

H. W. ALEXANDER.
 CONTRACTING METAL CORE FOR RING MOLDS.
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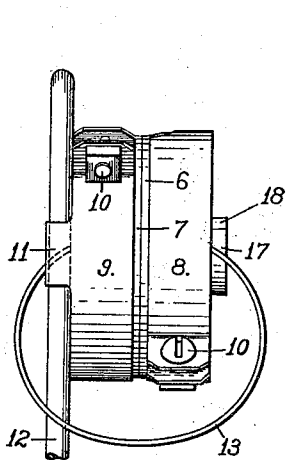


Fig. 1

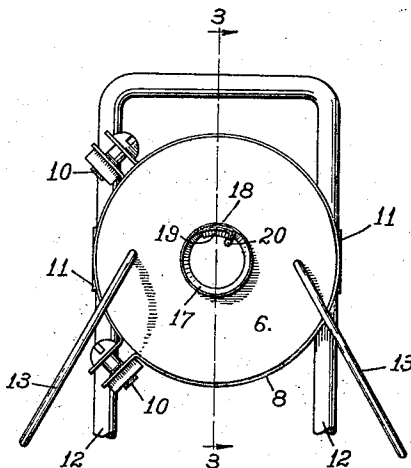


Fig. 2

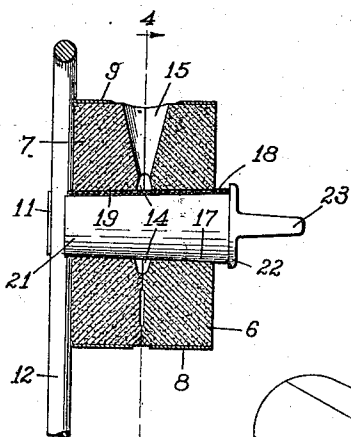


Fig. 3

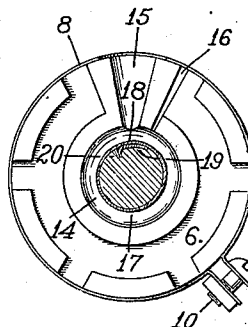


Fig. 4

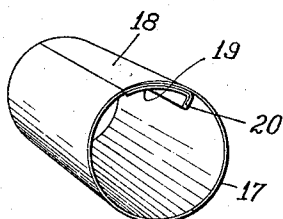


Fig. 5

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CONTRACTING METAL CORE FOR RING-MOLDS.

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To all whom it may concern:

Be it known that I, H WALTER ALEXANDER, a citizen of the United States, and a resident of Sac City, in the county of Sac and State of Iowa, have invented certain new and useful Improvements in Contracting Metal Cores for Ring-Molds, of which the following is a specification.

My invention relates to molds for casting metal, and particularly to contracting metal cores for such molds. The herein disclosed embodiment of my invention is particularly intended for use with molds for casting finger-rings and the like from precious metals, and it is the object of the invention to provide a permanent contracting core for molds of this class, the core being used with a permanent mold of clay or the like, and being adapted for producing a variety of sizes of rings. A further object of my invention is to provide simple means for supporting and expanding the core when placing the same in the mold, and for facilitating the removal of the core from the mold.

In the accompanying drawings Figure 1 is a side view of a mold provided with a core embodying my invention, Fig. 2 is a front view of the same, Fig. 3 is a longitudinal vertical section on the plane of the line 3—3 of Fig. 2, showing the mandrel within the core, Fig. 4 is a transverse vertical section on the plane of the line 4—4 of Fig. 3, and Fig. 5 is a perspective view of the core alone.

The mold shown in the drawings comprises two principal annular parts 6 and 7 which are made of clay or other material suitable for use in a permanent mold for metals of the class before mentioned. The mold-parts 6 and 7 are surrounded peripherally by clamp-bands 8 and 9, respectively, said clamp bands having screws 10 for drawing the ends thereof toward each other, and the band 9 having hooked projecting side-pieces 11 for engaging a U-shaped support-frame 12. Resilient split-rings 13 are employed as shown in Figs. 1 and 2, for pressing together the mating side-faces of the mold-parts 6 and 7, and the latter are kept in axial alinement by the core. Said mating or contacting side-faces of the mold-parts have suitably-formed recesses 14 therein adjoining the axial openings thereof, said recesses forming the mold-cavity. At the top of said mold-cavity a gate or pouring-channel communicates therewith, the

same being formed by recesses 15 in the faces of the parts, and in one or both of the parts there may be formed also a vent 16, as indicated in Fig. 4.

