

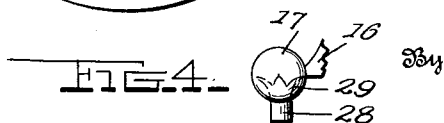
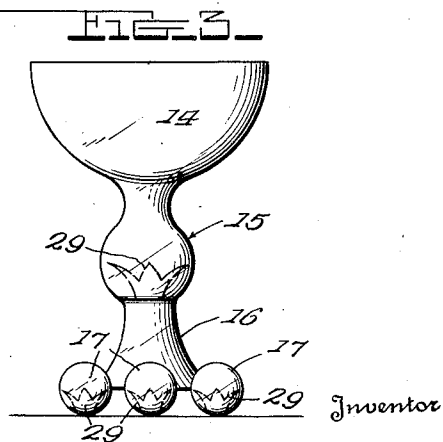
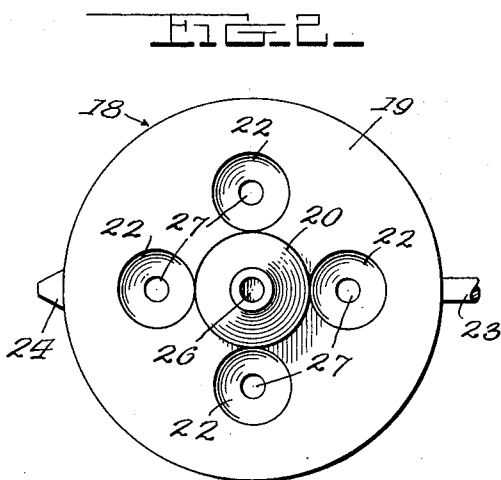
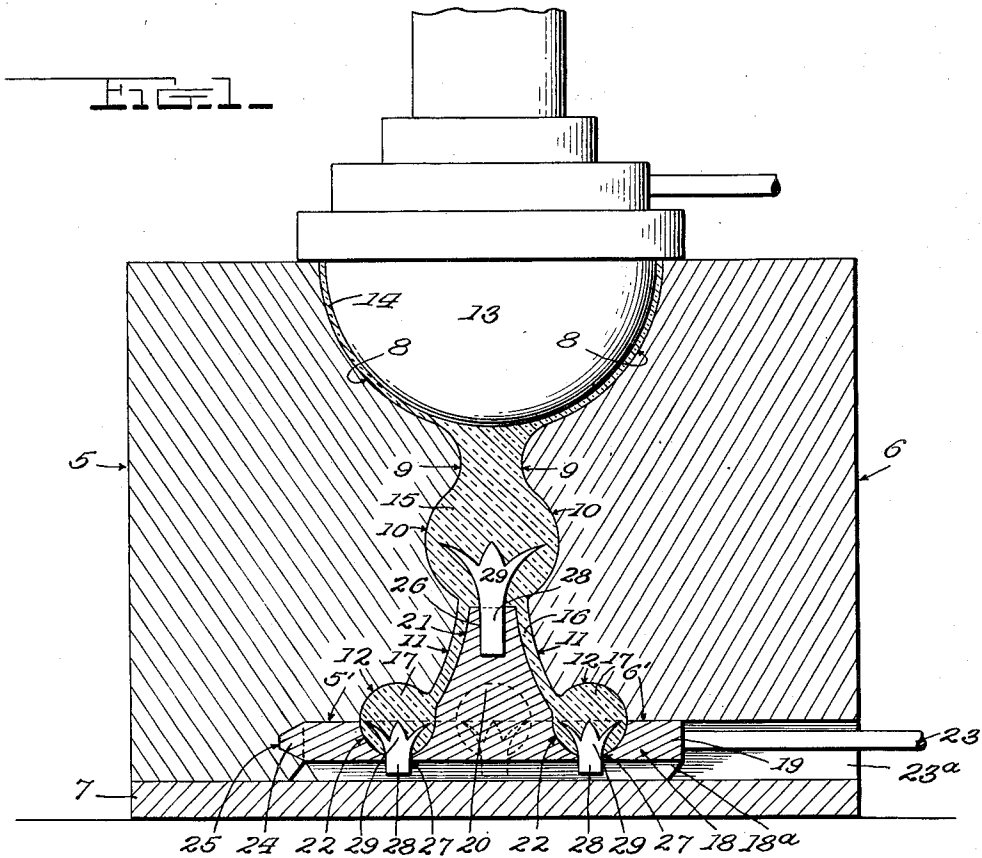
July 17, 1951

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2,561,247

METHOD AND APPARATUS FOR PRODUCING GLASS ARTICLES

Filed Jan. 18, 1950



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UNITED STATES PATENT OFFICE

2,561,247

METHOD AND APPARATUS FOR PRODUCING
GLASS ARTICLES

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Application January 18, 1950, Serial No. 139,161

4 Claims. (Cl. 49—73)

1

This invention relates to the incorporation of preformed ornamental elements in moulded transparent or translucent glassware and the like, and the present embodiment is concerned with implanting one or more of such ornamental elements in the base of an article; and the term "base" is used to not only comprehend the actual supporting portion adapted to rest directly upon a table or the like, but such a supporting portion plus any upward projection which it may have. Thus, in stemware, for example, cocktail, wine, and sherbet glasses, the present embodiment of the invention relates to ornamentation of either the actual foot, or the stem, or both, whether such ornamentation be effected simultaneously with the moulding of an entire article, or incident to the moulding of a mere base for later attachment to a bowl-like portion to coact with said base in forming a complete article.

