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MOLD FOR WATER CLOSET BOWL RIMS

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The present invention relates to improvements in molds, particularly adapted for casting from suitable ceramic material tops or rims for water closet bowls.

More particularly the object of the invention is to provide a mold for such articles in which a top or rim provided with an annular water channel or conduit and a relatively large number of perforations or discharge outlets may be cast by a single operation.

With a mold constructed as hereinafter described, it is possible to cast in one piece a closet bowl rim which, when positioned on the body of a bowl, having a flat, ungrooved, upper edge will provide the desired water channel and outlet discharge perforations without subsequent treatment. In the accompanying drawings there is illustrated one embodiment of the invention which has been practically found to operate successfully, but there can, of course, be modification in some of the details shown and certain of the parts are illustrated more or less conventionally. The drawing is to be considered as illustrative rather than restrictive of the invention, except as details are recited in the appended claims, and, of course, the proportions and exact forms of parts of the mold hereinafter described may be varied without departing from the invention.

In the accompanying drawings:

Figure 1 is a perspective view of a mold constructed in accordance with the present invention, the parts being arranged in the position occupied when a rim or top is to be poured.

Figure 2 is a vertical section substantially on the line 2—2 of Figure 3.

Figure 3 is an elevation of the bottom mold section of Figures 1 and 2.

Figure 4 is a sectional view, substantially at right angles to Figure 2, on the line 4—4 of Figure 1.

Figure 5 is a perspective view of the intermediate and bottom sections arranged as in Figures 1 to 4, the top section being removed.

Figure 6 is a similar view with two members of the intermediate section removed.

Figure 7 is a perspective detail view of one member of the intermediate mold section.

Figure 8 is a perspective view of the assembled mold reversed from the position shown in Figures 1 to 6, and in the relation in which it is positioned when it is to be detached from the article cast or formed therein.

Figure 9 is a view similar to Figure 8 with the uppermost section removed.

Figure 10 is a similar view with two of the members of the intermediate section withdrawn.

Figure 11 is a detail perspective of the lower member of the mold, referring to Figures 8 to 10 inclusive.

Figure 12 is a more or less conventional view of a mold for the body of a closet bowl showing the manner in which the rim mold of the present invention is related thereto when positioning the top or rim on such bowl.

Reverting to the drawings, in which like reference characters designate corresponding parts in the several views, it will be seen that the embodiment of the invention illustrated comprises three sections, namely, two outer sections A, B, and an intermediate section which is composed of four separable members C, D, E and F. The inner faces of the outer sections A, B, are provided with tubular bosses A', B', which, when the several sections are assembled, contact with each other, as shown in Figs. 2 and 4, and provide an annular space within which are positioned the members C, D, E and F of the intermediate mold section.

A groove or channel is formed in the inner face of the section A, about the outer end of the boss A' and with this channel communicates an opening A², through which the "slip" or ceramic mixture may be poured. A suitable vent A³ is also formed in the section A and communicates with said channel.

In the inner face of the section A are formed a series of peripheral notches or seats a, a', a", a³, a' and a, which receive lugs or ribs c, d, e, e and f, formed on the adjacent face of the members C, D, E and F of the intermediate mold section.
The intermediate section is shown as comprising four quadrant shaped sections the vertical edges of which abut when said members are positioned about the bosses A, B. Said members have a wedge-like fit when pushed inward and provide a continuous wall about said bosses. If desired, the number of said members of the intermediate section may be increased but the particular arrangement shown has been found very satisfactory.

Each of the arc-shaped members C, D, E and F of the intermediate section is so shaped that a portion adjacent the inner end thereof will overhang and extend substantially parallel with a portion of the surface of the boss B on the outer mold section B', and each of said members C, D, E and F, is provided at its inner end with a series of substantially vertically extending notches t which, when the sections are assembled, engage with the divisions between a series of notches b formed about the periphery of said boss B'. The notches t are of greater depth than the notches b so that when the sections are assembled there will be provided a series of spaced members, the intervals between which communicate with the channel formed between the sections A, B, into which the members C, D, E and F extend. The exposed portions of the notches t are adapted to produce a peripherally notched skirt integral with the rim or top adapted to cooperate with the inner face of the closet bowl wall to provide the desired discharge passages from the annular water space or channel in the rim.

The boss B' of the section B is provided at an intermediate point in its length with a deflected section B'' and the member E of the intermediate mold section is provided with a corresponding section E' which, with said portion B' of the member B', provides a recess H constituting a lateral extension of the mold chamber, in which will be formed the tongue or extension of the rim skirt I, which is commonly provided opposite the inlet to the water channel or space in the completed rim.

The members C, D, E and F of the intermediate section are shown as provided with sockets L adapted to receive pins or projections M on the outer section B so that accidental separation of the members C, D, E and F from the section B or relative lateral movement between them will be prevented. The section B, however, can be readily removed, when the mold has been reversed into the position shown in Figure 8, by being lifted vertically.

The members C, D, E and F of the intermediate section are connected with the other outer section, A, by the several lugs or ribs thereon engaging the recesses a, a', a, a' and a', referred to. This connection, it will be noted, while preventing turning movement of the members of the intermediate section about the bosses B, A', the outer sections permit separation of the intermediate and outer sections by a direct, radially outward pull on any of the members of the intermediate section. A single lug or rib and cooperating notch or recess are sufficient for retaining each of the members C, D, E and F in proper relation to the section A, but the member E is preferably provided with two similar lugs e, e', and corresponding recesses e, e', a', e, and a', are provided therefor in the section A.

