

O. B. LINDQUIST.
SECTIONAL CORE FOR MOLDS.
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1,165,685.

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Fig. 1.

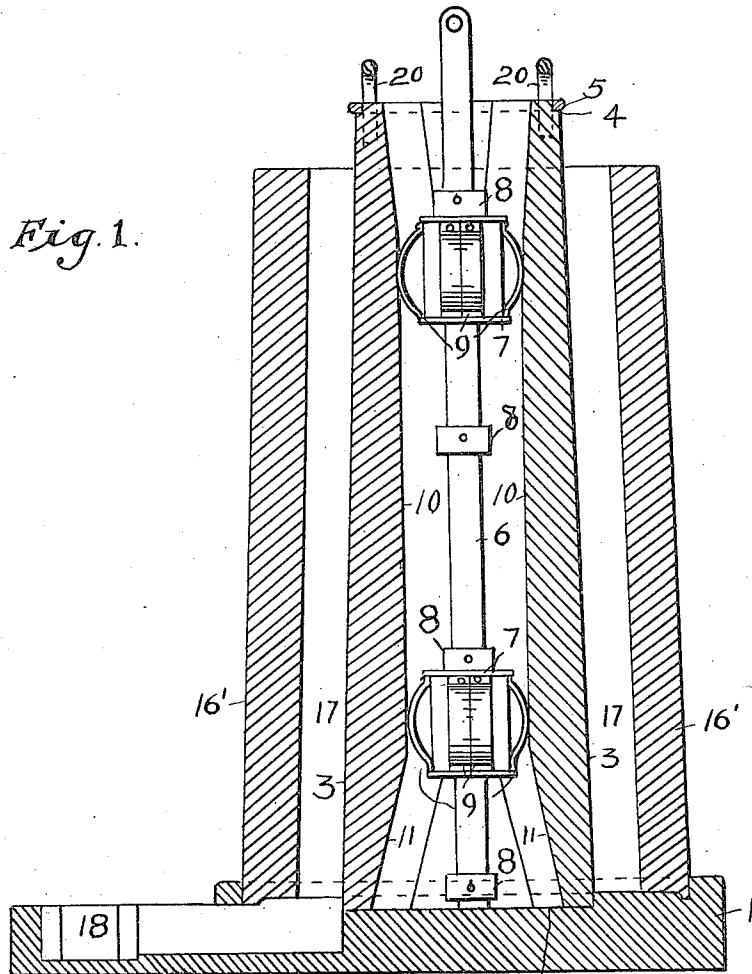
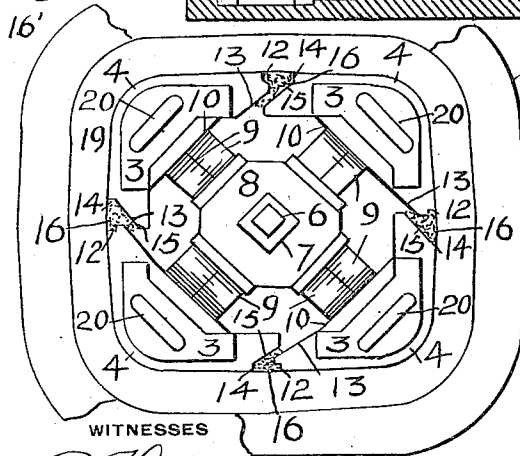


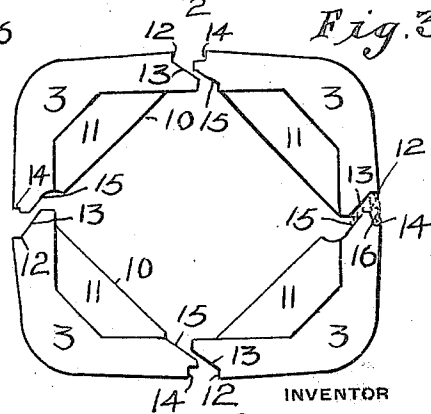
Fig. 2.



