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CONCRETE BUILDING MOLD.

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1,375,109.

Patented Apr. 19, 1921.

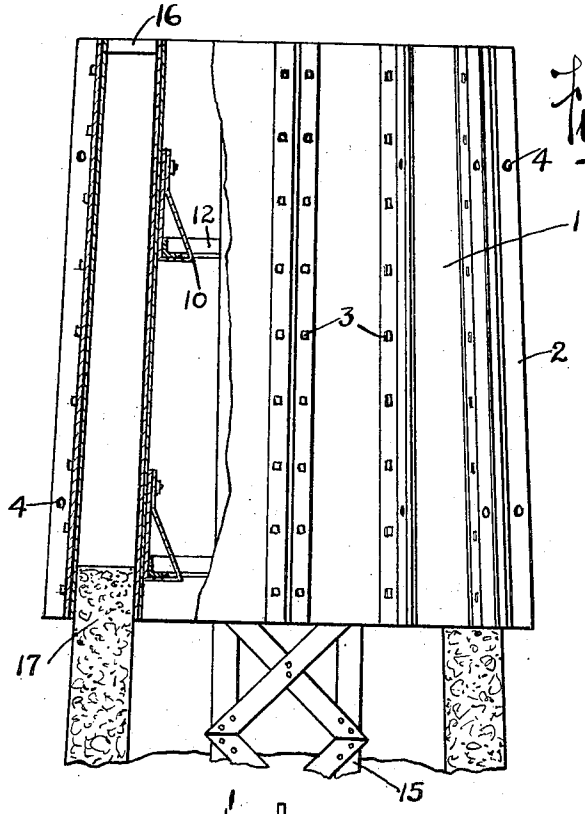


Fig. 1.

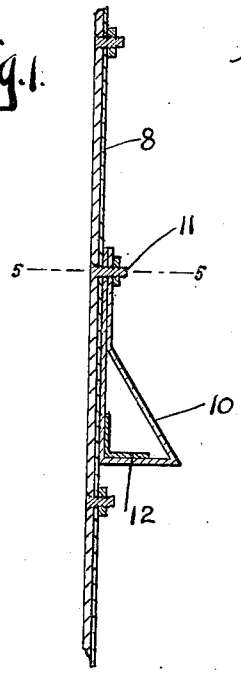


Fig. 3.

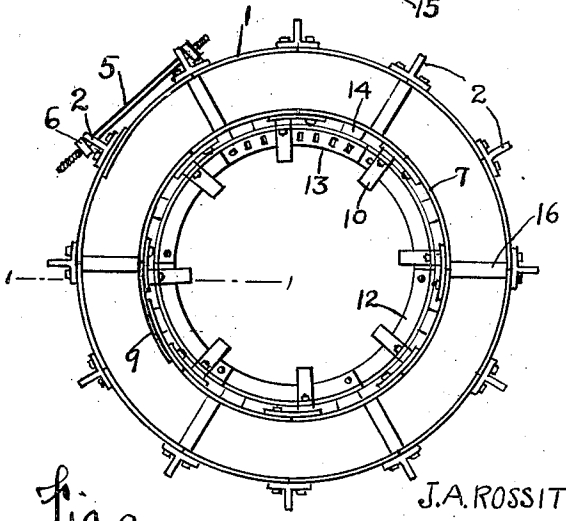


Fig. 2.

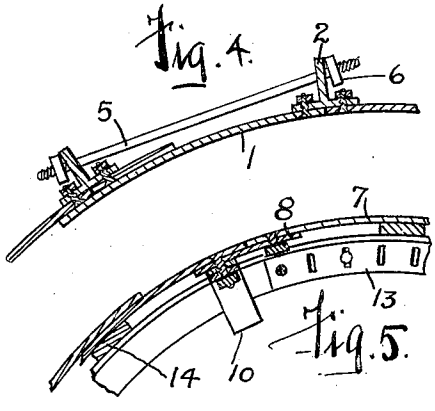


Fig. 4.

Fig. 5.

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CONCRETE-BUILDING MOLD.

1,375,109. Specification of Letters Patent. Patented Apr. 19, 1921.

Application filed June 14, 1920. Serial No. 388,818.

To all whom it may concern:

Be it known that we, JAY A. ROSSITER and CURTIS C. SANER, citizens of the United States, residing at Houston, Harris county, Texas, have invented a certain new and useful Improvement in Concrete-Building Molds, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in molds for use in the construction of concrete buildings, such as chimneys, water towers, silos, etc.

