Feb. 26, 1935. R. E. SPENCER 1,992,332

MOLD FOR FLOWER HOLDERS

Filed Feb. 12, 1934

Fig. 1

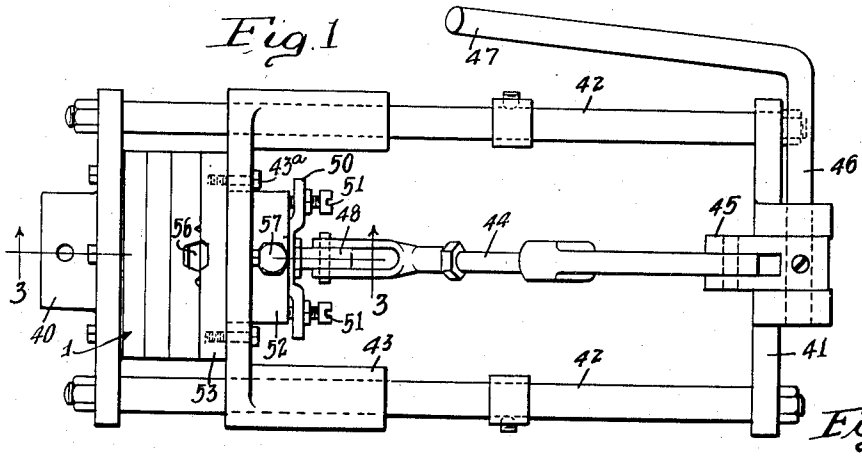

Fig. 7

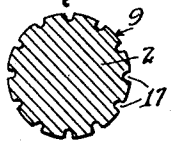

Fig. 2

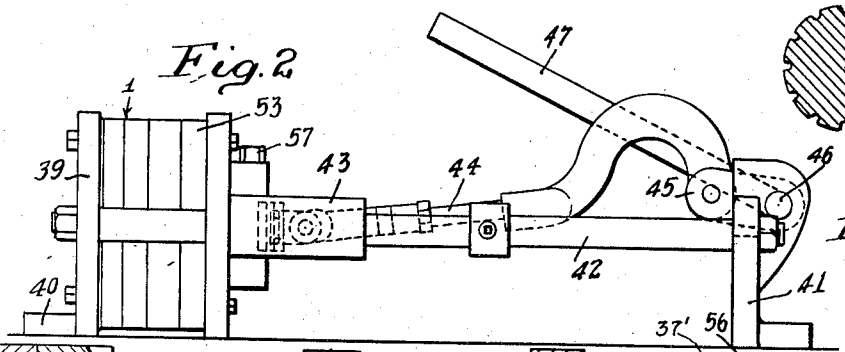

Fig. 8

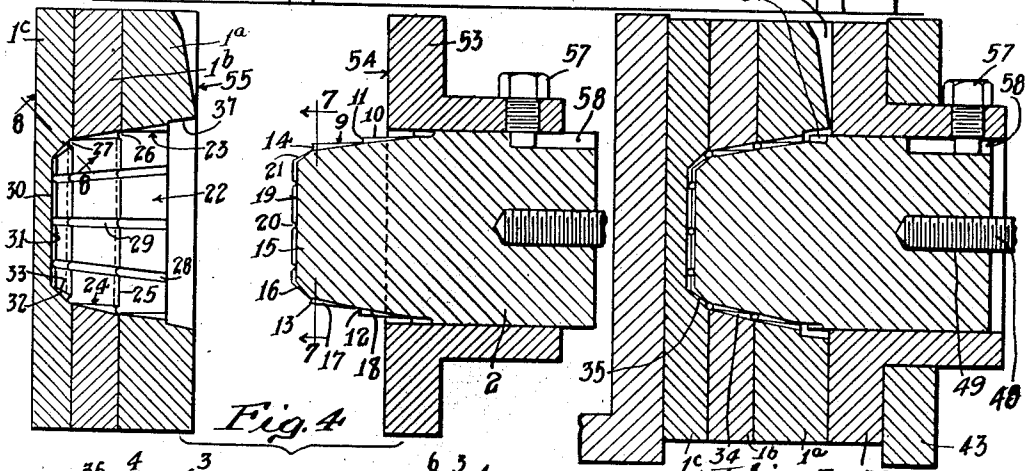

Fig. 4

Fig. 3

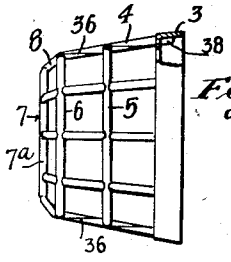

Fig. 5

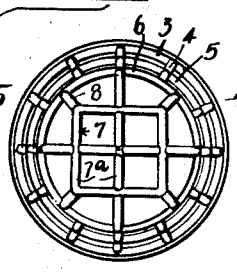

Fig. 6

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UNITED STATES PATENT OFFICE

1,992,332

MOLD FOR FLOWER HOLDERS

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Application February 12, 1934, Serial No. 710,848

7 Claims. (Cl. 22—153)

This invention relates to molds, and, while the mold may be employed for making articles of different kinds, it is particularly adapted for facilitating the casting of flower holders of a reticulated type and having a general conical form. Such flower holders are usually formed with converging bars connected together by integral annular rings. The large end of the cone operates as a base, and the holder usually includes a grid formed at the base and an upper grid. These grids are formed with bars and the spaces between the bars cooperate to hold the flowers in an upright position. Heretofore, it has not been possible to mold an article of this kind in a two-piece mold because the core or inner portion of the mold can not be withdrawn from the flask or outer member of the mold.

In a flower holder of this type, the converging bars are usually connected by an integral ring, which is located at an intermediate point on the bars.

One of the objects of this invention is to enable a mold cavity to be formed in a two-piece mold, which will enable an article having such converging bars and an intermediate integral ring to be cast.

