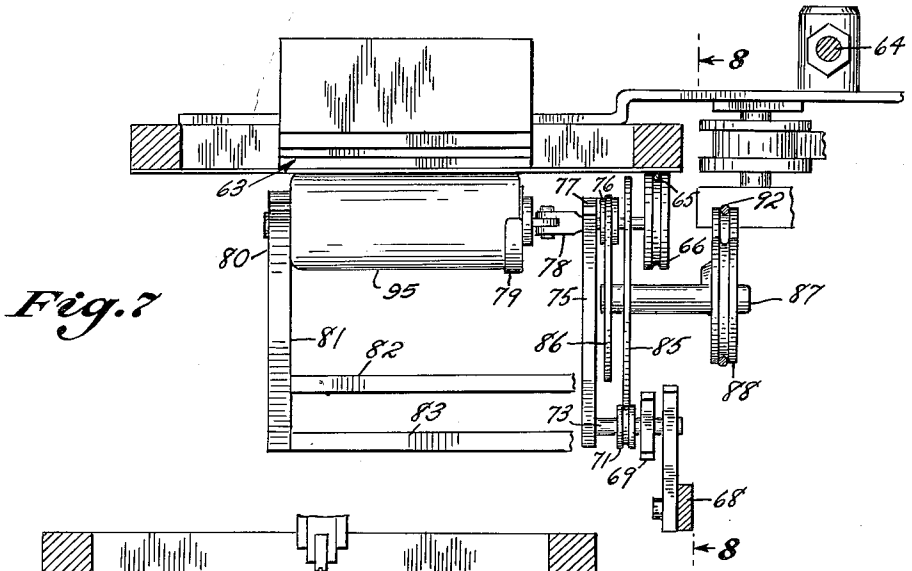


Fig. 7

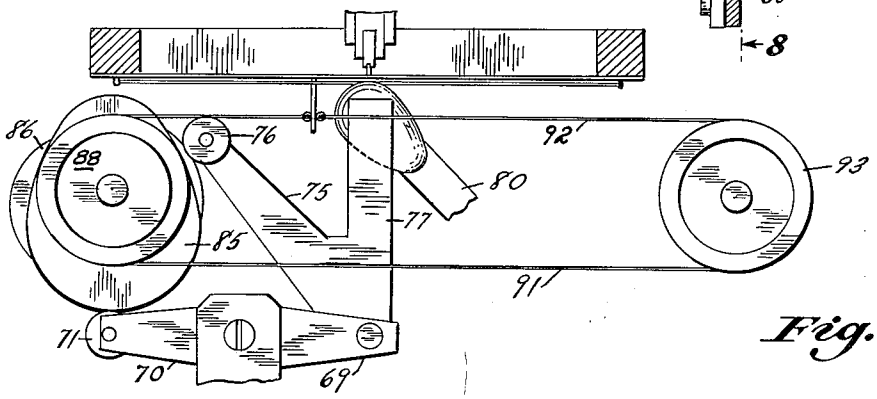


Fig. 8

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ATTACHMENT FOR STENCILLING ARTICLES OF NON-CIRCULAR SECTION

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Filed May 15, 1959, Ser. No. 813,386
5 Claims. (Cl. 101—126)

This invention relates generally to the field of stencilling the surfaces of various small decorative articles or containers, and more particularly to an improved means for supporting and moving such articles or containers in relation to a moving stencil screen.

The technique of stencilling is relatively well known in the art, and devices for performing this operation normally are a silk or wire screen capable of holding a stencilling material, the screen being supported for movement in a horizontal plane. A fixed wiper blade is disposed opposite the surface being stencilled, and serves to wipe the stencilling material upon the surface of the article as the article is moved in a generally rotating manner to present a continuous surface to the moving stencil screen. Cable or other means are employed to relate the rotational movement of the object with the translational movement of the screen.

