L. C. COVAULT & J. D. REESE.

MOLD FOR MAKING CONCRETE STAVES.

APPLICATION FILED NOV. 26, 1912.

1,113,957.

Patented Oct. 20, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

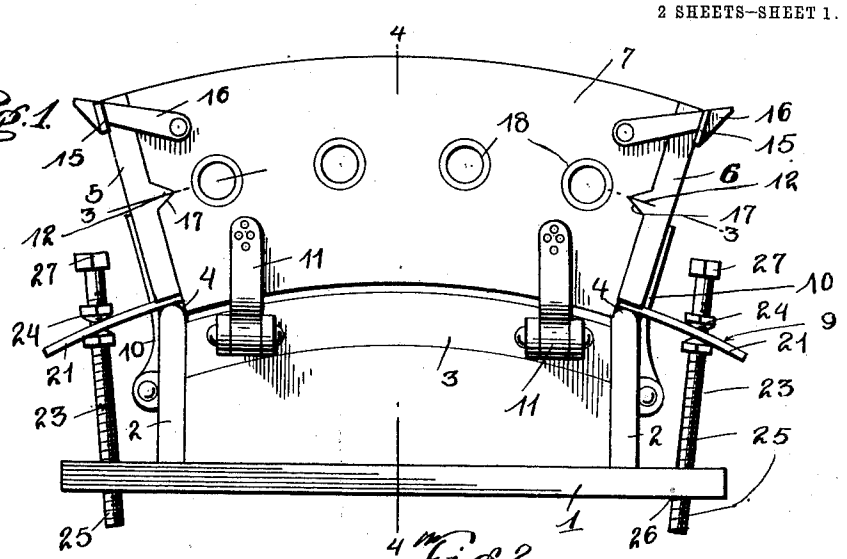
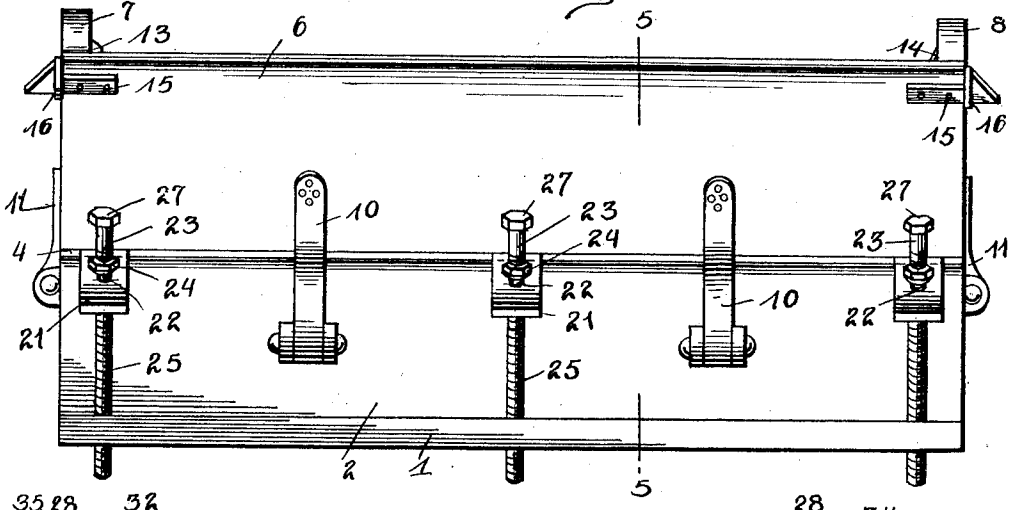


Fig. 2.



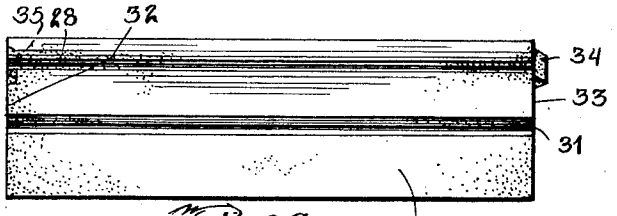


Fig. 6.