A further object of the invention is to produce a two-piece mold of this type, having a construction at the inner end of the core and the inner face of the flask for facilitating the forming of the upper grid of the molded article and for integrally connecting the same to the converging side bars of the article.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combinations of parts to be described hereinafter, all of which contribute to produce an efficient mold for flower holders.

In the drawing:

Figure 1 is a plan of a molding apparatus embodying my invention and illustrating the mold in its closed condition.

Figure 2 is a side elevation of the apparatus, illustrated in Figure 1.

Figure 3 is a vertical section, taken on the line 3—3 of Figure 1, but upon an enlarged scale, certain parts being broken away.

Figure 4 is a view similar to Figure 3, but showing the mold in its open condition.

Figure 5 is a side elevation of a flower holder, partially broken away and shown in section. This flower holder can be made in the mold illustrated. This view does not show the flower holder in its normal upright position, but shows it oriented through 90°, so that its axis is in the horizontal position which it occupies when formed in the mold.

Figure 6 is a plan of the flower holder, illustrated in Figure 5, as though looking down upon the same when in use.

Figure 7 is a vertical cross-section, taken on the line 7—7 of Figure 4.

Figure 8 is a fragmentary cross-section, taken on the line 8—8 of Figure 4.

Figures 7 and 8 are intended particularly to illustrate the form of the molding grooves which I employ in the mold.

In practising the invention, I provide a flask 1 with which a core 2 cooperates. These parts may be mounted in any desired position, so that the core can be introduced at will into the flask to form the molding cavity. In the present instance, they are mounted so that the axis of the mold is horizontal and the core is guided and movable in a horizontal direction into and out of the flask. This construction is of minor importance and will be described more in detail hereinafter.

