

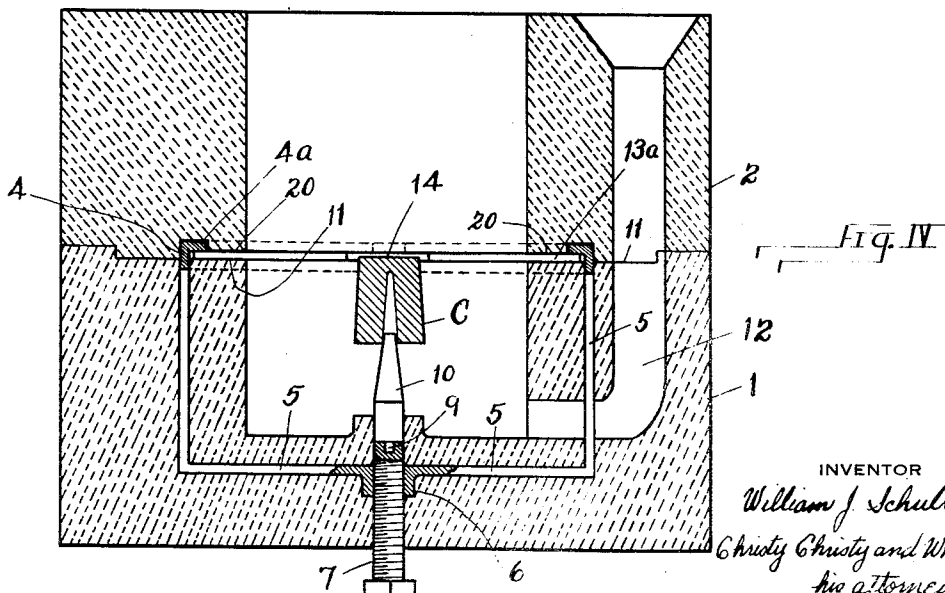
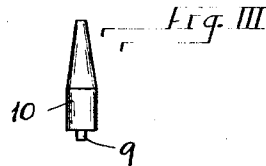
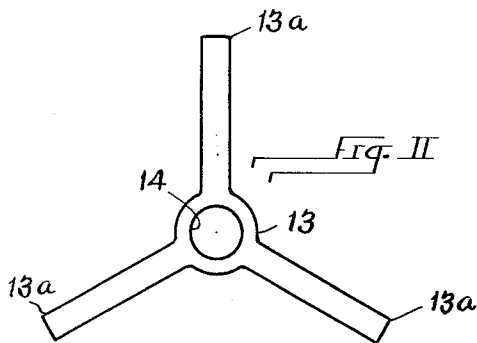
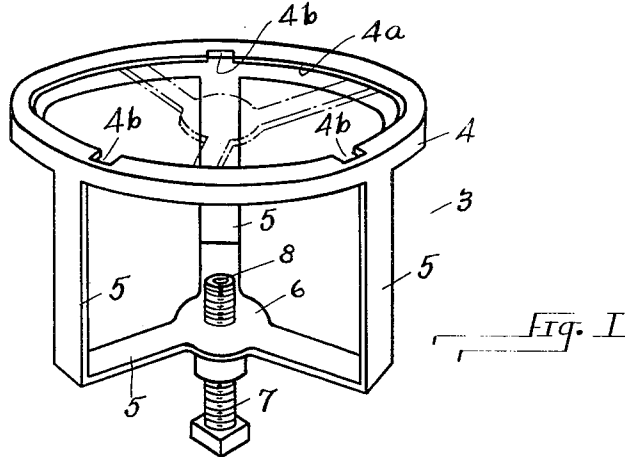
May 23, 1933.