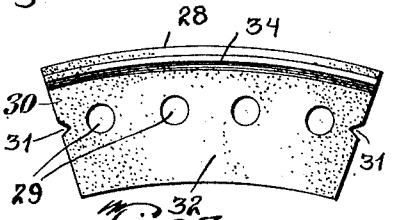


Fig. 7.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

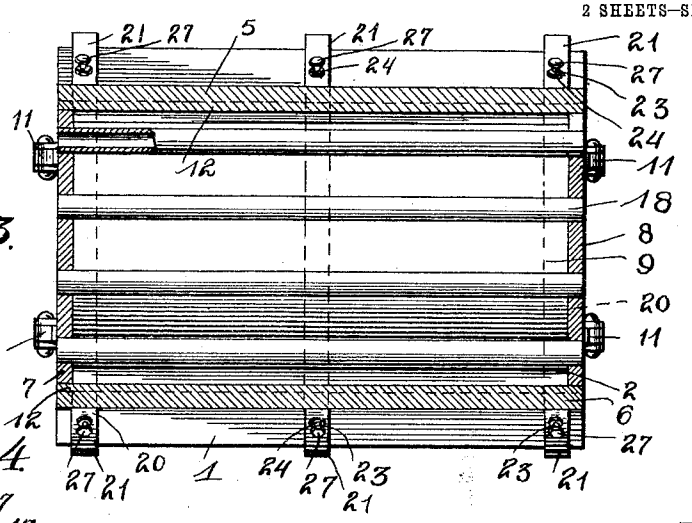


Fig. 4.

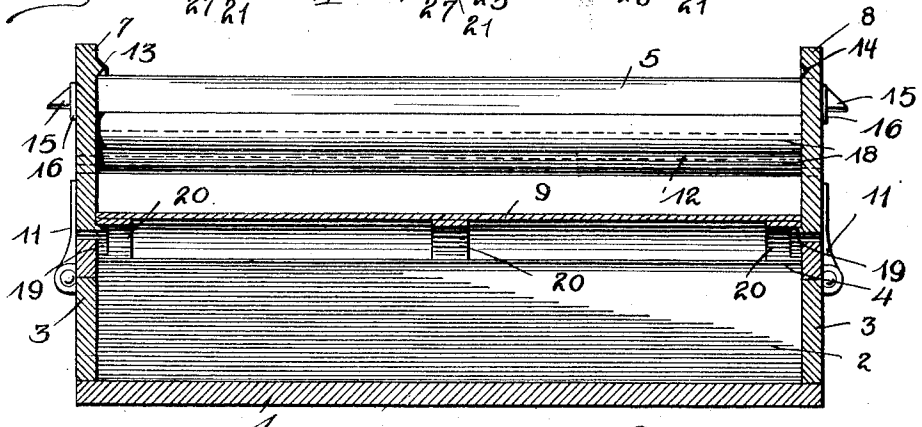
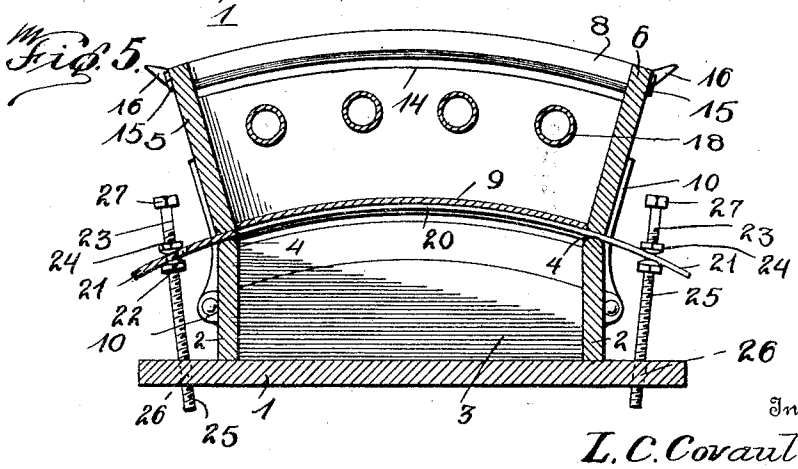


Fig. 5.