WITNESSES

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Fig. 3.



INVENTOR

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SECTIONAL CORE FOR MOLDS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OTTO B. LINDQUIST, a citizen of the United States, residing at Tarentum, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Sectional Cores for Molds, of which the following is a specification.

My invention relates to sectional cores for molds.

It is the principal object of my invention to provide for molds sectional cores which may be readily removable as soon as the metal cast in contact therewith has solidified.

Another object is to provide a sectional core whose sections may yield as the cooling metal cast around them contracts.

My invention further comprises the peculiar shape of the core sections whereby the latter may be rotated or swung inwardly away from the casting preliminarily to its removal.

Another object is to provide special yieldable means for holding the core sections in their normal or outer position.

Other objects will appear hereinafter.

Referring to the accompanying drawings, Figure 1 is a central vertical section through a mold embodying the preferred form of my invention; Fig. 2, a top plan view of Fig. 1 with the clamping ring removed; and Fig. 3, a bottom plan view of the core sections.

On the drawings, 1 designates the base plate composed preferably of steel. It is provided with a central depression 2 to receive the lower end of the core and to determine the normal position of the core sections with respect to the corners and sides of the mold and to limit their outward movements.

The core may consist of any desired number of vertical sections arranged to form substantially a continuous outer surface, which will vary according to the cross-sectional shape of the article to be cast in the mold. I have shown my core composed of four sections arranged to form the inner surface of an ingot mold. These sections are each somewhat L-shaped, the vertical

angles of the sections being rounded as shown on Figs. 2 and 3. I have shown the sections having their adjacent edges at the central portion of the sides of the mold but these edges may be placed elsewhere. The upper ends of the core sections are provided with shoulders 4 all in the same plane to receive the clamping ring 5 which determines the normal position of the upper ends of the core sections and limits their outward movements.

6 represents a vertical rod standing in the center of the vertical space inclosed by the core sections 3. On the rod 6 I place the sleeve 7 which is slidable thereon within limits fixed by the collars 8 secured to the rod 6 below the center of the rod or near the lower end thereof. Above the center of the rod 6 I locate another sleeve 7 movable within limits fixed by the collars 8 secured to the said rod. Each of the sleeves 7 is provided with outwardly bowed springs 9 preferably arranged in multiple ninety degrees apart on the sides of the sleeves 7. The rod 6 and the sleeves 7 are constructed to prevent the sleeves 7 from rotating on the rod and to keep the springs 9 of one sleeve 7 in vertical alinement with the springs on the other sleeve 7. To secure this I have made the rod 6 square in cross-section and provided the sleeves 7 with square openings to fit the same. The inner faces of the said sections 3 are made flat to form guides and bearings for the springs 9. These faces flare upwardly from a point near their lower ends and the pressure of the springs 9 against the core sections increases as the sleeves 7 are forced downwardly by the rods 6. The lower ends of these surfaces are flared downwardly as shown at 11 to reduce the weight.

The adjacent edges of the said sections are preferably constructed as follows:—One edge of each section is provided with the shoulder 12 formed in the outer surface of the section. From the bottom or inner portion of the shoulder 12 the said edge extends obliquely toward the center of the core and the edge of the adjacent section, this oblique surface being indicated by the numeral 13.

The remaining edge of each core section is provided with the shoulder 14 cut in the outer surface of the section. From the bottom of this recess the surface of the said edge extends obliquely toward the center of the mold and the edge of the adjacent section for a short distance or to the point 15, from which the said edge extends obliquely toward the center of the core and substantially parallel to the adjacent surface 13 of the adjacent core section 3. Normally the adjacent edges of the sections 3 are separated slightly from each other, the space between the adjacent edges being filled with molding sand 16 or other suitable material to make the said space flush with the sides of the said sections.

When the casting contracts around the core the sections 3 will move inwardly and crush the molding sand in the spaces between the sections and thereby relieve the stress on the casting and prevent the casting from sticking so tightly to the sections.