The mold is capable of forming a flower holder or article of this same type having the general form illustrated in Figures 5 and 6. Such a flower holder is cast with base ring 3, and its body is formed of a plurality of converging bars 4, which are integrally united at an intermediate point on their length by a ring 5. The upper end of the flower holder is formed with an upper ring 6, which unites integrally with the grid 7, which forms the upper end of the flower holder when in use. This grid 7 comprises an elevated body portion 7^a formed of bars, and this body portion 7^a may be of rectangular form and united to the upper ring 6 of the flower holder by inclined bars 8.

In constructing a mold to cast an article, such as illustrated in Figures 5 and 6, I form the core 2 of substantially cylindrical form, but stepped. In other words, the forward portion of the core has a substantially cylindrical face 9, which preferably has a very slight taper and the rear portion of the core is formed with a substantially cylindrical face 10 of a relatively larger diameter, so that an annular shoulder 11 is formed extending around the core. This shoulder 11 faces toward the flask 1 and has a recess 12 cut in it, so that this recess 12 extends circumferentially all around the core. This recess is preferably of half-round form in cross-section.

At the inner end of the cylindrical face 9, a similar shoulder 13 is formed with a similar re-

cess 14, and beyond this point the core is formed with a tapered nose 15 having a substantially conical side face 16, which is formed at a very considerable taper.

The substantially cylindrical face 10 is also preferably slightly tapered, like the face 9.

In order to form mold cavities for the bars 4 of the flower holder, I form aligned grooves 17 and 18 in the faces 9 and 10. The groove 17 has its greatest depth at the shoulder 13 and tapers toward the shoulder 11, at which point the groove disappears. The groove 18 is similarly tapered, having its greatest depth at the shoulder 11.

In order to enable the core 2 to cooperate to form the grid 7 and the inclined connecting bars 8, I provide the core with a substantially flat inner end face 19, which is formed with parallel grooves 20 to form the bars of the elevated grid body 7^a of the flower holder, and adjacent the shoulder 13 special grooves 21 are formed which have their greatest depth at the end face and have their origin at the shoulder 13. The grooves 21 and the grooves 17 and 18 are preferably of U-shape in cross-section, although they may be V-shaped, if desired. The bottoms of the grooves 17 and 18 are in alignment with each other.

The flash 1 is formed with a mold chamber 22 which corresponds in outline to the core, that is to say, it has an outer substantially cylindrical face 23 and an inner substantially cylindrical face 24, the latter being slightly smaller in diameter than the former so that annular shoulder 25 is formed extending around the interior of the mold chamber. This shoulder is formed with a continuous recess 26 that extends circumferentially around the interior of the mold, and this recess is preferably half-round in form so as to cooperate with the recess 12 to produce a mold cavity for the intermediate ring 5. At the inner end of the substantially cylindrical face 24 an annular shoulder is formed, provided with a circumferential half-round recess 27 which cooperates with the recess 14 to form a mold cavity for the inner ring 6, which is located near the top of the flower holder.

In the faces 23 and 24 aligned grooves 28 and 29 are formed, which have their greatest depth toward the outer side or mouth of the mold chamber. The faces 23 and 24 have the same slight taper as the substantially cylindrical faces 10 and 9 of the core, and at their greatest depth the grooves 28 and 29 have substantially the same depth as at the large ends of the grooves 18 and 17.

The flask is provided with the end face 30 formed with a plurality of half-round grooves 31, which would align with the corresponding grooves 20 cut in the end face of the core.

Between the face 30 and the annular groove 27 a plurality of tapered grooves 32 are formed to cooperate with the tapered grooves 21 of the core to form the connecting bars 8. These grooves 32 are preferably of U-shape cross-section (see Fig. 8). In other words, the grooves 32 are formed in a conical face 33 that has substantially the same conical taper as the conical nose 16 on the inner end of the core.

