Sept. 18, 1928. 1,684,382

W. E. BAUMBERGER

WALL FORM TIE STRUCTURE

Filed Sept. 18, 1926

Fig. 1.

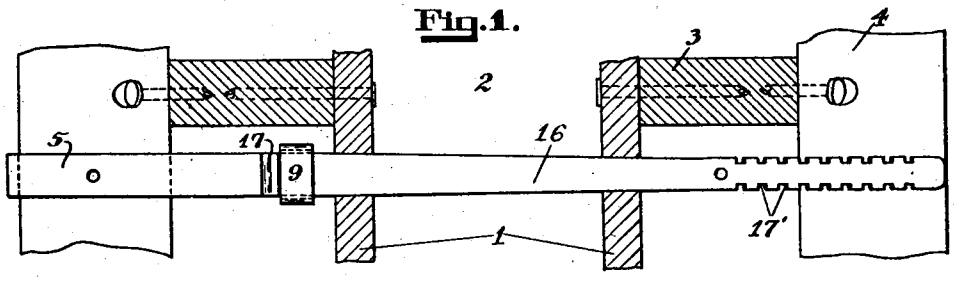


Fig. 2.

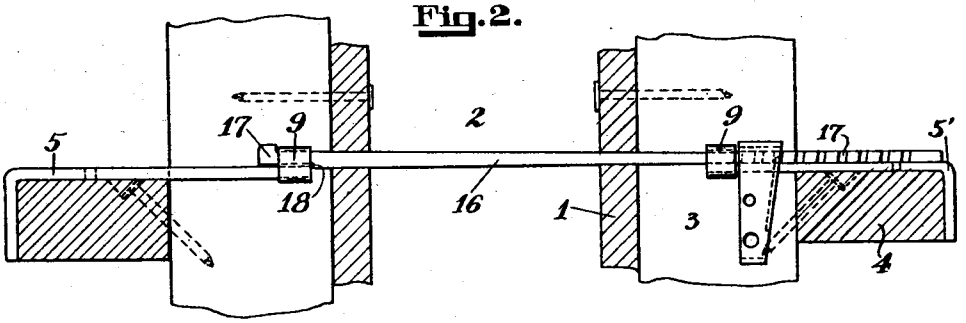


Fig. 3.

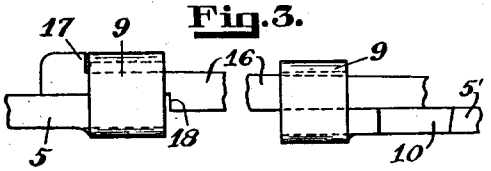


Fig. 4.

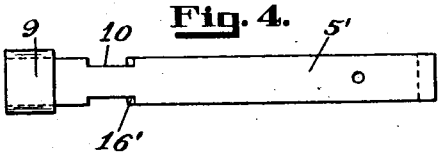


Fig. 5.

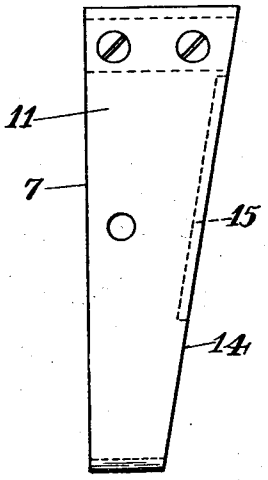
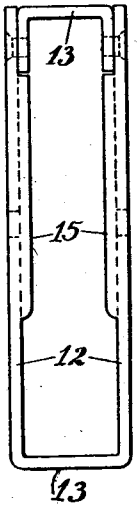


Fig. 6.



INVENTOR
Walter E. Baumberger

BY
Harry A. Tolton
ATTORNEY

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UNITED STATES PATENT OFFICE.

WALTER E. BAUMBERGER, OF SAN FRANCISCO, CALIFORNIA.

WALL-FORM TIE STRUCTURE.

Application filed September 18, 1926. Serial No. 136,292.

This invention relates to a knock-down tie device for retaining forms, particularly concrete wall forms, in spaced relation, and precluding the same from movement toward or from each other while the wall is being poured or curing.

