June 22, 1965 J. L. BRIGHT 3,189,960

MOLD AND SUPPORT THEREFOR

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Fig. 2.

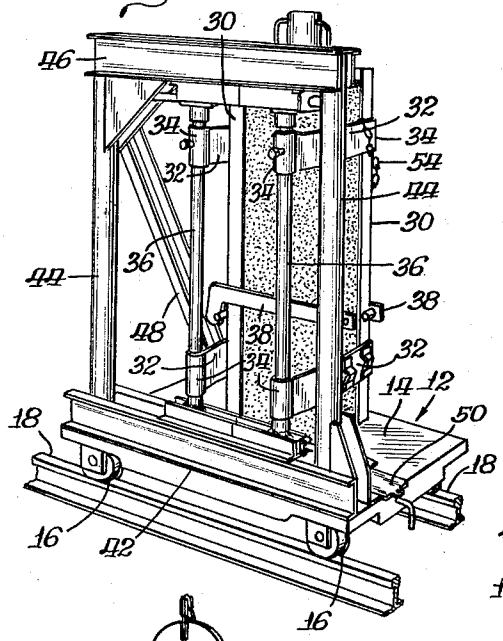


Fig. 1.

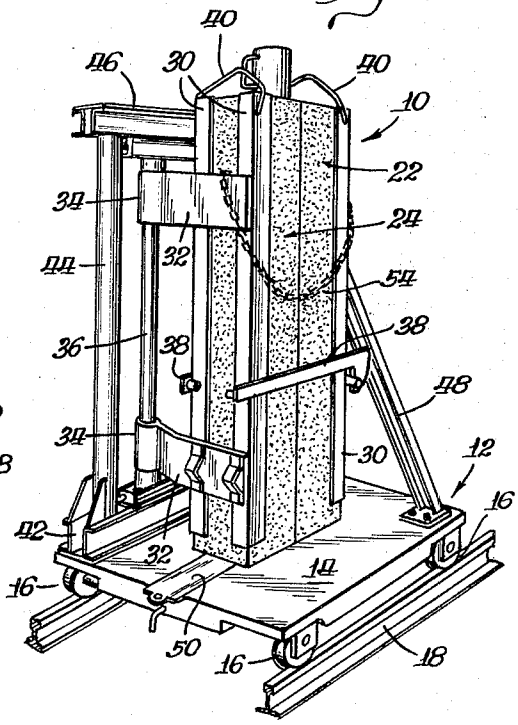


Fig. 3.

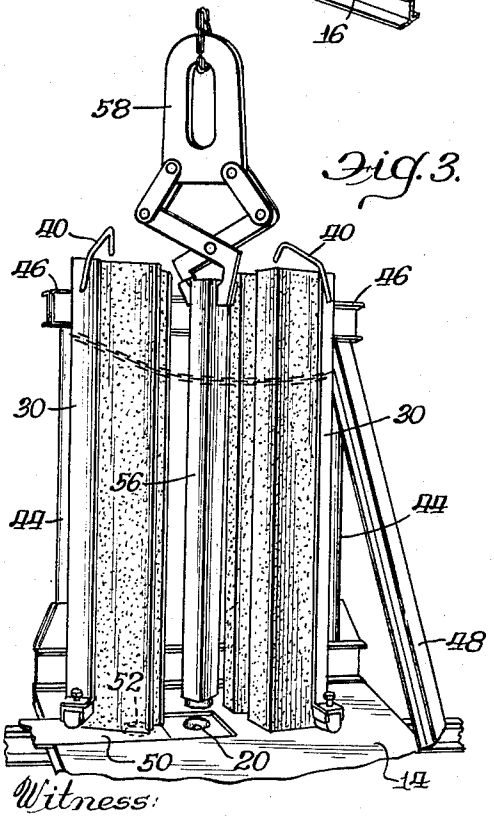
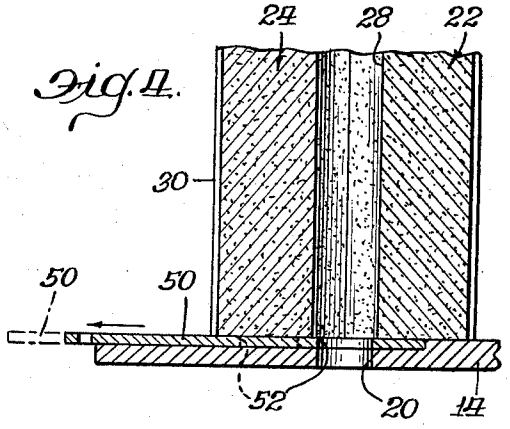


Fig. 4.