An object of our invention is to provide a mold composed of units which are detachable and reversible and capable of use both in constructing tapered structures and also for use in the erection of similar buildings cylindrical in shape.

Another object of our invention is to provide plates which may be secured together to form both an inner and outer shell in the erection of a wall and wherein a spacing means may be used which will be readily removable when the wall is being poured so as not to interfere with the formation of said wall.

Another object is to provide retaining means for the inner wall which will be rapidly and easily operated so as to support the same without unnecessary manipulation.

Other objects and advantages will be apparent in the specification which follows and will be more particularly pointed out therein.

Referring to the drawings wherein like numerals of reference are applied to like parts throughout the several views, Figure 1 is a side elevation of a mold, one side of which is shown in section on the line 1—1 of Fig. 2; Fig. 2 is a top plan view of our improved mold; Fig. 3 is a section through the wall of the inner shell taken approximately on the line 1—1 of Fig. 2; Fig. 4 is an enlarged detail of the tightening means used for the outer wall; and Fig. 5 is a transverse section showing a detail of the retaining ring in position on the inner wall, said view being approximately on the line 5—5 of Fig. 3.

In the construction of our improved mold, we employ longitudinal plates 1, which, as will be noted, are tapered slightly from the lower to the upper end so as to accommodate the shape of the shell to the taper of a concrete chimney in connection with which it is shown in this view. The plates are identical in construction and are perforated along their lateral edges for the attachment of connecting plates comprising T bars 2 by means of bolts 3, said bolts having their heads received in counter-sunk recesses in plates 1 so as not to indent the concrete. The perforations along the edges, by means of which the connecting T bars are attached, are designed to be uniformly spaced so that the plates may be reversed when necessary, and it will be noted that these perforations, through which the bolts 3 are secured, are uniformly spaced from the central bolt and are also uniformly spaced from the upper and lower ends. When, therefore, it is desired to erect a cylindrical chimney or other structure, each alternate plate may be reversed and the openings in the attaching plates 2 will register with those in the connecting plates so that they may be secured together in the same manner as here shown. The outwardly projecting ribs of the T plates 2 are perforated toward the upper and lower ends at 4 to receive a tightening bolt 5 to draw the outer shell into desired position. This bolt 5 is shown as an ordinary bolt threaded at its opposite ends to accommodate nuts 6 which may be tightened against the adjacent plate 2 to tighten the outer shell. To allow of such tightening, one of the plates 1, adjacent to the said bolt, is allowed to overlap the opposite one so that the tightening of the bolt will serve to adjust the shell to the desired diameter. When this shell is used in the erection of a tapered chimney, it is obvious that the diameter will decrease toward the upper end thereof. Therefore, as the diameter gradually decreases one or more of the plates 1 may be taken out when the chimney becomes of such size as to allow the removal thereof.

The inner wall of the mold is made up of plates 7 similar in general construction to the outer plate 1. Said plates are tapered and reversible and are joined together at their edges by plates 8 which overlap the adjacent edges of the plates and secure them together by means similar to that employed in the outer shell. At the point 9 where the plates overlap there is no tightening means used, however. On the inner face of the said inner wall are placed a plurality of supporting stirrups 10. These stirrups, as

shown in Fig. 3, are made up of a flat strap of metal bent into the shape of a triangle at the lower end and having the upper ends erect and perforated to accommodate an attaching bolt 11, by means of which the stirrup is secured to the attaching plate 8 used in securing the plate 7 of the inner wall together. A series of these stirrups are secured at the same height around the inner face of the shell so as to furnish a support for a retaining ring 12 adapted to rest on the lower horizontal portion of said stirrup, as shown in Figs. 1 and 3. The retaining ring 12 is preferably made of angle iron arranged together in sections, the said sections being bolted together at their adjoining ends so that the sections may be removable. There is one section 13 perforated, as shown in Fig. 2, so that it may overlap the adjacent ring and be secured thereto at any of the points of perforation there shown. This allows the ring to decrease in diameter as required by the decreasing size of the chimney. It is contemplated that the retaining ring 12 will come approximately in contact at all times with the inner side of the stirrups 10 upon which it rests, but it is obvious that practically no pressure will be exerted by the ring against the inner wall to retain it in position. It is, therefore, desired that wedges 14 may be driven at intervals between the ring and the inner shell 7 so as to wedge the same tightly outwardly toward the outer wall until it assumes the desired position, as will be later explained.

It is necessary, of course, in the erection of a chimney or other structure of this nature that a scaffolding similar to that shown at 15 in Fig. 1 be used, upon which the workmen may operate. This scaffolding is in no way a part of the chimney or of the form used in retaining the wall, but is simply a support for a platform upon which the workmen may stand. It may, therefore, assume any shape or form desired.

