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APPARATUS FOR MOLDING CONCRETE BEAMS.

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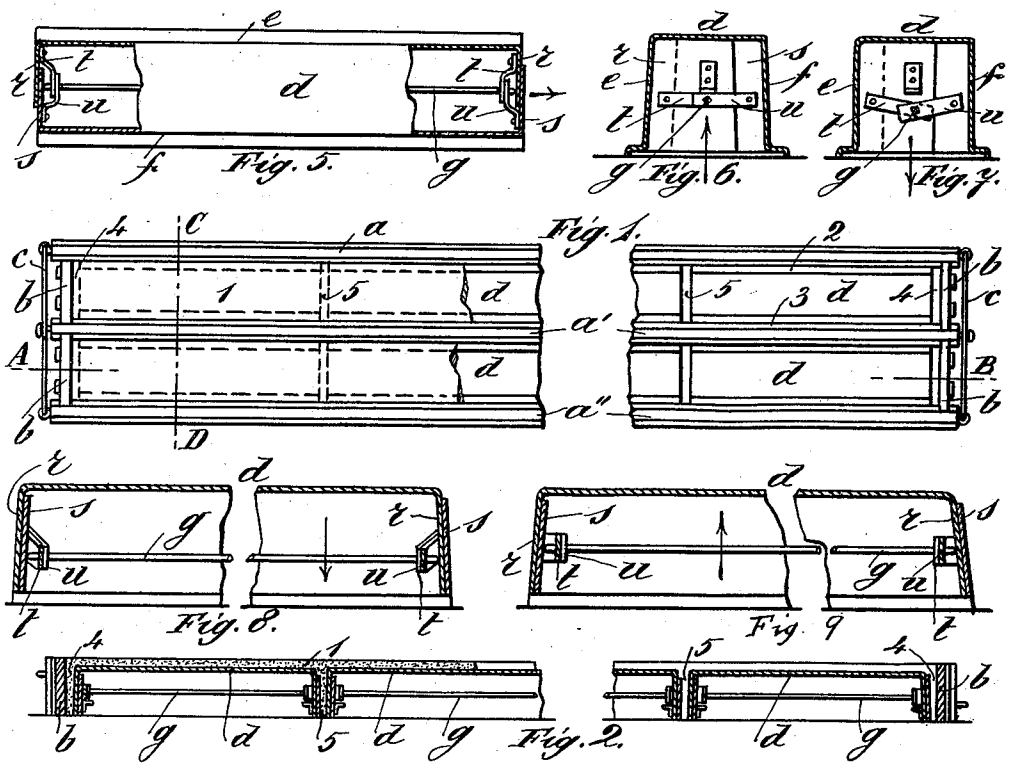

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To all whom it may concern:

Be it known that I, ELIA BIANCHI, contractor, subject of the King of Italy, residing at 16 Via Merovigli, Milan, in the Kingdom of Italy, have invented certain new and useful Improvements in Apparatus for Molding Concrete Beams, of which the following is a specification.

The object of the present invention is a process and apparatus for casting beams of reinforced concrete, which may be U or otherwise shaped and are cast and finished in the shop at a distance from the spot to which they are to be conveyed ready for being laid down with the purpose of building ceilings and similar structures.

The very well known advantages connected with the use of beams of reinforced concrete, manufactured in the shop, in comparison with the use of structures cast on the spot, are attained, according to the present invention, in a very simple, efficient and cheap manner, by the use of a special mold, no costly machinery or apparatus being required. Moreover the resulting constructional materials are perfect in structure and cohesion, very compact, strong and economical to produce, the molds being filled with wet concrete of normal composition which is allowed to solidify for considerable time before unmolding and using it.

The invention is illustrated by way of example in the accompanying drawings in which:

Figure 1 is a view from above of a double mold intended for casting a couple of beams; Fig. 2 is a section on line A—B (Fig. 1); Fig. 3 is an end elevation of Fig. 1; Fig. 4 is a cross section on line C—D (Fig. 1); Fig. 5 is a view from above of a core, partly in section, intended to be used in connection with the molds; Figs. 6 and 9 are respectively a cross and a longitudinal section showing the core (Fig. 5) in operative position; Figs. 7 and 8 are respectively a cross and a longitudinal section of the core (Fig. 5) showing the same, when it is being detached from the cement and about to be withdrawn; Figs. 10 to 12 show different modes of laying down the U-shaped beams manufactured according to the present invention.