Witness:

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Fig. 5.

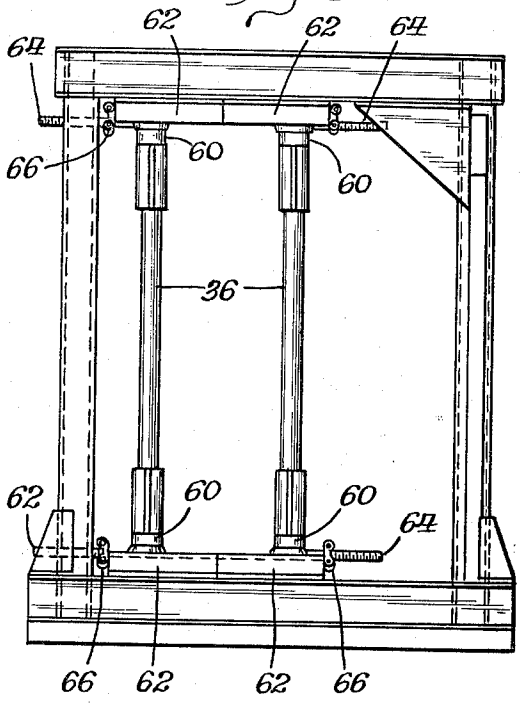
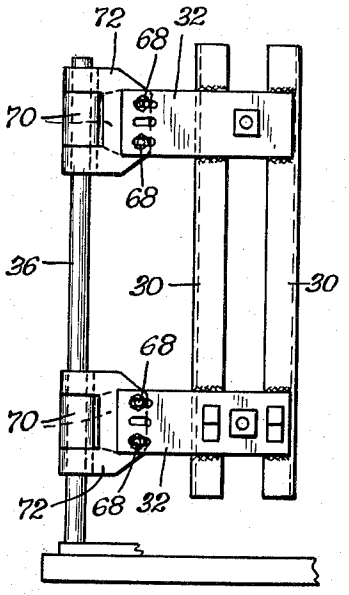


Fig. 6.



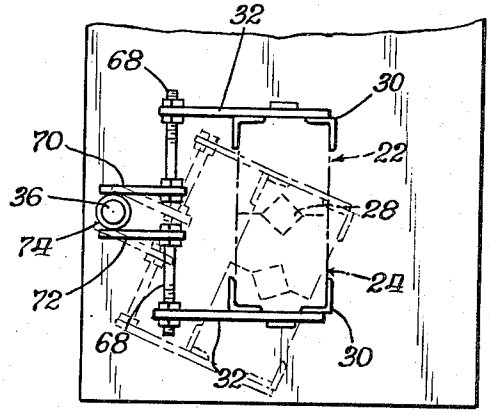


Fig. 7.

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3,189,960

MOLD AND SUPPORT THEREFOR

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3 Claims. (Cl. 22—209)

The present invention relates to a mold and support therefor.

The invention relates more particularly to a mold used in pressure casting, that is, it is filled by pouring through a bottom opening. The mold is mounted on a portable support, such as a car running on rails.

A broad object of the invention is to provide a mold and support therefor of the foregoing character whereby the pouring operation can be performed in the least amount of time.

Another and more specific object is to provide a mold and support therefor of the foregoing character in which the separable parts of the mold can be moved into and out of cooperative position in a minimum amount of time and with minimum effort.

Still another object is to provide a mold of the foregoing character mounted on a portable support for horizontal swinging movement, in one form utilizing two axes and in another a single axis.