16' represents a mold preferably composed of steel which surrounds the core so as to leave a space 17 around the core into which the metal may be poured through the gate 18 in a manner well known. In Fig. 2 I have shown the casting 19 in the space 17. As soon as the casting 19 has solidified in the space 17 the clamping ring 5 and the rod 6 are withdrawn from the core sections. The withdrawal of the rod 6 withdraws the sleeves and springs carried thereby and leaves the space inclosed by the core sections empty so that one of the core sections may be swung or rotated inwardly toward the center of the core and away from the castings on an imaginary vertical axis near one edge. The core sections are withdrawn from the casting by suitable apparatus connected to the staples 20 secured in the tops of the core sections. I prefer that the inclined opposing faces on adjacent sections shall have their inclination in the same direction with reference to their cutting through an imaginary circle drawn through them from the center of the space inclosed by the core sections. The interior of the mold 16 tapers slightly upwardly and the assembled core tapers correspondingly. The lower ends of the core sections will accordingly be slightly wider than their upper ends. It would, therefore, be impossible to pull the assembled core upwardly out of the casting 19 as each core section would act as a key to prevent the core from contracting sufficiently. I rotate one of the core sections toward the center of the core, as already stated, where there is sufficient space to permit the removal of the same by an upward pull thereon. The other sections being now unlocked or released can be readily removed from the casting. When the rod 6 is pushed down be-

tween the core sections the friction of the springs 9 on the faces 10 causes the sleeves 7 to be in engagement with their respective upper collars 8. When the rod 6 is to be removed, it is drawn up so as to cause the lower collars 8 to deliver hammer-like strokes against the bottom of the sleeves 7 in order to loosen the latter and drive the same upwardly.

I claim—

1. In a mold, a mold-body, a plurality of core sections in the mold-body, arranged with their adjacent edges separated, means for limiting the outward movement of the sections, means for yieldingly holding the core sections in contact with the said limiting means, and a fragile means filling the spaces between the said adjacent edges of the core sections and collapsible when the cooling casting between the mold and the core-sections shrinks on the latter.

2. In a mold, a mold body, a plurality of core sections arranged in the mold body with their adjacent edges separated when in their normal positions, a fragile means insertible between the adjacent edges of the said sections for yieldingly holding the sections in the said positions, a base plate having a depression to receive the lower ends of the sections and limit their outward movement, and means embracing the upper ends of the sections to limit their outer movement.

3. In a mold, a mold body, a plurality of core sections arranged in the mold body with their adjacent edges separated when in their normal positions, a vertical removable bar insertible between the sections, collars in which the bar is slidable, springs carried by the collars and bearing against the inner faces of the sections for holding them yieldingly in their normal positions and stops on the bar for limiting the movement of the bar in the collars, the stops acting as hammers on the collars for moving the latter.

4. In a mold, a core including a series of vertical core sections arranged to inclose a vertical space and form the inner surface of a casting and having their adjacent edges overlapping, one edge of each section lying between the edge of the adjacent section and the center of the core, and removable means in the said space for holding the sections in their normal positions.

5. In a mold, a core including a series of vertical core sections arranged to inclose a vertical space and to form the inner surface of a casting, the adjacent edges of the sections being spaced apart and overlapping, the opposing faces of the overlapping portions of the edges being inclined in the same direction, whereby each section may be swung toward the center of the space and freed from the casting contiguous thereto.

6. In a mold, a core including a series of

vertical core sections arranged to inclose a vertical space and to form the inner surface of a casting, the adjacent edges of the sections being spaced apart, whereby a section
5 may be swung toward the center of the space and freed from the casting contiguous thereto.

Signed at Pittsburgh, Pa., this 16th day of April, A. D., 1914.

OTTO B. LINDQUIST.

Witnesses:

W. LESTER WALKER,
H. B. PAVITT.

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