When the core is in casting position within the flask, as illustrated in Figure 3, all of the grooves formed in the core and the flask cooperate to form molding cavities to cast the flower holder. In examining this figure, it will be evident that the length of the converging bars 4 that are located between the rings 5 and 6 or between the base 3 of the ring 5 are formed by a mold cavity 34 that is partly formed in the flask and partly formed in the core, and this mold cavity is divided at the faces 9 and 10 which are substantially cylindrical, so that although the flower holder has a general conical form, the core can be drawn without difficulty after the casting is made. Likewise, the grooves 21 and 32 cooperate to form mold cavities 35 for the connecting bars 8, formed partly in the core and partly in the flask and which are divided on the conical face 16. By reason of the fact that the grooves are of substantially U-shaped cross-section, there is no interference in withdrawing the core from the bars 8 of the molded flower holder. In this connection, it should be understood, however, that although the grooves taper in depth they do not taper in width. The result is that the flower holder presents lines 36, as illustrated in Figure 5, which can be distinguished on the sides of the bars.

In order to form the base ring 3 of the flower holder, the flask 1 is provided with a counterbore 37, which cooperates with the portion of the core immediately back of the substantially cylindrical face 10 to form a mold cavity for this ring, and at this point the outer face of the core is provided with grooves 37' (see Fig. 3) that are cut longitudinally into it to form stub ends 38 in alignment with the ends of the converging bars 4. These parts 38 form small abutments, which are useful in securing a base in a flower holder. This base is inserted by a separate operation, and, as stated above, is reticulated so as to cooperate with the grid 7 to support the flowers in an upright position.

In order to facilitate the formation of the grooves in the flask 1, I prefer to construct the flask of three pieces, 1^a, 1^b and 1^c. These pieces are separated from each other on planes substantially coinciding with the position of the grooves 26 and 27. This enables all of these grooves to be formed readily by means of cutting tools, after which the three pieces are all permanently secured together.

The flask 1 is mounted on an end plate 39, which may have a foot 40 for securing it to a bench. The frame of the device also includes an outer end plate 41, and these end plates are connected by parallel guide bars 42, on which a cross-head 43 slides. This cross-head carries the core in a properly oriented position to enable the proper grooves to align to form the casting. The core is movably mounted in the cross-head 43 and is moved in and out, as desired, by any suitable means, such as a connecting rod 44, attached to a crank 45 carried on a crank-shaft 46, having a crank or arm 47 for operating it. The end of the connecting rod 44 is attached directly to the core by an adjustable pin 48 received in a threaded socket 49 in the butt end of the core. On the butt end of the core there is also provided a pusher plate 50, the ends of which are offset outwardly and receive set screws 51, the tips of which engage a sleeve 52 secured to the cross-head 43 by bolts 43^a. When the crank 47 is operated to shove the core into place, the core will advance, and as it advances it will carry the cross-head with it. The forward end of the sleeve 52 is formed into an enlarged collar 53, the forward face 54 of which comes up against the forward face 55 of the flask, and between these faces the gate 56 for the mold is formed. By adjusting the set screws 51, the relation of the faces 54 and 55 can be adjusted.

In order to hold the core 2 in proper alignment to cooperate with the flask 1, the sleeve 52 is pro-

vided with a set screw 57, the tip of which runs in a guide slot 58 in the adjacent face of the core. This slot may extend in from the butt end of the core. When the core is being withdrawn to open the mold, the core will slide back in the sleeve 52 until the end of the slot strikes the tip of the set screw 57, after which the cross-head will be pulled back to open the mold completely.

The term "cylindrical" as used in this specification, is intended to mean a surface of revolution generated by a line or element rotating about an axis, regardless of whether the line or element is straight or curved in a plane radial to the axis of rotation.

While the specification and drawing illustrate my improvement as applied to a mold for forming articles of general conical form, it is obvious that in accordance with my invention, molds can be formed for casting flower holders of square or polygonal form.

It is understood that the embodiment of the invention described herein, is only one of the many embodiments this invention may take, and I do not wish to be limited in the practice of the invention, nor in the claims, to the particular embodiment set forth.