One object of the invention is to provide a novel method which may be advantageously practical to attain the desired end; and another aim is to provide a novel, simple, and practical apparatus for use in carrying out the method.

In the drawing:

Figure 1 is a vertical sectional view showing a mould constructed in accordance with the invention and a moulded article in said mould, said article being provided with a plurality of the ornamental elements embedded in its foot and stem,

Figure 2 is a top plan view of the mould section which holds the pre-formed ornamental elements in place during moulding of the glass around them,

Figure 3 is a side elevation of the article formed in the mould, after removing the portions of the ornamental elements by means of which said elements were held in said mould, and

Figure 4 is a detail side elevation similar to the lower left-hand portion of Figure 3, showing a modification.

The mould construction disclosed in the drawing will be rather specifically described, but said construction is only one of many which may be utilized in carrying the invention into practice. It is therefore to be understood that variations may be made over the present disclosure within the scope of the invention.

Four mould side sections 5 and 6 are supported for relative opening and closing movements upon a horizontal base 7, the inner sides of said sections being recessed to form portions 8, 9, 10, 11,

2

and 12 of a moulding cavity. The portions 8 coact with a mould section or plunger 13 in forming a bowl-like part 14 on the article formed in the mould; the portions 9 and 10 provide for forming the major portion 15 of the article stem; the portions 11 coact with a core, hereinafter described, in forming the hollow flared lower portion 16 of the stem; and the portions 12 are instrumental in forming circumferentially spaced feet 17 on the lower end of said stem, said portions 12 being in the form of downwardly open concave semi-spherical recesses which coact with other like recesses hereinafter described to form the globular feet 17.

A lower mould section 18 rests removably upon the base 7 and the side sections 5 and 6 of the mould are recessed at their lower ends at 5' and 6' to snugly receive this lower mould section 18. This section is shown in the form of a horizontal plate 19 carrying a central upstanding upwardly tapered or downwardly flaring substantially frusto-conical core 20. This core is the one referred to above as coacting with the cavity portions 11 in forming the hollow downwardly flared or substantially frusto-conical lower portion 16 of the article stem, and it forms a downwardly opening recess 21 of like shape in said lower portion 16 of said article stem. The plate 19 is formed with upwardly open concaved semi-spherical recesses 22 constituting the above mentioned recesses which mate and exactly coact with the recesses 12 in forming the feet 17 shown arranged in equi-spaced relation in an annular series. The plate 19 is preferably provided with a reduced shank and handle 23 receivable loosely in an opening 23^a of and extending from the communicating bottom recesses 5' and 6' of the mould section 6, and with a tapered lug or key 24 at its inner end for reception in a socket 25 in the section 5 at the outer end of recess 5', to anti-slippingly hold the section 18 in place.

The upper end of the core 20 has an upwardly open central cylindrical socket 26, and the plate 19 is formed with a series of spaced circular openings or sockets 27 which extend through the bottom of the plate and open upwardly centrally into the recesses 22. These sockets 26 and 27 are to receive the individual downwardly projecting stems 28 of preformed solid hard ornaments 29 to be embedded in the article base—one in the stem and the others in the feet 17. In the present disclosure, the stems 28 of the ornaments 29 in the recesses 22, project through the

sockets 27, and the lower side of the plate 18 is recessed at 18^a to receive the stem ends. This, however, is not essential.

The ornaments 29 may be formed from glass or any other suitable material and must have a sufficiently high melting point to withstand the heat of the molten glass or the like from which the article is moulded. Obviously, these ornaments may be of any desired design or designs and of any color or colors.

In carrying out the method with the aid of the above described apparatus, the stems 28 of the ornaments 29 are downwardly inserted into the sockets 26 and 27 while the mould is open and the mould section 18 detached. The mould sections are then relatively assembled to form the complete mould cavity and the article is moulded in this cavity from glass or the like having at least some degree of transparency (preferably crystal clear), and the mould sections are then relatively disassembled and the article removed. Then, the stems 28 of the ornaments 29 are preferably cut or ground off, leaving the article in the attractive form shown in Figure 3, with one of the ornaments 29 visible in the stem and others in the feet 17. If desired, the portions of the stems 28 which project downwardly from the base or feet 17 may be left intact to rest upon a supporting surface, as shown in Figure 4.

In the moulding of glass articles, particularly of the type disclosed herein, it is necessary to have the mould formed of a number of sections sufficient for the release of the moulded article after molding or pressing without damage to the article. As in the present disclosure, the moulded article has four feet and it is preferable to employ a four-section mould which would permit the operator to remove the moulded article from the mould without damage thereto. It will be understood that the number of mould sections may vary in accordance with the character of article to be moulded.