The bore or axial opening through the mold-parts 6 and 7 is slightly tapering or frusto-conical in form, the taper preferably being the same as that of the standard ring-gage or measuring device by which sizes of finger-rings are commonly determined. My contracting core has a like taper and is a substantially frusto-conical tubular body formed from a thin sheet 17 of metal, such as bronze, having considerable resilience. The sheet 17 is rolled or otherwise suitably bent to the form desired, the longitudinal edge-portions of the sheet overlapping, and the thickness of the outer overlapping portion 18 being gradually reduced to a very thin knife-like edge, whereby the outer surface of the core may be perfectly circular in transverse section. The inner longitudinal edge-portion of the sheet is doubled back to form a reinforcing part 19, and the doubled edge is turned in radially to form a flange 20 extending longitudinally within the opening through the core. It will be seen that at the overlapped portions of the core-wall there are three thicknesses of metal, comprising the outer portion 18, the main sheet 17, and the inner part 19. In placing the core within the mold, said thick part of the core-wall is placed opposite the inner end of the gate or pouring-channel formed by the recesses 15, so that said portion of the core will be that first struck by the molten metal entering the mold-cavity from the gate.

Preferably there is associated with the core a mandrel comprising a metal body 21 formed to fit within the core, and grooved or channeled longitudinally to receive the flange 20 and reinforcing part 19. At one end the mandrel-body 21 has an annular flange 22 adapted to fit against the larger end of the core, and at the same end there is a flat handle 23 which may be conveniently grasped when using the mandrel to insert the core in the mold and to remove the same therefrom. By the use of the mandrel for inserting the core in the mold, the core is held in its normal or expanded form until it is firmly seated in the tapering bore of the mold-parts by the pressure of the flange 22 against its larger end, and after being so seated in the bore of the mold the core is

frictionally retained therein when the mandrel is withdrawn, which is done before pouring the molten metal into the mold-cavity. When the cast ring cools, the contraction thereof compresses the core, causing a slightly greater over-lapping of its longitudinal edges, the core offering so little resistance to the contraction as to cause no appreciable stress in the ring. The mandrel may also be conveniently used for removing the core from the ring and mold, after the casting is sufficiently cooled. For this purpose, the mandrel is reinserted in the core and then turned slightly in a clockwise direction. The turning movement of the mandrel is communicated to the flange and causes a slight additional contraction of the core which loosens the same sufficiently to readily enable its withdrawal. Thereafter the mold is opened and the casting removed therefrom.

It may be mentioned that it is preferable, before placing the core in the mold, to coat the surface of the core, where the same adjoins the mold-cavity, with a thin film or deposit of soot, such as may be effected by passing the cold metal through the smoky flame of a burning hydrocarbon. Such a film or coating of carbon or lampblack effectually prevents adherence of the cast metal to the core.

It will be obvious that my invention provides a simple, inexpensive and efficient core for molds of the class described, and that one core of suitable length may be used, if desired, for molds of several sizes such that the rings produced therein are within the range of diameters presented by longitudinally different portions of the core.

Now, having described my invention, what I claim and desire to secure by Letters Patent is:

1. A core for ring-molds, comprising a tubularly formed metal sheet having its longitudinal edges overlapping and the outer overlapping edge-portion thinned so that the external surface is of circular cross-section.

2. A core for ring-molds, comprising a frusto-conical tubularly-formed sheet-metal

body having at one side overlapping portions extending longitudinally from end to end thereof and contacting slidably to enable variations of diameter throughout the length of the tube, and removable means for expanding the tube.

3. In a core for ring-molds, the combination with a tubularly-formed sheet-metal core having longitudinal edges overlapping and contacting slidably, of means fitting slidably within said core to expand the same, and a longitudinal inwardly extending flange on the core interengaging with the expanding means to prevent relative rotation of the parts.

4. In a core for ring-molds, the combination with a frusto-conical tubularly-formed sheet metal core having longitudinal overlapping edges contacting slidably to enable variations of diameter throughout the length thereof, of a mandrel fitting removably within said core to hold the same in expanded form, and having an abutment for engaging the end of the core to press the same into a mold.

5. A core for ring-molds, comprising a tubularly-formed metal sheet having its longitudinal edges overlapping, the inner overlapped portion having an integral flange extending inwardly therefrom.

6. A core for ring-molds, comprising a thin sheet of resilient metal curved transversely to form a frusto-conical tube, the longitudinal edges of the sheet overlapping, and the inner overlapping portion doubled back to form a stiffening and reinforcing part.

7. A core for ring-molds, comprising a thin sheet of resilient metal curved transversely to form a tube, the longitudinal edges of the sheet overlapping and contacting slidably to enable variations of diameter of the tube throughout its length, the overlapping outer edge portion thinned so that the external surface of the tube is of circular cross-section, and the inner overlapping portion doubled to provide a triple thickness of metal at one side of the tube.

H WALTER ALEXANDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."