The manner of using the improved mold may be briefly described as follows. The several sections are initially positioned as shown in Figures 1 to 4 inclusive, and the required amount of slip poured into the opening A'. The form of the mold space in cavity provided by the several sections is such that a rim having an annular flat bottom face and an integral depending skirt at the inner edge of such base is produced, the skirt being curved to extend outward beneath said flat bottom face and having its free edge provided with a series of notches.

After the plastic content of the mold has hardened sufficiently, the mold is reversed or positioned, as shown in Figure 8. The section B is now removed, by being lifted directly from the intermediate section, the pin and socket connection L, M, between such sections offering no obstruction to such movement. The members of the intermediate section are then successively withdrawn laterally, the connection between such members and the outer section A, namely, the notches a, a', a, a', and the coating lugs or ribs not interfering with such movement.

When the outer section B and intermediate section have thus been removed, the rim will be supported by the section A, the operator may readily position this section on the top of a bowl mold N, so as to bring the flat surface of the rim before referred to into contact with the corresponding flat upper edge of the closet bowl. It is customary to coat the contacting edge surfaces of the rim and bowl with a suitable cement before superposing the rim on the bowl, and thereafter the union between the members is completed in the ordinary manner.

To assist the operative in accurately positioning the rim on the bowl in the mold N, the mold section A is preferably provided with a plurality of sockets O, which receive suitable pins on the bowl mold N, so that the parts will be accurately guided into the exact and proper relation.

As shown in Figure 12, when the rim or top is positioned on the bowl in the mold N, the flat surfaces of the rim and bowl are in close contact and the water channel or space is provided entirely between the transversely
curved skirt and bowl wall. The lower slightly outward turned, free edge of the rim skirt, which as shown and described, is notched need not be connected to the adjacent surface of the bowl but may contact therewith.

An important feature of the invention is that by using the improved mold it is possible to cast a water closet bowl rim in which all of the water channel or space in the rim of the completed closet may be formed at a single operation. Heretofore it has been customary to form a portion of such water channel in the upper edge of the closet bowl or to make the rim or top of a plurality of sections.

Having thus described the invention, what is claimed is:

1. A mold for casting water closet bowl rims comprising superposed outer and intermediate sections, the intermediate section contacting with one of the outer sections including a plurality of members that are connected with said outer section by means permitting separation of said sections by lateral movement of the members of the intermediate section, the other outer section being engaged with the contacting intermediate section by means permitting relative movement between said sections in a vertical direction only.

2. A mold for casting water closet bowl rims comprising superposed outer and intermediate sections, the intermediate section being formed of a plurality of members that are interlocked with one outer section by means permitting disengagement of said sections by lateral, horizontal, movement of the members of the intermediate section and interlocked with the other outer section by means permitting relative movement between said sections in a vertical direction only.

3. A mold for casting water closet bowl rims comprising superposed outer and intermediate sections, the intermediate section contacting with one of the outer sections being formed of a plurality of members that are connected with said outer section by interlocking tongues and recesses permitting disengagement of said sections by lateral, horizontal, movement of the members of the intermediate section, the other outer section being engaged with the contacting intermediate section by means permitting relative movement between said sections in a vertical direction only.

4. A mold for casting water closet bowl rims comprising superposed outer and intermediate annular sections, the intermediate section contacting with one of the outer sections being formed of a plurality of members that are connected with said outer section by arc-shaped interlocking tongues and recesses preventing relative rotary movement between said sections and permitting separation of the sections by radial movement of the members of the intermediate section, the other outer section being engaged with the contacting intermediate section by means permitting relative movement between said sections in a vertical direction only.

5. A mold for casting water closet bowl rims comprising superposed sections, one section having on its inner face a boss, provided with a notched periphery, and a recess that extends radially outward from said boss, the notched periphery of the boss being deflected into said recess, a second section, contacting with that aforesaid, including a plurality of members forming a space receiving the boss on the first said section and each having an undercut edge that overhangs a portion of said boss and is provided adjacent its face that contacts with the first said section with notches that register with the notches in said boss when the parts are assembled, and a third section having on one face a boss adapted to extend into the space surrounded by the members of the second said section and to contact with the boss on the first said section.

6. A mold for casting water closet bowl rims comprising superposed sections, one section having on its inner face a boss, provided with a notched periphery, and a recess that extends radially outward from said boss, the notched periphery of the boss being deflected into said recess, a second annular section surrounding said boss and including a plurality of members each having an undercut edge that overhangs a portion of said boss and is provided adjacent its face that contacts with the first said section with notches that register with the notches in said boss when the parts are assembled, the members of said annular section being engaged with the first said section by means permitting relative movement between said sections in a vertical direction only, and a third section having on one face a boss adapted to extend into the space surrounded by the members of the second said section and to contact with the boss on the first said section, said third and second sections being connected by means permitting disengagement by lateral movement of the members of the said second section.

In testimony whereof I have hereunto set my hand.

ALFRED V. LAWTON.