The double mold (Fig. 1) consists of three trapeziform wooden ridges *a a' a''* running edgewise throughout the length of the beams to be cast, which length may attain 6 meters or about so. The ridges *a a' a''* are held in a position parallel to and at a constant distance from each other by means of the wooden cross pieces *b*, while the latches *c*, consisting of bolts and eyes, at both ends of the molds, keep the whole system together. In the empty space between the ridges *a a' a''* the cores *d* are uniformly distributed so as to leave empty spaces of constant width on both their longitudinal sides as well as equal intervals between two adjacent cores in the direction of their length. The cores *d* (Fig. 6) consist of ⊓ shaped boxes of thin metal sheet, which are laid down with their open side, turned downward. To make sure that the intervals between the cores *d* and the ridges *a a' a''* be kept constant throughout the length of the mold, the cores are provided at their bases with flanges of uniform width (Figs. 6 and 7), which are intended to abut against the aforesaid ridges.

Concrete is poured into the intervals between the cores *d* and the sidewise projecting wooden ridges *a a' a''*, taking care of submitting the same to a gentle pressure and of laying down within the mass properly distributed iron ties for reinforcement (see the rods *o* and the edgewise running plates *m* Figs. 10, 11 and 12) while the concrete is being poured in. The form of the beam thus obtained is shown at 1, 2, 3, 4, 5 (Figs. 1, 2 and 4). It is that of a box without lid having side walls 2 and 3, end front walls 4 and several cross partitions 5 distributed at equal intervals for strengthening the beam. As soon as the cement has set, *i. e.* after 12 to 24 hours, according to the temperature, the beams are turned upside down to allow of the cores being removed, whereupon the beams may be taken to the store, where they are kept ready for use.

In order to facilitate the removal of the cores, the elastic deformability, depending on the thinness of the metal sheet, is availed of. The end or front walls of the cores do not consist of a single sheet integral with the side walls *e f* (Figs. 6 and 7) but of two sheets *r*, *s* overlapping each other the former of which is integral with the side wall *e*, while the latter is integral with the other side wall *f*.

A rod *g* (Figs. 6, 7, 8, 9) running throughout the length of the core *d* is connected at

both of its ends by means of a couple of links *t* to the front end plates *r* on one side and by means of the couple of links *u* to the front end plates *s* on the other side. It ensues therefrom that when the rod *g* is pushed by hand in the direction of the arrows Figs. 6 and 9 the walls *e f* are forced outward in the position they must have, when the cement is being poured in; that on the contrary when the rod *g* is pushed in the direction of the arrows Figs. 7 and 8, the walls *e f*, owing to their resiliency, come together and in becoming detached from the cement enable the cores to be speedily withdrawn. The same is the case with the front or end walls *r*, *s* (Figs. 8, 9) which, when left to themselves (Fig. 8) as it is the case when the rod *g* is in its lowest position, are slightly sloping downward. When on the contrary the rod *g* is pushed in the direction of the arrow (Figs. 6 and 9) its ends will abut against the inner face of said end walls *r* and *s* and force them outward.

The beams, on being laid down, are brought to register one with the other along their edges *h* which may be turned either downward (Fig. 10) or upward (Fig. 11), the wedge shaped interval *k* being filled with cement or the like to insure the rigidity of the ceiling.

In the case of Fig. 12, between two adjacent beams and throughout their length, wooden joists *i* of rectangular form are inserted, which by means of clamps *j* carry a wire net on which the plastered ceiling proper rests.

It will be understood that I do not limit myself to the particular form of beams hereinbefore described and illustrated in the annexed drawings, but

What I claim is:

1. A core for concrete molds, comprising in combination, a sheet of flexible material bent to have a top and sides, opposite sides of the structure consisting of overlapping elements slidable on one another, means movably connecting said overlapping elements, and means joining said connecting elements and engaging the overlapping elements, whereby all four sides of the core may be simultaneously spread.

2. A core for concrete molds, comprising in combination, a sheet of flexible material bent to have a top and sides, opposite sides of the structure consisting of overlapping elements slidable on one another, and means joining said overlapping elements for simultaneously spreading all of said sides.

3. In apparatus of the character described, a core member of sheet metal having a continuous top and side walls that are movable toward and from each other, said member also having convergently disposed end walls, each comprising slidably overlapped sections, a rod disposed longitudinally within the core and having its ends movable into engagement with the end walls for forcing the same outwardly, and links connected to the rod and to the end walls for moving the side walls away from each other.

In testimony whereof I affix my signature in presence of two witnesses.

ELIA BIANCHI.

Witnesses:
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