Other objects and advantages of the invention will appear from the following detailed description taken in conjunction with the accompanying drawings in which:

FIGURE 1 is a perspective view of the apparatus of the invention from the front and at an angle;

FIGURE 2 is a perspective view of the apparatus from the rear side and at an angle;

FIGURE 3 is a perspective view of the apparatus in open position, showing a cast article being removed;

FIGURE 4 is a sectional detailed view taken through the bottom end of the mold and the deck of the car on which it is mounted, this view being taken transverse to the parting plane of the mold parts;

FIGURE 5 is a rear view of the framework for supporting the mold showing adjusting members;

FIGURE 6 is a side view of a modified form of mold; and

FIGURE 7 is a top view of the mold shown in FIGURE 6.

Referring now in detail to the drawings, attention is directed first to FIGURES 1 and 2 in which the apparatus as a whole is shown. The mold is indicated in its entirety at 10, and the car, or portable support on which it is supported, at 12. The car has a supporting deck 14 and wheels 16 running on rails 18. The car is moved along the rails to a pouring station at which is provided a pouring tube of known type connected with a ladle for pouring upwardly therethrough through a hole 20 in the car deck and into the mold cavity.

The mold 10 in the present instance is designed for casting relatively long billets and, as such, is of tall proportions. The mold is made up of two parts, 22 and 24, each including a block of graphite. These blocks have concave conformations which, when the mold parts are together, form a cavity 28. Each mold block is supported in a mold frame of suitable construction, and which may include a pair of vertical angle irons 30. Secured to the two angle irons at each side are two horizontal arms 32 preferably widely spaced apart in vertical direction. These arms may be secured to the angle irons as by welding, and extend rearwardly beyond the mold blocks toward the rear of the car (away from the observer, FIG. 1, toward the observer, FIG. 2). Each arm 32 includes a loop 34 receiving a post 36 of which there are two spaced transversely and closely adjacent the rearward projection of the side surfaces of the mold. The two arms at each side are pivotally mounted on a respective post whereby the mold parts may be swung about the axes of the respective posts into and out of operative interengagement. The mold parts may be normally clamped together by arms 38, each pivoted on one of the parts of the mold and detachably engageable with a latching element on the other mold part. The mold parts may be provided with bails 40 at the top, secured to the angle irons, for handling them by means of a crane.

The car is provided with a framework for supporting the mold in the desired positions, this framework including also the posts 36 referred to above. The framework may be of such detailed construction as desired, but includes principal members such as a crossbeam 42 secured to the car deck, fixed posts 44 rising from the ends of this beam, across the top of which is a top beam 46. A diagonal piece 48 is secured between the top of one post and the car deck at the opposite side, to rigidify the frame. These various members of the framework may be secured together as by welding.

A cut-off plate 50 is provided for cutting off the mold from the pouring tube. This plate is disposed under the mold, on the car deck, and is arranged for sliding in and out as indicated in FIG. 4, its inner position being shown in full lines and its outer position in dot-dash lines. The plate has a hole 52 therein, preferably of the same size as the hole 20 in the car deck, and in register with that hole when the plate is in its inner position. For performing the filling operation, the plate is moved to its inner position and the cavity is then filled. After it is so filled, the cut-off plate 50 is pulled to its outer position in which the hole 52 therein is out of register with the hole 20, cutting off the cavity. After this step, the pouring tube may be separated from the car, and the car moved along the tracks to another position to enable another car to be brought in for a pouring operation.

After the mold has cooled and the molten metal therein frozen, the mold may be opened, as shown in FIG. 3. To open the mold, the mold parts are swung about their respective axes, i.e., the posts 36, after the clamp arms 38 are released. If desired, a tie means, or chain, 54 may be utilized for limiting the outward swinging movement of the mold parts. A cast article indicated at 56 can be removed by suitable lifting means 58. The mold is then accessible for a further pouring operation.

The structure above described enables the mold parts to be moved into and out of operative interengagement in minimum time and with minimum effort. The mold parts are secured against tipping or other displacement both in the closing and opening movements by the widely-spaced points of support provided by the posts 36. This securement is effective both with respect to securing the mold on the car, and as to relative movement between the mold parts. The mold parts must of necessity move into accurate interengagement by merely moving them toward each other.

