MOLD FOR METAL-CONCRETE CONSTRUCTION.

Application filed June 29, 1903. Serial No. 163,462. (No mod.)

To all whom it may concern:

Be it known that I, Carl Weber, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Molds for Metal-Concrete Construction, of which the following is a specification.

My invention relates to an improvement in the molds for use in the erection of structures such as chimneys, stand-pipes, water-towers, and the like, composed of a framework of structural metal beams embedded in concrete. In the erection of such a structure it is common to employ in its progress both outside and inside scaffolding for access of the laborers to the work. This tends to complicate the work and adds to the cost.

The primary object of my invention is to enable the outside scaffolding to be dispensed with by providing for molding the concrete in sections about the framework, a construction of mold adapting it to be readily removed after a section has been molded and to be as readily raised and adjusted upon that section into position for molding the next succeeding section, this procedure being repeated throughout the erection. The method involved in the procedure thus outlined forms the subject of my application for a United States Patent therefor filed concurrently herewith on the 29th day of June, 1903, Serial No. 163,462.

My invention consists in the construction of the molds I have devised for accomplishing the aforesaid object.

Referring to the accompanying drawings, Figure 1 shows by a broken view in elevation two of my improved molds in use on a chimney undergoing erection. Fig. 2 is a section taken on the irregular line 2 on Fig. 1 and viewed in the direction of the arrow; Fig. 3, a section taken at the line 3 on Fig. 1 and viewed in the direction of the arrow; Fig. 4, a perspective view of an outer mold-section; Fig. 5, a broken view in elevation showing parts of two adjacent outer mold-sections with the latch device for releasably locking them together, and Fig. 6 a similar view showing parts of two adjacent inner mold-sections with their releasably-locking latch device.

A is the outer mold, and B is the inner mold, both being of the same general construction—that is to say, formed of a plurality of segmental sections releasably locked together, though the outer mold being of greater diameter than the inner one, contains the greater number or greater length of sections. Fig. 4 shows a section, A', of the outer mold in the form of a segment of the circle described by the complete mold to cause it to conform to the circular shape in cross-section of a chimney C being erected. Each mold-section is preferably formed of wood, though it may be formed of any other suitable material, and comprises a substantial frame a of required shape, having fastened to one side matched boards forming an unbroken facing a', which projects below the lower frame member, as represented at a. On the outer side of the frame near each corner at one end of the mold-section is fastened a catch c, crossed by a guard serving the purpose hereinafter described and comprising a bar b, fastened at its ends to bearings b', projecting from the upper and lower frame members. On the same side of the frame near each corner at the opposite end of the mold-section is pivoted a latch d, shown to be offset near its free end. From the upper frame member there depends a hanger e, preferably in the form of a rope fastened at its ends to the frame member and serving the purpose hereinafter described.

The foregoing description of the details of the outer mold-section (shown in Fig. 4) applies to all the sections employed in the outer mold, and it also applies to each section B' of the inner mold B, except that the catches c' on each mold-section B' are shown in the form of loops, and the latches d' thereon have tongues a' depending from them to enter the loops, though these differences are not material.

To employ my improved construction of mold in the erection of a round chimney C after the foundation (not shown) is laid, the framework D, Fig. 1, comprising upright T-bars f, rising from the foundation in a circular series encircled at intervals by similar bars f' in annular form, is erected for a portion of the structure. About the base of the framework the outer mold A is adjusted by placing sections A' endwise together and locking together B...
ing them from one to the other by engaging the latches \( d \) on each with the catches \( c \) on the one next adjacent thereto, and the inner mold \( B \) is adjusted inside the framework by placing sections \( B' \) endwise together and locking them from one to the other by engaging the latches \( d' \) on each with the catches \( c' \) on the one next adjacent thereto. The meeting edges of two of the sections of the inner mold are oblique, as shown at \( t \) in Fig. 3, to facilitate the adjustment of the sections and dismemberment of the mold, as hereinafter described. The distance apart of the molds is according to the thickness desired of the wall of the structure, and of course the relative diameters of the molds are proportioned accordingly. With the inner and outer molds forming the first set thereof adjusted on the foundation, as described, the space between them is filled with concrete \( g \) about the portion of the framework between the molds, whereby the beams are embedded in the concrete. When the concrete has set, another similar set of molds \( A \) \( B \) are adjusted in the manner described of the lowermost set upon the latter, the upper edges of which receive and overlap the lower edges of the superimposed molds at their extensions \( a \), and the space between these molds is filled with concrete \( g \). When that concrete becomes set, the hanger \( e \) on each section of both lowermost molds is raised and caught on a suitably-placed hook \( h \) or holder, whereupon the latches of all the sections are disengaged from their respective catches and the sections separate or become readily separable, but cannot fall apart, because of being held against falling by suspension on the hangers \( e \). The laborers who work on a suitable scaffolding (not shown) inside the chimney \( C \) as the erection thereof progresses raise the mold-sections by their hangers on top of the molds last placed and adjust them on the latter in the manner already described of adjusting the second set of molds on the lowermost set thereof. The space between the newly-adjusted molds is then filled with concrete \( g \), and when it becomes set the molds of the then lowest set are dismembered while their sections are suspended, and these sections are raised upon the last-finished section of the structure and adjusted, as already described. Thus the work proceeds of dismembering the lowest mold and raising and adjusting it for use on the last-finished portion of the structure and repeating this operation, for which only two sets of molds are required, until the erection is completed, which may also involve splicing further lengths of the beams \( f \) to the upper ends of those embedded and encircling these upright extensions at intervals with angular beams \( f' \).

The guards \( b \) shield the latches \( d \) against being engaged by the mold-sections being past them and dislodged thereby from the catches.

As will be seen, by the use of my improved construction of mold the work of erection may be performed expeditiously and cheaply with the use of scaffolding only on one side (preferably the inner side) of the structure.

When a lowermost mold has been removed, the mold above it requires no other support than is afforded by its adherence to the concrete surface, as has repeatedly been demonstrated by me in the practice of my invention, that support being very much greater than is necessary for holding the mold in place.

What I claim as new, and desire to secure by Letters Patent, is—

1. A set of molds for the erection, substantially as described, of structures composed of framework of structural metal beams embedded in concrete, said set comprising an outer mold composed of a series of sections each formed of a frame provided with a continuous facing extending beyond its lower end, with means for releasably locking it to adjacent sections and a hanger fastened to the mold-section to be raised and lowered thereon and affording the medium by which to suspend the section preparatory to raising it, and an inner mold formed of sections like those of the outer mold and provided with means for releasably locking them one to another.

2. A mold for the purpose set forth, composed of a series of sections each comprising a frame provided with a facing and having on one end catches with guards crossing them and on the opposite end latches for releasably engaging the catches to lock the sections one to the other, substantially as described.

CARL WEBER.

In presence of—

WALTER N. WINBERG,
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