W. J. SCHULTZ
MOLDING APPLIANCE

1,911,040

Filed Jan. 27, 1932

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

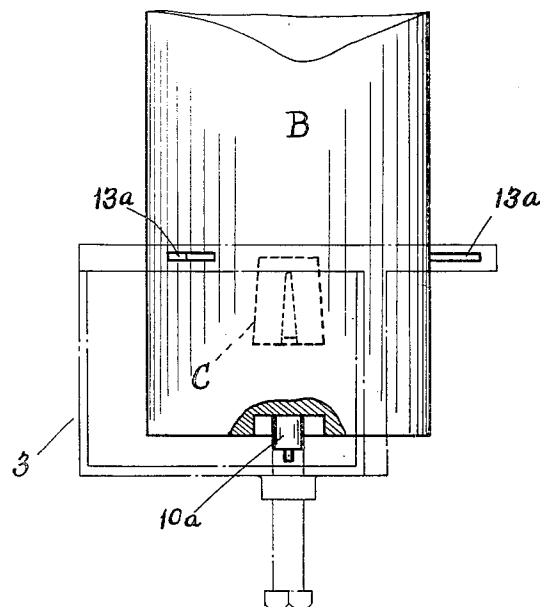


FIG. V

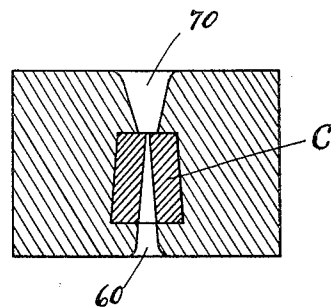


FIG. VI

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UNITED STATES PATENT OFFICE

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MOLDING APPLIANCE

Application filed January 27, 1932. Serial No. 589,168.

It is the object of the invention to produce a molding appliance, primarily intended for molding composite metallic bodies, adapted to support within the matrix of a mold a body upon or around the surface of which a second body is to be cast and molded. For purposes of illustration, the invention will be described as utilized for the manufacture of a drawing die comprising a drawing block, upon and around the surface of which there is molded a supporting body, casing or carrier of suitable metal, for example, cast iron or steel. By the use of the appliance to be described, the drawing block is positioned and rigidly held in the proper position within the mold matrix for the casting around it of the carrier referred to.

In the accompanying drawings there is shown in Fig. I a perspective view of what I call a cage; this cage is mounted in a mold, and co-operates with other parts, presently to be described, to secure the drawing-block C in desired position within the mold. Fig. II is a bottom plan view of a spider, and Fig. III is a view in side elevation of a nipple, both the spider and the nipple being adapted to co-operate with the cage in securing the block C within the mold. Fig. IV is a view in central vertical section of a mold containing the cage and its associated parts for securing the block, ready for the casting of its supporting body or carrier. Fig. V is a view, partly in side elevation and partly in vertical section, of the completed casting, the mold having been broken away, leaving the completed casting and the cage in the position indicated by the dotted lines. Fig. VI is a view in vertical section of the completed implement which is machined from the casting.

The mold for casting the supporting body of metal around the block C comprises a drag 1 and a cope 2, and advantageously both mold sections are formed of a baked-sand composition, such as that of which molding cores are usually formed. In order that the block C may be secured in the precise position desired within the mold, I combine with the drag 1 the cage 3. The cage comprises in structure an upper annulus 4, provided with an inturned shoulder 4a, and a plurality of legs 5 extend downward from annulus 4, and turn angularly inward, uniting with a boss 6. An adjusting screw 7 extends with threaded engagement through the boss 6; the end of screw 7 is provided with a socket 8 (Fig. I) to receive the depending centering pin 9 of a block-positioning nipple 10 (Fig. III).

The cage 3 is included within the body of the drag 1, leaving a portion of annulus 4, and shoulder 4a, above the parting-line 11, and leaving the screw 7 projecting upwardly into the bottom of the drag. The drawing is conventional in that the right-hand leg 5 of the cage in Fig. IV is shown in full lines, when as a matter of fact the leg should be shown in dotted lines, to the rear of the gate 12. However such showing has been intentionally made for the purpose of presenting a clearer showing of the structure. The foundryman will understand how the drag 1 of the mold can be fashioned of sand composition around the cage 3, and then baked to give it sufficient hardness for service.

A three-armed spider 13 is formed with a seat 14 which conveniently is inset in its central portion. The shoulder 4a of the cage 3 is notched at the three points 4b to permit the tips 13a of the arms of the spider to be dropped into a position below shoulder 4a, whereupon a slight turn of the spider will move the tips 13a out of registry with the notches 4b, and the spider will be secured in place as shown in Fig. IV, the tips 13a resting upon the parting face 11 of the drag 1 and locked there by the shoulder 4a.