In the prior art, devices have been employed which comprise a holder for a bottle of elliptical section, which is then rotated as though it were a section of a cylinder. Such devices have suffered from the fact that it is not possible to decorate more than one geometric plane of the bottle in one machine cycle.

It is therefore among the principal objects of the present invention to provide an improved means for supporting an article to be decorated of non-circular cross section in such manner that the above mechanical method may be employed in conjunction therewith.

Another object of the invention lies in the provision of attachable structure of the class described which may be incorporated into many existing screen stencilling devices without extensive modification.

A further object of the invention lies in the provision of an improved article supporting construction which may be used for printing many ovoid or irregular section objects as well as two or more sides of a square, rectangular, hexagonal or polygonal object.

Still another object of the invention lies in the provision of a device as described above which will require no modification of existing printing techniques.

A feature of the invention lies in the ready adaptability of the disclosed embodiments to a wide variety of irregularly shaped sections.

These objects and features, as well as other incidental ends and advantages, will more fully appear in the course of the following disclosure, and be pointed out in the appended claims.

On the drawings, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIGURE 1 is a fragmentary side elevational view showing a first embodiment of the invention.

FIGURE 2 is a vertical fragmentary sectional view as seen from the plane 2—2 on FIGURE 1.

FIGURE 3 is a fragmentary end elevation as seen from the lefthand portion of FIGURE 1.

FIGURE 4 is a fragmentary vertical sectional view corresponding to that seen on FIGURE 2 but showing an altered relative position of certain of the component parts.

FIGURE 5 is a fragmentary and elevational view corresponding to that seen on FIGURE 3, and showing an altered relative position of certain of the component parts.

FIGURE 6 is a fragmentary view in elevation showing a second embodiment of the invention.

FIGURE 7 is a fragmentary and elevational view, partly in section as seen from the plane 7—7 on FIGURE 6.

FIGURE 8 is a fragmentary rear elevation showing the side opposite that shown on FIGURE 6.

In accordance with the invention, the first embodiment of the device, generally indicated by reference character **10** comprises broadly: motion coupling means **11**, cam plate means **12**, cam follower means **13** and article holding or chucking means **14**.

The motion coupling means **11** includes a driven shaft **18** connected by means (not shown) so as to respond to planar movement of the stencilling screen of a conventional stencilling device. During operation, the shaft **18** will execute a substantially full revolution during the period in which the stencilling screen moves a distance sufficient to expose the entire printing area thereof to the action of the wiper blade. The shaft **18** is mounted in a bearing **19** in turn secured to the cam plate means **12**.

The cam plate means **12** is secured in relatively fixed position with respect to the stencilling device in any suitable manner, as for example by bolting to the frame thereof, and comprises a relatively thick metallic plate having first and second surfaces **24** and **25**. An irregularly shaped cam surface **26** extends between the surfaces **24** and **25**, and as best seen on FIGURES 2 and 4, the surface comprises a first end or terminal **27**, a first generally arcuately shaped portion **28**, a first curved portion **29**, a second curved portion **30**, a second arcuate portion **31** and a second terminal **32**. The exact configuration of the cam surface **21** will depend in large measure on the configuration of the article, generally indicated by reference character **53** which is to be stencilled. The shape and configuration shown on FIGURES 2 and 4 is suitable for the ovoid shape of the article **54** illustrated. The cam plate means **12** is also provided with a circular opening **33** in which the bearing **19** is disposed.

The cam follower means **13** includes a lateral driven member **36** having a first end **37** secured to the shaft **18** and a second free end **38** having a bearing (not shown) the axis of which lies parallel to the shaft **18**. Supported for rotation within the bearing is a cam follower **40** having a cam follower finger **41** slidably engaged within the cam surface **21**. The cam follower **40** is supported on a a rotatable shaft **42** which extends outwardly of the driven member **36** to support a rotatable member **43**. From a consideration of FIGURES 2 and 4, it will be observed that since the axis of the cam follower finger **41** is laterally displaced with respect to the axis of the bearing in the second end **38**, the cam follower **40** and rotatable member **43** will rotate relative to the member **36** in a predetermined path of travel depending upon the configuration of the cam surface **26**.