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UNITED STATES PATENT OFFICE.

LEWIS C. COVAULT AND JOHN D. REESE, OF MECHANICSBURG, OHIO.

MOLD FOR MAKING CONCRETE STAVES.

1,113,957. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed November 26, 1912. Serial No. 733,647.

To all whom it may concern:

Be it known that we, LEWIS C. COVAULT and JOHN D. REESE, citizens of the United States, residing at Mechanicsburg, in the county of Champaign and State of Ohio, have invented new and useful Improvements in Molds for Making Concrete Staves, of which the following is a specification.

This invention relates to a mold for making concrete staves or building blocks designed especially for use in the construction of silos and similar buildings, the object of the invention being to provide a mold whereby staves or building blocks of this character curved on the arcs of different radii may be quickly, conveniently and economically produced.

A further object of the invention is to provide a mold whose curved forming surface may be adjusted to vary its curvature, and by means of which hollow blocks having tongue and grooved ends and grooved sides may be made, for the production of secure joints in their use in a building structure.

The invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is an end elevation of a concrete stave mold constructed in accordance with our invention. Fig. 2 is a side elevation of the same. Fig. 3 is a horizontal longitudinal section on the line 3—3 of Fig. 1. Fig. 4 is a vertical longitudinal section on the line 4—4 of Fig. 1. Fig. 5 is a vertical transverse section through the mold. Figs. 6 and 7 are views of one of the complete concrete staves.

Referring to the drawings, 1 designates a suitable base supporting a pair of parallel longitudinal sills 2 connected by end pieces 3, and forming the frame proper of the mold, the said sills being provided with curved or rounded upper edges 4. Supported upon the said frame structure is a mold comprising side walls 5 and 6, end walls 7 and 8, and a transversely curved bottom wall 9. The side walls 5 and 6 are carried by bracket arms 10 hinged to the sills 2, so as to adapt said walls to be swung outwardly and inwardly, while the end walls 7 and 8 are similarly carried by bracket arms 11 hinged to the end pieces 3, so that said walls may be swung outwardly and inwardly, allowing the mold to be opened and closed at different periods in the process of forming the stave. As shown, the side walls 5 and 6 are inclined to the perpendicular, or diverged upwardly and outwardly with relation to each other, while the end walls 7 are arranged perpendicularly in parallel planes, but curved transversely on the segment of a circle, to give the desired bevel to the longitudinal side edges of the stave and the curvature to the stave in a transverse direction.

The side walls 5 and 6 are provided with longitudinally extending V-shaped ribs 12 for the purpose of producing correspondingly shaped longitudinal grooves in the side edges of the stave, while the end walls 7 and 8 are respectively provided with a transverse rib 13 and a groove 14 of the shape described for the purpose of producing a groove in one end of the stave and a tongue at the opposite end thereof. The side walls are provided at their opposite ends with hooked keepers 15 adapted to be engaged by hooked pivoted latches 16 on the end walls, for holding the said walls of the mold in closed relation. In the side edges of the end walls are formed recesses 17 to receive the ends of the ribs 12 on the side walls, whereby said ribs are also utilized as supplementary fastening members to assist in holding the walls of the mold in closed position. Openings 18 are provided in the end walls for the reception of core tubes or rods designed to form openings in the body of the staves, for the production of hollow wall staves.

The bottom wall 9 of the mold is composed of a thin flexible metallic plate adapted to rest at its end edges upon flanges 19, on the end walls. The said wall 9 has secured thereto central and terminal transverse flexible metallic strips 20 having extended ends 21 provided with elongated slots 22. These extended ends of the strips 20 form

lateral extensions of the bottom wall and rest upon the mounted edges 4 of the sills 2 and project laterally beneath and beyond the side walls, and are engaged by vertically disposed adjusting screws 23 which pass through the slots 22 and are provided with abutments 24 bearing against the upper and lower surfaces of the ends 21, whereby in the vertical adjustment of the screws the strips, and consequently the wall or plate 9, are adapted to move therewith and to be bent or flexed accordingly. Each screw has a lower threaded end 25 working in a threaded opening 26 in the base 1 and is provided at its upper end with a handle 27 or head for the application of a wrench or suitable tool whereby it may be adjusted.