The nipple 10 is seated upon the tip of screw 7, and the block C, which in this case is partly perforated, is centered over the point of the nipple. The screw 7 is run up, raising the nipple and block within the mold, until the top of the block nests in or rests on the seat 14 of the spider. Manifestly, the block will thus be rigidly secured or clamped and accurately centered within the mold. The cope 2 of the mold is then placed upon the drag, the bottom face of the cope being appropriately shaped to fit over the ring 4

and notched at three points 20 to fit snugly over the arms of spider 13.

Therefore the inner face of the mold is of uninterrupted cylindrical contour, save where the arms of the spider extend into the joined body of the mold. Molten metal is introduced through gate 12 and the mold is filled to form the supporting casing for the block C.

I have found that it is particularly desirable to employ a cage having three legs 5, since such a structure provides the necessary rigidity in the structure without destroying ample clearance for the gate 12. The arms, spokes or other equivalent parts which the spider 13 may include are advantageously three in number, since the block C may thereby be accurately centered in the mold; the three-armed structure also provides maximum strength for a given weight of metal in the spider. Preferably the spider 13 and the nipple are formed of a metal having substantially the same composition as that of the metal cast around the core. The nipple and spider—having been cleansed and pickled before assembly in the mold—are amalgamated with the supporting body cast around the block C, so that the central portion of the spider and all portions of the spider within the casting become integral with the block-supporting body.

Upon solidification of the casting the baked-sand mold is broken away, leaving the cast body B (Fig. V) with the cage 3 attached to the protruding tips 13a of the spider. The cage may be turned to such position that its notches 4b will be in registry with the tips 13a of the spider, and then the cage may be removed from the casting. I make a particular point of the fact that in my structure the cage 3 is more or less permanent, and it may be used over and over again. Only the spider 13 and the nipple 10 are lost in the operation, and they are inexpensive. The nipple may be painted with a refractory wash, so that the cast metal will not weld to it, but it is doubtful whether a small item of this nature is of importance.

The casting B, autogenously welded around the block C, is machined down to its ultimate shape (Fig. VI) and the protruding portion 10a of the nipple (Fig. V)—the portion protected by the mold and not taken into the body of the casting—is broken away. An entrance 60 and an exit 70 are drilled and machined in the die body. The block C is pierced and internally finished to desired size, by apparatus and methods well known to the art.

I claim as my invention:

1. The combination with a mold having a matrix for the shaping of cast metal, of a spider extending across said mold matrix, said spider comprising a seat and arms radiating therefrom and projecting into the

wall of said mold, and clamping means supported by the mold wall and adapted to co-operate with said seat.

2. The combination with a mold having a matrix for the shaping of cast metal, of a cage mounted in the mold wall surrounding the matrix, a spider extending across said mold matrix, said spider comprising a seat and arms radiating therefrom and engaging said cage, and clamping means adjustably carried by said cage and extending into said mold matrix for co-operation with said seat.

3. The combination with a mold having a matrix for the shaping of cast metal, of a cage mounted in the mold wall surrounding the matrix, a spider extending across said mold matrix, said spider comprising a seat and arms radiating therefrom and engaging said cage, and a clamping member in threaded engagement with said cage, said clamping member being located opposite said seat and adjustable relatively thereto.

4. The combination with a mold having a matrix for the shaping of cast metal, said mold including a cope and a drag defining said matrix, of a cage mounted in said drag, said cage including a rim projecting above the parting face of said drag, a spider extending across the mold matrix, said spider comprising a seat and arms radiating therefrom and projecting outwardly and engaging said cage rim, said cage rim being housed in the assembled cope and drag of the mold, and clamping means adjustably carried by said cage and extending into said mold chamber for co-operation with said seat.

5. The combination with a mold having a matrix for the shaping of cast metal, of a fusible spider extending across said mold matrix, said spider comprising a seat and arms radiating therefrom and supported in the mold wall, and a permanent clamping device projecting through the mold wall for co-operation with said seat.

6. An appliance for use in combination with a mold, comprising a cage including a shouldered rim, a spider comprising a seat and arms radiating therefrom for engagement with said rim, said cage also including an element threaded for the passage of a screw, and a screw directed through said threaded element toward the seat of said spider.

In testimony whereof I have hereunto set my hand.

WILLIAM J. SCHULTZ.