A chuck supporting member **44** is adjustably disposed upon the rotatable member **43** within slots **46**, and is secured in given position by screws **45**, this adjustment providing for the processing of containers of a given configuration and varying size, as will more fully appear.

The article supporting or chucking means **14** is supported by the chuck supporting member **44**, and engages a member **48** thereon by means of a pin **49** which permits ready removal of the chuck **50**. The chuck **50** may be of any suitable configuration or type depending upon the configuration of the article **53** to be decorated, and in the embodiment shown comprises first and second arms **51** and **52** which engage the ovoid configuration at the surfaces of relatively narrow radii, leaving first and

second surfaces 54 and 55 exposed to be stencilled, as is well-known in the art.

During operation of the first embodiment of the device, the shaft 18 is rotated in angular displacement corresponding to the linear displacement of the stencilling screen (not shown). The chuck 50 executes a combination of rotational and translational planar movement, the rotational and translational components resulting in the presentation of a continuous surface to the lower surface of the stencilling screen as is the case in articles of generally circular cross-section. The cycle of operation commences with the cam follower finger 41 in the first terminal 27 of the cam surface 26 as shown in FIGURE 2 of the drawing, and completes the cycle as shown in FIGURE 4 wherein the finger 41 engages the end portion 32. Upon returning the screen to its initial position, the component parts of the device 10 are returned to the position shown in FIGURE 2 for the commencement of a new cycle.

Turning now to the second embodiment of the invention as shown in FIGURES 6 to 8, inclusive, the device, generally indicated by reference character 60 is shown in connection with a standard stencilling machine which may be of a type, for example, disclosed in my co-pending application, Serial No. 731,753, filed April 29, 1958 entitled "Screening Device." Machines of this type generally include a stencil screen support means 62, a relatively fixed wiper blade 63, stencil screen moving means 64, and cable means 65, including a driven pulley 66 for rotating the chucking means 79 in predetermined relation with respect to movement of the stencil screen.

Referring to FIGURE 6, the device includes a fixed bracket 68 which may be a portion of the machine upon which there is mounted a first rocker arm 69. The rocker arm 69 is of generally elongated configuration including a first end 70 having cam follower means 71 and a second end 72 which forms a pivotal support axis 73 for a second rocker arm 74. The second rocker arm 74 includes a cam follower member 75 having a follower roller 76 thereon and a chuck support member 77 having a clevis support member 78 thereon. The chuck 79 may be of a type similar to that shown in the first embodiment, or may be of any desired design. In the embodiment disclosed, a bottle support member 80 is formed by a vertical brace 81, the brace 81 being supported by a pair of horizontal support members 82 and 83. A first cam 85 and a second cam 86 are mounted on a common cam shaft 87 which is driven by a pulley 88. As best seen in FIGURE 7, the first cam 85 engages the cam follower roller 71, while the second cam 86 engages the cam follower roller 76. Cable means 92 is secured to the stencil screen support means 62 and is looped about the pulley 88 and an idler pulley 93.

From a consideration of FIGURE 6, it will be apparent that motion imparted to the first rocker arm 69 will result in a corresponding vertical movement of the axis of rotation of the chuck 79 and motion imparted to the second rocker arm 74 will result in substantially horizontal planar movement. As best seen in FIGURES 6 and 8, the pulley 66 is of a shape to correspond to the cross-section of the article generally indicated by reference character 95 so that uniform linear speed with regard to the surface of the article will be obtained as the screen support means 62 moves in a horizontal plane. By changing the configuration of the cams 85 and 86, the necessary translational motion components are imparted to the chuck 79 to obtain a result similar to that in the first embodiment.