From the foregoing description of the invention and drawing it will be seen that novel and advantageous provision has been made for attaining the desired end, and while preferences have been disclosed, attention is again invited to the possibility of making variations within the scope of the invention as claimed, including, of course, the idea of moulding the base for subsequent attachment, instead of moulding said base as an integral part of a complete article including the receptacle or bowl-like part 14. Obviously, a duplicate of mould member 18 may be loaded with the ornaments, in readiness for use, while one article is being moulded, if desired.

What is claimed as new, is:

1. A method of embedding an attractive lustrous hard solid ornament having a reduced mounting stem, in a stem or foot of a moulded plastic tableware article having at least some degree of transparency to render the ornament visible from the exterior of the article, with the aid of a mould having separable upper sections and a removable lower section having cooperable registering moulding cavities for jointly receiving molten plastic for forming the article therein and the lower section only having a socket therein reduced relative to and leading centrally from said cavities, said method comprising the steps of engaging the mounting stem of the ornament snugly in the socket to support the ornament in position with its enlarged ornamental portion extending into and spaced from

the wall of the adjacent cavity, relatively assembling the sections, and flowing molten plastic into the cavities around the ornament therein to set, relatively disassembling the mould sections to remove the moulded article with the ornament embedded therein and severing the mounting stem at the surface of the article.

2. A method of embedding an ornament having an enlarged upper ornamental portion and a reduced lower mounting stem depending therefrom, in the stem and feet depending from a moulded plastic bowl or cup-like article having some transparency with the aid of a mould having separable upper sections and a removable lower section mounted in an opening in the upper sections, said upper sections having cooperable cavities in which the article and depending stem thereof is to be moulded with a depending outwardly flaring lower hollow wall portion, said upper and lower sections having registering globular enlargement forming cavities and the lower section having an upstanding core extending into and spaced from the lower portions of the depending stem cavity to form a hollow flaring cavity therebetween in which said hollow wall portion is formed and communicating with said enlargement forming cavities at its bottom and the lower section having sockets therein at the bottom of the stem cavity at the top of the upstanding core and bottom of the enlargement forming cavities, said method comprising the steps of fitting said ornament stems in said sockets to close the latter with the upper ornament portions extending into the cavities in spaced relation to their surrounding walls, relatively assembling the mould sections to form moulding cavities for the article, stem and enlargement, flowing and forcing molten plastic into the cavities to form the article bowl, stem, flaring wall portion and enlargements around the upper ornament portions of the ornaments to set and embed the ornaments therein, relatively disassembling the mould sections, and severing the projecting ornament stems.

3. A method of embedding ornaments having reduced mounting stems in a moulded transparent cup or bowl-like plastic or glass article having a depending stem with a lower globular enlargement with a hollow downwardly flaring skirt and spaced globular enlargements at the lower edge of the skirt, with the aid of a mould having separable upper sections cooperable in producing cavities in which the article, cup or bowl and stem are to be moulded, and a lower section having an upstanding core extending upwardly into the upper sections at the cavity below the stem cavity in spaced relation to the wall of the skirt cavity leading into the stem cavity and spaced semi-circular cavities registering with similar opposed cavities in the upper sections around the lower end of the skirt cavity to form globular cavities therewith, said lower section having a socket centrally in the top of the core and in the lower section at the centers of the semi-circular cavities, said method consisting of fitting the ornaments in said stem and latter semi-circular cavities with the stems of the ornaments snugly fitting the socket to support the ornaments with their upper ornament portions extending into said cavities in spaced relation to their surrounding walls, relatively assembling the mould sections and flowing molten material into the article and its stem cavities, and into the globular cavities through the skirt cavity to form the article bowl, stem, skirt and globular enlargements around the

5

ornaments therein to harden and embed the ornaments in said stem and globular enlargements, relatively disassembling the mould sections, and severing the ornament stems flush with the bottom of the article stem within the skirt and bottom of the globular enlargements.

4. An article forming mould comprising a base, separable upper mould sections relatively movable on said base forming a bowl-like moulding cavity, a communicating downwardly enlarged stem forming cavity and a communicating outwardly flaring recess depending from the stem cavity with communicating spaced enlarged semi-circular cavities around the bottom thereof, said sections having a bottom opening immediately below and embracing said recess and spaced semi-circular cavities and extending through one side, and a lower mould section removably mounted in said opening through said side and having an upstanding tapered core centered in the flaring recess to form an annular space between the core and inner wall of the flaring recess communicating with the stem cavity with spaced semi-circular cavities below and registering with the other semi-circular cavities to form globular cavities, the lower mould section having sockets extending from the globular cavities to receive reduced stems of preformed hard ornaments projecting

6

into and spaced from the walls of the globular cavities, said core having a top socket to receive the reduced stem of a preformed hard ornament projecting into and spaced from the wall of the stem forming cavity, whereby when molten material is flowed and forced into the cavities to integrally form the bowl, stem thereof, flaring wall in the flaring recess and globular enlargements at the lower end of said wall and embed the ornaments therein for removal upon disassembling the mould sections.

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