What I claim is:—

1. In a mold for casting an article having a plurality of converging bars united by an intermediate integral ring, the combination of a flask having a mold cavity including an inner mold cavity of relatively small diameter having a substantially cylindrical face, and an outer mold cavity having a substantially cylindrical face of relatively larger diameter, said mold cavity having an annular circumferential shoulder between the said substantially cylindrical faces, with a recess formed therein, said substantially cylindrical faces having a plurality of aligned tapered grooves cut therein in planes extending radially from the axis of the mold cavity, the grooves in the inner mold cavity having their greatest depth at the said shoulder, and the grooves in the outer portion of the mold originating at said shoulder and increasing in depth in an outward direction in the outer mold cavity, a core having an inner portion with a substantially cylindrical face of relatively small diameter and an outer portion with a substantially cylindrical face of relatively larger diameter, and having an annular shoulder located between said last named substantially cylindrical faces, said last named annular shoulder having a circumferential recess formed therein, said circumferential recesses cooperating when the core is in position, to produce an annular chamber to form the said ring, and said aligned grooves cooperating to form cavities for molding the said bars.

2. In a mold for casting an article having a plurality of converging bars united by an intermediate integral ring, the combination of a flask having a mold cavity including an inner mold cavity of relatively small diameter having a substantially cylindrical face, and an outer mold cavity having a substantially cylindrical face of relatively larger diameter, said mold cavity having an annular circumferential shoulder between the said substantially cylindrical faces, with a recess formed therein, said substantially cylindrical faces having a plurality of aligned tapered grooves of substantially V-shaped cross section cut therein in planes extending radially from the axis of the mold cavity, the grooves in the inner mold cavity having their greatest depth at the said shoulder, and the grooves in the outer portion of the mold originating at said shoulder and increasing in depth in an outward direction in the outer mold cavity, a core having an inner portion with a substantially cylindrical face of relatively small diameter and an outer portion with a substantially cylindrical face of relatively larger diameter, and having an annular shoulder located between said last named substantially cylindrical faces, said last named annular shoulder having a circumferential recess formed therein, said circumferential recesses cooperating when the core is in position, to produce an annular chamber to form the said ring, and said aligned grooves cooperating to form cavities for molding the said bars.

3. In a mold for casting an article having a plurality of converging bars united by an intermediate integral ring, the combination of a flask having a mold cavity including an inner mold cavity of relatively small diameter having a substantially cylindrical face, and an outer mold cavity having a substantially cylindrical face of relatively larger diameter, said mold cavity having an annular circumferential shoulder between the said substantially cylindrical faces, with a recess formed therein, said substantially cylindrical faces having a plurality of aligned tapered grooves cut therein in planes extending radially from the axis of the mold cavity, the grooves in the inner mold cavity having their greatest depth at the said shoulder, and the grooves in the outer portion of the mold originating at said shoulder and increasing in depth in an outward direction in the outer mold cavity, a core having an inner portion with a substantially cylindrical face of relatively small diameter and an outer portion with a substantially cylindrical face of relatively larger diameter, and having an annular shoulder located between said last named substantially cylindrical faces, said last named annular shoulder having a circumferential recess formed therein, said circumferential recesses cooperating when the core is in position, to produce an annular chamber to form the said ring, and said aligned grooves cooperating to form cavities for molding the said bars, said mold cavity having an inner end face and said core having an inner end face to substantially abut against the first named inner end face when the core is in place, said end faces having registering grooves formed therein to form an end grid for the molded article, said mold having grooves formed between the flask and the core to receive the cast metal to unite the grid integrally with the bars cast in the said tapering grooves.

4. In a mold for casting an article having a plurality of converging bars united by an integral ring, the combination of a flask having a stepped substantially cylindrical mold chamber, a substantially cylindrical stepped core to fit into the mold chamber, said mold chamber having an annular groove with a circumferential recess formed therein, said core having an annular shoulder with a circumferential recess formed therein, said recesses cooperating when the core is in position in the flask, to form a mold cavity for casting the ring, said mold having mold cavities for said bars, said last named mold cavities being formed partly in the wall of the mold chamber and partly in the wall of the core, the portions of the last named grooves located in the flask having a substantially U-shaped cross section and the grooves formed in the said core being of substantially U-shaped cross section.