It may thus be seen that I have invented novel and highly useful improvements in screen stencilling structure for use in connection with the stencilling of non-circular articles, which permit such stencilling in a substantially automatic manner resembling that employed in the case of circular articles. With minor modifications (not shown) the structure may be also employed in the screening of articles which are not only of non-circular configuration, but which are also tapered. By resorting to either of the two embodiments disclosed, a large number of existing stencilling machines may be adapted to provide this feature.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention relates.

I claim:

1. In a screen printing device having a stencil screen, an improved chucking means for supporting an article to be decorated of non-circular cross-section comprising: a shaft arranged for rotational movement and driven by planar movement of said screen, a first driven member laterally arranged with respect to said shaft, and having a free end executing arcuate motion with respect to the axis of said shaft, a cam member having a cam surface arranged in a plane substantially perpendicular to the axis of said shaft, a cam follower mounted upon the free end of said first member and having an axis of rotation parallel to the axis of rotation of said shaft, said cam follower having means engaging said cam surface laterally displaced with respect to said last mentioned axis of rotation, said cam follower having means thereon for supporting said article for simultaneous rotational and translational planar movement controlled by said cam surface.

2. In a screen printing device having a stencil screen, improved chucking means for supporting an article to be decorated of non-circular cross-section comprising: a first rocker arm having first and second ends, said first rocker arm being supported for pivotal movement about a relatively fixed axis, first cam means for imparting movement to one of said ends, a second rocker arm having first and second ends and arranged for pivotal movement upon the other end of said first rocker arm, second cam means for imparting movement to one of said ends of said second rocker arm, and article engaging means supported for rotation upon the other end of said second rocker arm.

3. In a screen printing device having a stencil screen, improved chucking means for supporting an article to be decorated of non-circular cross-section comprising: a first rocker arm having first and second ends, said first rocker arm being supported for pivotal movement about a relatively fixed axis, first cam means for imparting movement to one of said ends, a second rocker arm having first and second ends and arranged for pivotal movement upon the other end of said first rocker arm, second cam means for imparting movement to one of said ends of said second rocker arm, an article engaging means supported for rotation upon the other end of said second rocker arm; said first and second cam means having means for driving the same in synchronism.

4. In a screen printing device having a stencil screen, improved chucking means for supporting an article to be decorated of non-circular cross section comprising: a first rocker arm having first and second ends, said first rocker arm being supported for pivotal movement about a relatively fixed axis, first cam means for imparting movement to one of said ends, a second rocker arm having first and second ends and arranged for pivotal movement upon the other end of said first rocker arm, second cam means for imparting movement to one of said ends of said second rocker arm, an article engaging means supported for rotation upon the other end of said second rocker arm; said first and second cam means having means for driving the same in synchronism; and means for rotating said article supporting means, said means being controlled by movement of said stencil screen.

5. In a screen printing device having a stencil screen, improved chucking means for supporting an article to be decorated of non-circular cross-section comprising: a first

rocker arm having first and second ends, said first rocker arm being supported for pivotal movement about a relatively fixed axis, first cam means for imparting movement to one of said ends, a second rocker arm having first and second ends and arranged for pivotal movement upon the other end of said first rocker arm, second cam means for imparting movement to one of said ends of said second rocker arm, an article engaging means supported for rotation upon the other end of said second rocker arm; said first and second cam means having means for driving the same in synchronism; said first and second cam means being mounted on a shaft, and means for driving said

shaft and said article support means in synchronism controlled by movement of said stencil screen.

References Cited in the file of this patent

UNITED STATES PATENTS

71,010	Hope	Nov. 19, 1867
460,931	Goudie	Oct. 6, 1891
2,093,203	Miller	Sept. 14, 1937
2,202,799	Jackson et al.	May 28, 1940
2,307,404	Heyne	Jan. 5, 1943
2,492,052	Martin	Dec. 20, 1949