D. E. TINGLEY.

CONCRETE MOLD.

APPLICATION FILED NOV. 12, 1909.

988,048.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.

FIG. 1.

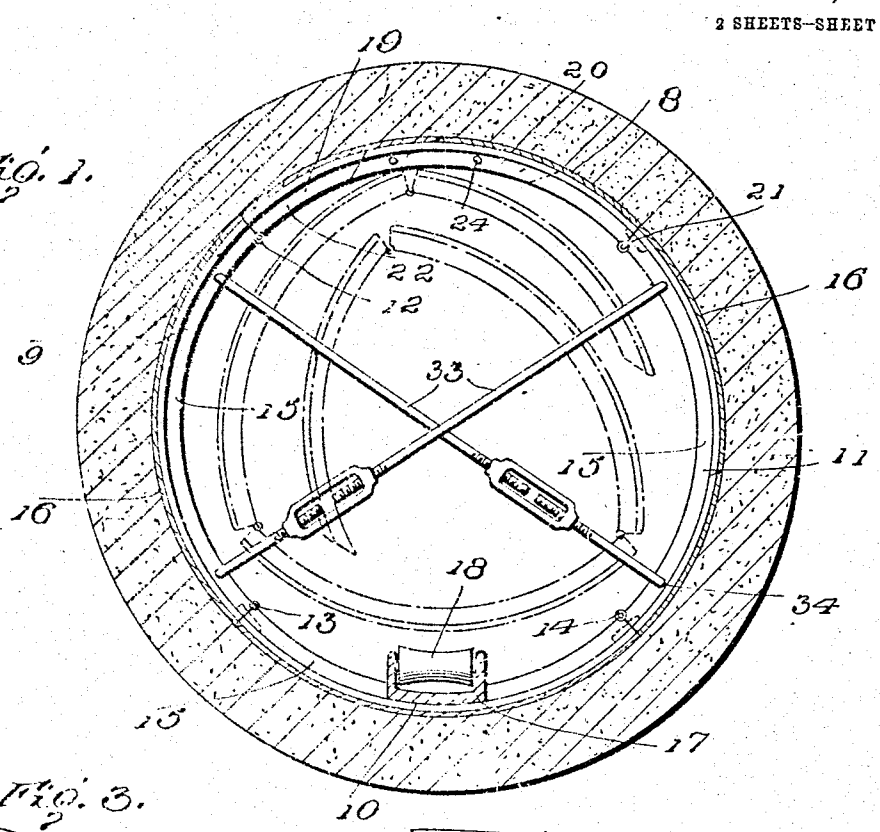


FIG. 3.

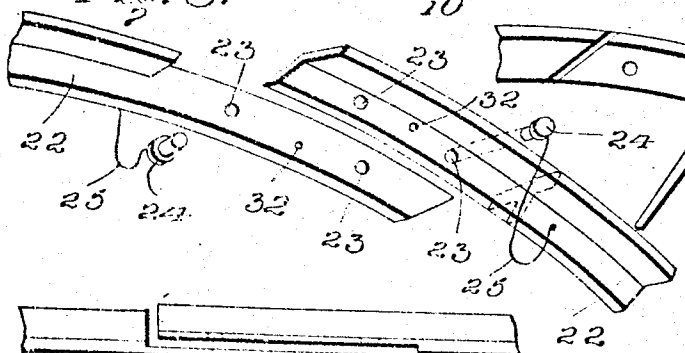


FIG. 4.

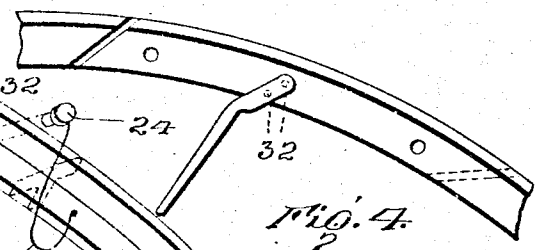





FIG. 2.

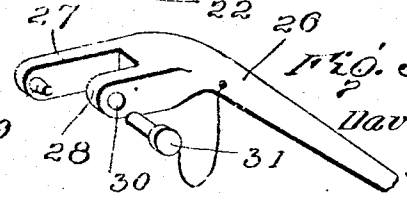


FIG. 5.

Witnesses

Wm. Seaman

R. L. Morton.

Inventor

David E. Tingley

By

Dudley, Browne & Phelps

Attorneys

D. E. TINGLEY.

CONCRETE MOLD.

APPLICATION FILED NOV. 13, 1909.

988,048. Patented Mar. 28, 1911.