It will be seen from the foregoing description that by adjusting the screws 23, the curvature of the bottom plate 9 may be varied, so that it will provide a forming surface curved on any desired radius within certain limits, for the production of correspondingly curved staves or building blocks. The bottom 9 having been, in the use of the mold, previously adjusted as desired, the walls of the mold are folded in and latched in closed position, the concrete or other plastic material tamped in up to the line of the openings 18, the core rods or tubes then inserted, and the remainder of the concrete or plastic material filled and tamped in to the desired level. It will, of course, be understood that the wall 9 forms the inner surface of the stave or block and that any suitable top plate, curved to the desired radius, may be employed to form the curved outer face of the block, or that the material may be properly shaped by hand manipulation to give the proper curvature to the back of the block. The stave having been formed, the latches 16 are adjusted to disengage the keepers 15, thus releasing the walls which are swung for the removal of the formed stave or block.

In Figs. 6 and 7 we have shown a curved stave or block 28 of the character produced by the mold, from which it will be seen that this stave or block is provided with longitudinal openings 29 formed by the core rods or tubes, side edges 30 having the proper bevel proportionate to the arc of curvature for abutment against the side edges of adjacent staves in the production of a wall of the intended diameter, said side edges being provided with longitudinal V-shaped grooves 31, and end edges 32 and 33 respectively, provided with a V-shaped tongue 34 and a V-shaped groove 35. The annular rows of staves or blocks are arranged with their side edges abutting in the formation of a wall and with their end edges abutting against the end edges of adjacent upper and lower tiers of staves, the respective tiers of staves being arranged to break joint in the usual way. When the edges of abutting staves or blocks are brought together, the meeting faces thereof are coated with a suitable binder such as hot pitch, tar or asphalt, which fills the grooves and forms an air-tight joint which will allow expansion and contraction without checking or cracking. The rows or tiers are also preferably bound together by bands which overlap their end edges, thus producing a firm and secure wall.

From the foregoing description, taken in connection with the drawings, the construction, mode of operation and advantages of our improved mold will be readily understood, and it will be seen that a mold for the purpose described is provided which is simple of construction and capable of being conveniently handled for the production of staves or blocks, which vary in curvature, in a rapid and economical manner.

We claim:—

1. A mold of the character described comprising a base frame including sills having curved or rounded upper edges, hinged side and end walls, the said end walls being provided with base flanges, the side walls extending upwardly in diverging relation and the end walls being longitudinally curved, a correspondingly curved bottom wall resting upon the flanges of the end walls and having extensions resting upon the rounded edges of the sills and projecting beneath and beyond the side walls, and means upon the base frame engaging said extensions to bend or flex and vary the curvature of said bottom wall.

2. A mold of the character described comprising a base frame including sills having curved or rounded upper edges, substantially diverging side walls hinged to the base frame and provided on their inner faces with longitudinally extending ribs, longitudinally curved end walls hinged to the base frame and provided with base flanges and having recesses receiving the ends of said ribs, one of said end walls being provided with a longitudinally extending groove, a curved bottom wall resting upon the flanges of the end walls and provided with extensions resting upon the rounded edges of the sills and projecting beneath and beyond the side walls, and means upon the frame engaging said extensions to bend or flex and vary the curvature of said bottom wall.

3. A mold of the character described comprising a base frame including sills having curved or rounded upper edges, hinged side and end walls, the said end walls being provided with base flanges, the side walls extending upwardly in diverging relation and the end walls being longitudinally curved,

a curved bottom wall resting upon the flanges of the end walls and provided with slotted extensions, resting on the rounded edges of the sills and projecting beneath and beyond the side walls, and adjusting devices upon the base frame engaging said slotted extensions to bend or flex and vary the curvature of said bottom wall.

In testimony whereof we affix our signatures in presence of two witnesses.

LEWIS C. COVAULT.
JOHN D. REESE.

Witnesses:
JOSEPH C. LEGGE,
T. B. WARE.

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