In the operation of our device, the wall is erected in stages, each section being poured in succession and when same has hardened, the form is raised and adjusted for the next stage. When the adjustment is made, the outer shell is first raised to within about 8 inches of the top of the section already poured and is secured in this position at its lower end by a tightening of the bolts 5 on the outer face of said section so as to draw the shell tightly against the outer face of the concrete wall. The inner form is then raised into position and by means of a batter-board the two walls are properly spaced from each other and the upper ends are held in the proper spaced position by means of removable blocks of wood or other material 16, these blocks being spaced at intervals around the upper end, as shown in Fig. 2. The inner wall is then secured in this adjusted position by means of the retaining rings 12 which are adjusted for the new position and the wedges 14 are driven down between the retaining ring and the inner wall form so as to force it tightly against the wall 17 of the chimney at the lower end and against the block 16 at the upper end. It is desirable that a plurality of retaining rings 12 be employed, one adjacent either end, but it is obvious that one ring properly positioned may in some cases be sufficient, and in others it may be desirable to use more than two.

When the shells of the mold have been thus properly spaced and secured in position the pouring of the next stage of the chimney may then proceed. The concrete is poured within the space between the outer and inner shells of the mold and tamped in place until a point adjacent the upper end is reached, after which the blocks 16 may be removed by means of a hammer or other tool and the remaining portion of that stage may then be poured. The block 16 may be dispensed with here since the concrete between the walls prevents any tendency of the mold to collapse or change its adjustment. In this way the wall when completed has no holes or openings therein due to spacing iron or bolts sometimes used with such forms. When the newly poured stage of the chimney has hardened sufficiently the form may be raised and readjusted for the succeeding stage with very little difficulty, it being only necessary to loosen the bolts 5, which tighten the outer shell against the chimney, and to remove the wedges 14 against the inner wall of the chimney and the device is ready for adjustment to the succeeding stage.

It will be obvious then in the use of our device for the erection of cylindrical structures, such as silos, water towers, or some forms of chimneys, the reversing of each alternate plate will result in a cylindrical form and in adjusting this form to the cylindrical structure the plates will preferably not overlap at the edges, but will be drawn together so that the edges will contact at all points on the outer shell and on the inner shell they will fit together in a similar manner. The retaining ring 12 will not have to be adjusted as the structure is proceeding, but, when once arranged to the proper diameter, this same diameter will be used throughout the construction of the building. The operation will hence be simpler than that described, but it is obvious that the same form and the same process of building will be used as in the case of tapered structures. The advantages of our invention will now be apparent. The form is adjustable for different sizes; it may be used both on cylindrical and tapered constructions and no con-

nection between the inner and outer walls during the use of the same will be necessary with the exceptions of easily removable blocks 16 at the upper end and these blocks may be made of desired lengths to space the walls the proper distance apart as the thickness of the chimney changes. There are, therefore, but few parts, which are easily adjustable and cheap to manufacture.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. A mold for concrete building structures comprising in combination an outer shell formed of a series of reversible tapered plates of uniform construction secured together at their lateral edges by T-bars, said bars being perforated, a tightening bolt fitting in said perforations for securing together two adjacent T-bars, an inner shell of similar tapered plates secured together at their margins by flat attaching plates, hangers on the inner faces of said plates, a retaining ring of angle iron supported on said hangers, removable spacing blocks at the upper ends of said shells, and means to tighten said inner wall in the desired position comprising wedges between said retaining ring and said inner shell.

2. In a mold for concrete building structures, an outer shell comprising reversible adjustable plates, means to adjust said shell to the desired size, an inner shell of similar plates, a retaining ring adjacent the inner face of said inner shell, said ring being adjustable in size, and wedges between said inner shell and said ring.

3. In a mold for concrete building structures, an outer shell comprising tapered reversible plates, means adjustably securing said plates together, means to tighten said shell against the work, an inner shell of tapered reversible plates, means to retain the inner shell in position comprising adjustable retaining rings, and wedges between said rings and said shell.

4. In a mold for concrete building structures, an outer shell, an inner shell, removable blocks to space said shells apart and an inner retaining ring supported on the inner face of said inner shell, means to adjust said ring against said shell and wedges between said ring and said shell to force said inner shell into proper position.

In testimony whereof, we hereunto affix our signatures, this the 10th day of June, A. D., 1920.

JAY A. ROSSITER.
CURTIS C. SANER.