The mold parts are surfaced, at least after certain pouring operations, which changes the dimensions of the graphite blocks at least slightly. It is, of course, desirous that the mold parts fit together with the highest accuracy, and in order to assure that feature, notwithstanding the resurfacing of the mold parts, means is provided for adjusting the posts 36 toward and from each other. Attention is directed to FIGURE 5 showing the posts mounted in bearings 60 at top and bottom, these bearings being mounted for movement in suitable means, such as blocks 62 mounted in the framework. Adjusting means including threaded screws 64 are secured at their inner ends to the bearings and extend outwardly beyond the ends of the blocks 62. Nuts, or equivalent

adjusting elements 66, are threaded on the screws, and upon turning them thereon and by working against the blocks, they move the screws in or out with consequent inward and outward adjusting movements of the posts 36. The details of mounting of the elements for accomplishing this adjusting feature may be as desired. When, for example, the face surfaces of the mold blocks are resurfaced, those surfaces would tend to assume a relative angular relation, but the adjusting means shown in FIG. 5 overcomes this difficulty and enables the meeting surfaces to interengage in a common plane.

The invention also encompasses the mounting of the mold parts on a single axis. For this construction, attention is directed to FIGS. 6 and 7. The mold and the parts thereof, including the arms 32, may be the same as or similar to the parts described above. The arms 32, however, extend rearwardly, and at the rear ends bolts 68 interconnect these arms with a pair of short arms 70 secured to sleeves 74 pivotally mounted on a single post 36. The arms 32 extend straight rearwardly, and the arms 70 and 72 are closely adjacent each other, i.e., spaced apart substantially the diameter of the sleeves 74. The arms 70 and 72, as will be seen in FIG. 6, are of cooperative shapes, the arms 72 being forked-shaped, while the arms 70 fit between the forked elements of the other arms. The present construction is simpler than the previous construction, and is easily manipulated. It has the further advantage that no cut-off plate, such as 50, is required. Because of the single axis about which the mold parts are pivoted, the mold as a whole can be swung about that axis when in connected condition, and this movement displaces the cavity 28 from register with the hole in the car, effecting the cut-off operation. After the mold has cooled, the parts are separated in the same manner as described above, and the cast article is withdrawn.

While I have herein disclosed a certain preferred form of the invention, it will be understood that changes may be made within the scope of the appended claims.

I claim:

1. A movable car having a support deck, a frame work mounted on the car, a pair of mold parts, means pivotally mounting the mold parts on the frame for movement about vertical axes into and out of interengagement, said mold parts including a pair of transversely spaced posts, means for adjustably moving the posts toward and away from each other, said mold parts having concavities which, when the molds are in interengagement, form a cavity opening downwardly through the mold, said car deck having a pouring opening in register with the mold cavity when the mold parts are in interengagement, and slide cut-off means between the mold and the car deck for cutting off the cavity from the pouring opening.

2. The method of casting in conjunction with a support and a mold which includes a pair of mold parts mounted on the support for pivotal swinging movement toward and away from each other, comprising the steps of filling the mold through a pouring opening in the support, when the mold is filled swinging the mold parts together as an unit for cutting off the mold from the filling opening, and thereafter separating the mold parts and removing the article so cast.

3. A movable car having a support deck, a frame work mounted on the car, a pair of mold parts, means pivotally mounting the mold parts on the frame for movement about vertical axes into and out of interengagement, said mold parts including a pair of transversely spaced posts, means for adjustably moving the posts toward and away from each other, said mold parts having concavities which, when the molds are in interengagement, form a cavity opening downwardly through the mold, said car deck having a pouring opening in register with the mold cavity when the mold parts are in interengagement.

References Cited by the Examiner

UNITED STATES PATENTS

1,679,869	8/28	Morton et al.	22—156
1,864,242	6/32	Guyot	22—153
2,308,448	1/43	Hodge	22—156
2,309,608	1/43	Wessel	22—150
3,015,863	1/62	Strom et al.	22—150

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