2 SHEETS—SHEET 2.

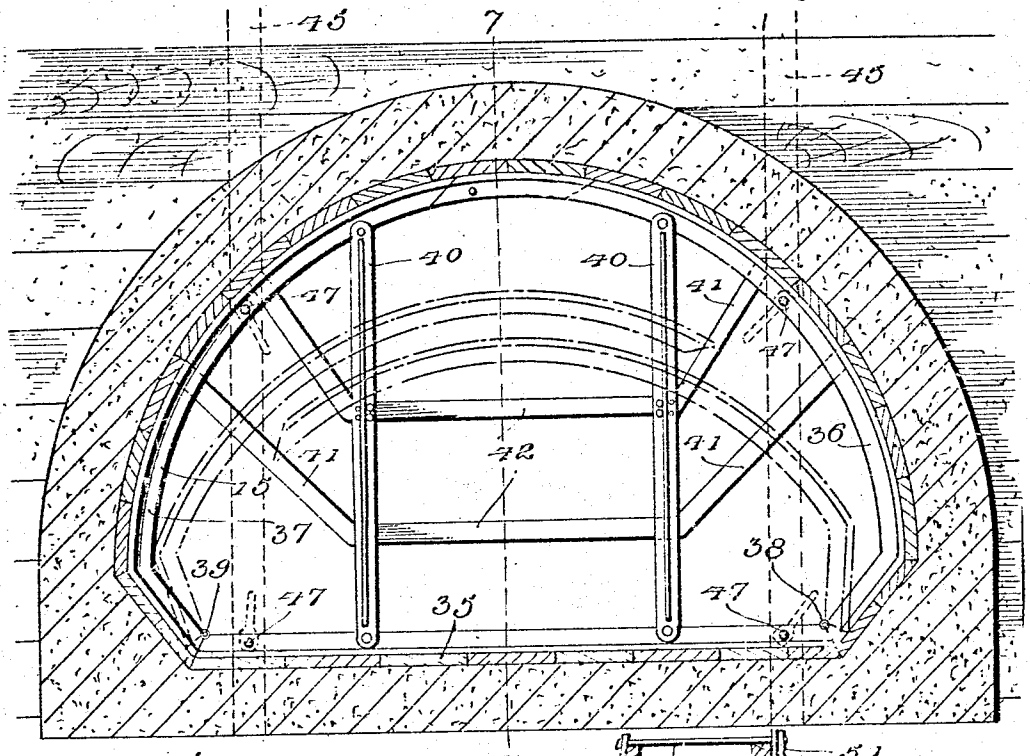


Fig. 6.

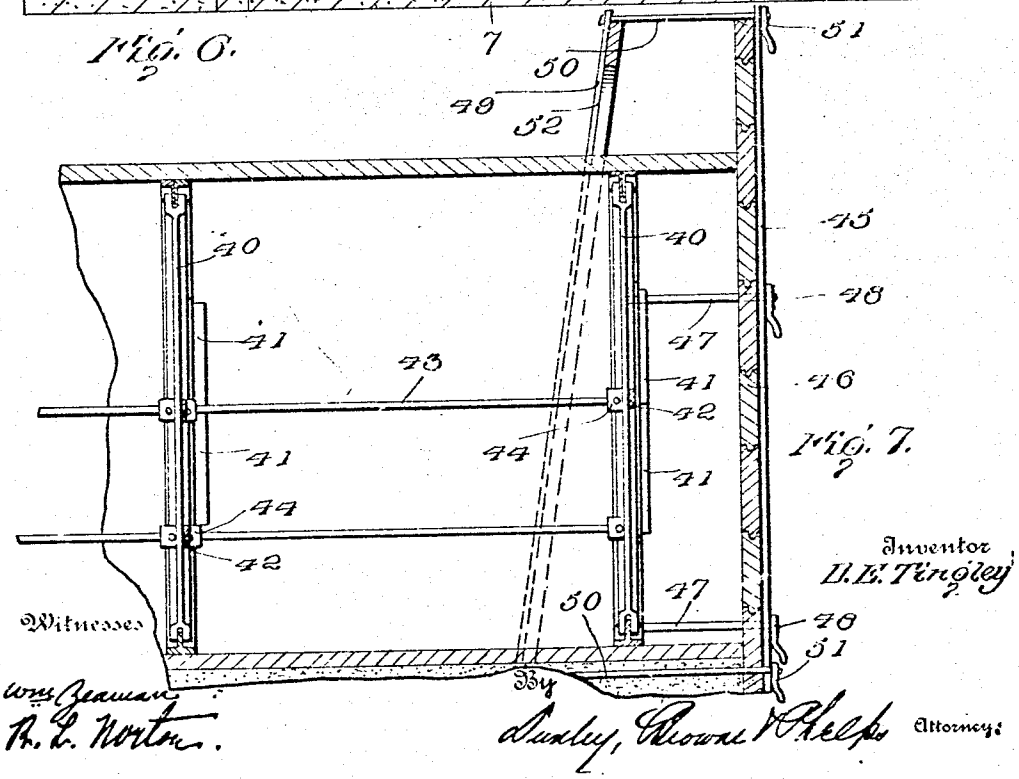


Fig. 7.