5. In a mold for casting an article having a plurality of converging bars united by an intermediate integral ring, the combination of a flask having a mold cavity including an inner mold cavity of relatively small diameter having a substantially cylindrical face, and an outer mold cavity having a substantially cylindrical face of relatively larger diameter, said mold cavity having an annular circumferential shoulder between the said substantially cylindrical faces, with a recess formed therein, said substantially cylindrical faces having a plurality of aligned tapered grooves cut therein in planes extending radially from the axis of the mold cavity, the grooves in the inner mold cavity having their greatest depth at the said shoulder, and the grooves in the outer portion of the mold originating at said shoulder and increasing in depth in an outward direction in the outer mold cavity, a core having an inner portion with a substantially cylindrical face of relatively small diameter and an outer portion with a substantially cylindrical face of relatively larger diameter, and having an annular shoulder located between said last named substantially cylindrical faces, said last named annular shoulder having a circumferential recess formed therein, said circumferential recesses cooperating when the core is in position, to produce an annular chamber to form the said ring, and said aligned grooves cooperating to form cavities for molding the said bars, said core having an inner annular shoulder with a circumferential recess formed therein, and said flask having an inner annular shoulder with a circumferential recess formed therein, said last-named circumferential recesses cooperating to form a mold cavity for forming an end ring on the casting and intersecting the cavities in the mold that form the converging bars.

6. In a mold for casting an article having a plurality of converging bars united by an intermediate integral ring, the combination of a flask having a mold cavity including an inner mold cavity of relatively small diameter having a substantially cylindrical face, and an outer mold cavity having a substantially cylindrical face of relatively larger diameter, said mold cavity having an annular circumferential shoulder between the said substantially cylindrical faces, with a recess formed therein, said substantially cylindrical faces having a plurality of aligned tapered grooves cut therein in planes extending radially from the axis of the mold cavity, the grooves in the inner mold cavity having their greatest depth at the said shoulder, and the grooves in the outer portion of the mold originating at said shoulder and increasing in depth in an outward direction in the outer mold cavity, a core having an inner portion with a substantially cylindrical face of relatively small diameter and an outer portion with a substantially cylindrical face of relatively larger diameter, and having an annular shoulder located between said last-named substantially cylindrical faces, said last-named annular shoulder having a circumferential recess formed therein, said circumferential recesses cooperating when the core is in position, to produce an annular chamber to form the said ring, and said aligned grooves cooperating to form cavities for molding the said bars, said core having an inner annular shoulder with a circumferential recess formed therein, and said flask having an inner annular shoulder with a circumferential recess formed therein, said last-named circumferential recesses cooperating to form a mold cavity for forming an end ring on the casting and intersecting the cavities in the mold that form the converging bars, said mold cavity and said core having inner end faces formed therein cooperating to form an annular cavity for casting an end grid for the molded article, said mold having grooves formed between the flask and the core to receive the cast metal and communicating with the annular cavity that forms the said end ring, to unite the grid integrally to the end ring.

7. In a mold for casting an article having a plurality of converging bars united by an integral end ring, the combination of a flask having a mold chamber with a substantially conical end face and with an annular shoulder extending around the mold chamber at the outer portion of said end face, said shoulder having a circumferential recess formed therein, a core having a substantially conical nose at the end thereof and having an annular shoulder adjacent said conical nose, with a circumferential recess formed therein to cooperate with the first-named recess to form a cavity to cast the end ring, the said conical end face of the mold having grooves cut therein tapering in depth and the said conical nose of the core having grooves cut therein tapering in depth in an opposite direction from the last-named grooves and registering with the same to form cavities for forming grid bars, said last-named cavities communicating with said ring cavity.

ROY E. SPENCER.