Witnesses

Wm. Beaman

R. L. Norton.

Inventor

D. E. Tingley

By

Dudley, Brown & Reed

Attorneys

# UNITED STATES PATENT OFFICE.

DAVID E. TINGLEY, OF MARSHALL, ILLINOIS

## CONCRETE-MOLD.

988,048. Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed November 12, 1909. Serial No. 527,705.

*To all whom it may concern:*

Be it known that I, DAVID E. TINGLEY, a citizen of the United States, residing at Marshall, in the county of Clark and State of Illinois, have invented certain new and useful Improvements in Concrete-Molds, of which the following is a specification.

My invention relates to certain new and useful improvements in concrete molds and has particular reference to molds for hollow concrete masonry constructions for building arches, conduits, sewers and other structures of this general class.

The particular object of my invention is to improve certain details of construction the form of mold disclosed in my Patent No. 931,351, granted August 17, 1909.

A further object of my invention is to provide a means whereby the end wings and similar structures used for finishing the ends of culverts, sewers, etc., can be molded as an integral part of the body of the structure.

With these and other objects in view my invention consists in certain constructions, combinations and arrangements of parts the preferred form of which will be first described in connection with the accompanying drawings and then the invention particularly pointed out in the appended claims.

Figure 1 is a cross section of a sewer pipe in process of construction in which my improved mold is employed; Fig. 2 is a detailed view of the improved form of connection between the two sections; Fig. 3 is a perspective view of said connecting parts with the parts shown in separated relation; Fig. 4 is a side view of said connecting parts showing the means for driving them into position to be locked in place; Fig. 5 is a perspective view of said means for drawing the connecting parts into proper position; Fig. 6 is a sectional view of a modification showing my invention, as adapted for arch work and the devices for holding wings on the end of such arch and Fig. 7 is a longitudinal section taken on line 7, 7 of Fig. 6.

In my prior patent above referred to I employ a plurality of sections which are adapted to be placed end to end to form the continuous construction, the length of these sections depending upon the character of work to be done. Each of these mold sections is formed of a plurality of members 7, 8, 9, 10 and 11, hinged together at 12, 13 and 14. While I have shown four of these members in the form of construction shown in Fig. 1, it is to be understood that this number may be increased or diminished as may be found desirable.

For convenience in describing the form of my invention illustrated I will designate the member 8 as the top member, the member 10 as the bottom member and the members 9 and 11 the side members. It is obvious that the relative position of these members may be changed as desired. The side members 9 and 11 are preferably formed with a plurality of curved T bars 15 as forming a rigid shell. The T bars are formed in the arc of a circle whose center is the longitudinal axis of the set up mold sections, and in the form of my invention shown the plates 16 are riveted to these T bars though other form of covering may be used, and such covering need not of necessity be secured to the bars. The bottom section 10 is similarly formed of T bars 15 which are similarly covered by plates 16. In the central portion of the bottom section, and preferably located between the T bars, I provide one or more U-shaped sections 17, in which are journaled the rolls 18.

The construction so far described is the same as that illustrated in my patent above referred to. The upper section 8 of the present construction is, however, formed in two parts 19 and 20, the part 19 being hinged to the section 9 by the hinge 12, and the part 20 being hinged to the section 11 by the hinge 21. The curved bars 22 of these sections are also formed of T-shaped irons, said bars being of a length to overlap, as best shown in Figs. 2 and 3. From these figures it will be seen that one of the projecting sides of the T for the overlapped part of the bar is cut away, forming a pair of oppositely positioned notches which, when locked together, will cause the parts 19 and 20 of the member 8 to form a continuous structure. The sheathing plates 16 of these sections are beveled on their edges so as to form a tight joint.

In order to lock the bars 22 together I provide the overlapped portion of said bars with openings 23 which register when the bars are in locked position, and which may be held together by pins 24 being passed through the openings. In order to prevent loss I preferably secure the pins to the bars adjacent the openings by means of flexible securing devices 25.

In order to force the two parts of the sec-

tion 8 into position where the overlapping bars will have their openings 23 in registry, I provide a tool shown in detail in Fig. 5. This tool comprises a handle 26, having a pair of projecting jaws 27, 28, said jaws being spaced apart and projecting from the opposite sides of the handle, the jaw 27 being longer than the jaw 28. The jaw 27 carries near its outer end an inwardly projecting pin 29, while the jaw 28 is provided with an opening 30 near its outer end through which may be passed a pin 31. The portions of the T bars 22 which are adapted to overlap are provided with openings 32 into which the pins 29 and 30 may be inserted when, by movement of the handle 26, the overlapped portions of the bars may be brought into position to cause the registering of the openings 23 and held there while the pins 24 are passed through the openings. After this has been done the pin 31 in the handle can be withdrawn and then the handle removed.

As the greatest strain on the mold sections occurs when the concrete is being placed in position around the sections I preferably provide, as in my prior patent referred to, turn buckles 33 having hooked ends 34 adapted to engage openings formed in the T irons of the various sections, whereby while the concrete is being placed in position around the sections they will be interiorly braced. As soon as all the concrete is in place the turn buckles may be removed.

In Figs. 6 and 7 I have shown a construction adapted for building concrete arches, culverts and the like and which comprises a bottom member 35 which is flat, and two side members 36 and 37, the two side members being hinged to the bottom member at 38 and 39, and the two side members 36 and 37 being secured together by the latching means heretofore described and which I have only generally indicated in these figures. In this modification I have also shown a modified form of interior bracing, which comprises a pair of bars 40, each formed by securing together two T irons, as best shown in Fig. 7, whereby posts having four projecting flanges are provided. 41 are the lateral braces which are pinned to the flanges of the post 40 at their inner ends and also pinned to the projecting flanges of the curved T bars 15 of the side sections. 42 are cross bars pinned to the flanges of the upright post to hold the same properly spaced apart. The vertical posts at their upper and lower ends are also pinned to the projecting flanges of the curved bars 15.

In order to tie the supports together I provide longitudinal fastening 43 which are provided at each end with U shaped yokes 44 adapted to embrace projecting flanges of the post and which can also be readily pinned to said flanges. In Figs. 6 and 7 I also show means for forming a mold to provide wing sections on the ends of culverts, sewers and the like, and in the form shown comprises a pair of uprights 45 adapted to hold a series of planks 46 against the end of a mold section, the uprights 45 being held in position by means of bolts 47 passing through the flanges of the post 40, the bolts being provided on their exterior with nuts 48. The bars 45 are adapted to extend above the top of the mold section so as to support the planks 45 above the top of said section, in order to form a wing extending above the top of the culvert or sewer. Preferably these planks are provided with tongues and grooves in order that they may be interlocked in position.

In order to form the inner face of the wings I provide inclined strips 49 which are connected to the strips 45 by means of the bolts 50 at the top and bottom, the bolts being provided with the nuts 51 on the outside of the structure. These plates 49 are adapted to secure in position planks 52, forming between said planks 52 and the planks 45 a space in which the wings are molded.

As the operation of my construction is fully described in my patent referred to I will refer to said patent for such description.

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

1. A mold comprising a plurality of members shaped to conform to the concrete or other construction to be molded thereover, said members being hinged together whereby they may be collapsed, one of said members being composed of two parts adapted to be separated to collapse the mold, each of said parts being provided with curved T bars running transversely of said part, the projecting portion of one side of each of the T bars being cut away, whereby said T bars may be overlapped so that their overlapping portions will form a complete T bar, said overlapping portions being provided with pin-receiving holes, and a tool having a handle portion, and a bifurcated portion comprising members of unequal length, adapted to take over the flanges of said overlapping portions to draw the same into position to bring the pin-receiving holes therein into registry.

2. A mold section comprising a plurality of members shaped to conform to concrete or other structure to be molded thereover, said members being hinged together whereby they may be collapsed to pass through an adjacent mold section, a pair of uprights spaced apart and secured interiorly to the top and bottom members of said mold section when expanded, a pair of strips longer than said uprights and placed vertically across the end of the expanded section, bolts

for removably securing said strips to said uprights, inclined strips extending on each side of the expanded mold section, bolts for securing said inclined strips to said vertical strips, and planking supported by said vertical and inclined strips to complete the mold for the wings of a conduit.

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

DAVID E. TINGLEY.

Witnesses.
WM. M. ANDREWS,
BENSON MARTIN.