The invention has for its objects to provide a tie device adapted for use in the erection of walls of various thicknesses; one which is capable of being disassembled when the wall retaining forms are removed; and one, the parts of which are, when embedded in the formed wall, readily removed therefrom; to provide a wall tie structure capable of rapid assembly and erection as the moulds are constructed and disassembled when the wall has cured without the necessity of employing skilled labor, and which may be quickly set up when it is desired to use the same in the erection of other wall forms; to provide a tie structure which consists of but few parts, is capable of quick adjustment, and the tie member of which is lineally tapered, enabling the same to be readily driven from a formed wall at the time the mould forming members are removed.

The invention consists broadly in a pair of anchor members for securing to the wall forming purlins and a connecting tie or member lineally tapered and releasably held in lineally adjustable overlapping relation to provide a uniting tie for the anchor members, there being employed means to interlock portions of the tie to the anchor members in their relatively adjusted position.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Referring to the drawings, forming a part of the application—

Fig. 1 is a horizontal, transverse, sectional view through assembled wall forms, illustrating in top plan, one of my anchor members and the tie member in assembled relation.

Fig. 2 is a vertical, transverse sectional view through assembled wall forms, illustrating the complete assembly of the wall tie.

Fig. 3 is a detail view in broken side elevation, illustrating the slide collar connection between the anchors and the connecting member.

Fig. 4 is a view in detail plan of one of the anchor members.

Fig. 5 is a view in side elevation of the locking stirrup.

Fig. 6 is a view in end elevation of the locking stirrup.

In the drawings, wherein like characters of reference designate corresponding parts—the numerals 1 indicate the built-up walls of the wall forming mould, preferably constructed of wood and affording between their faces a space 2 for filling with wall forming material, preferably concrete. The walls 1 are secured to spaced uprights 3, and these, in turn, are held by horizontally spaced purlins 4.

During the erection of the wall forms, the mould uprights 3 are extended upwardly, and those associated with the respective sides of the mould are united by the purlins 4. To the inner faces of the uprights 3 are nailed the boards or wall forming members 1.

At intervals, as the height of the mould walls progress, means are provided to maintain the mould walls in their predetermined spaced relation to insure the construction of a concrete wall of uniform thickness. At the desired intervals, and preferably at predetermined horizontal levels in the construction of the forms, anchor members 5 and 5′ are secured to opposing purlins, with their body portion 6 in spaced parallel alignment. The anchor members are preferably of flat strap material, the respective rear ends being angularly bent at 7 to project downwardly over the outer edge of the purlins, and said anchor members are preferably removably secured in position on their respective purlins by driven members, not shown, which pass through apertures 8.

The anchor members 5 and 5′ are each formed on one end with a connecting member guiding collar or eye 9, and the member 5′ is formed in its opposite side edges in rear of its collar with the recesses 10 for receiving the side walls of an interlocking wedge 11.

The wedge is in the form of an oblong loop or stirrup, consisting of parallel side walls 12 and connecting top and bottom walls 13, the side walls having inclined rear edges 14 formed with inturned flanges 15 terminating short of the bottom wall 13, and which flanges are adapted to bear on the end wall

16′ of the recesses 10, with the forward edges 7 of the side walls bearing on the rear edge of the collar 9 of the anchor member 5′, as in Fig. 2 of the drawings.

With the anchor members 5 and 5′ assembled, as above described, a tie member 16, preferably of strap material, is moved longitudinally of the member 5, through its loop 9. The tie member 16 is formed at one end with a stop flange 17 which contacts with the rear surface of the collar 9 of the anchor member 5, and is undercut, forming a shoulder 18, which is adapted to contact with the end of the anchor member 5 beyond its collar 9.

As in the drawings, the faces and side edges of the tie member 16 converge from the flange 17 toward its other end, and when in position, said tie member spans the space 2 formed between the wall forming members 1.

In positioning the tie member as in the drawings, the same may extend through aligned spaces provided between the meeting edges of the mould wall forming boards 1, although apertures, not shown, may be cut through solid portions of the board to allow for the projection of the member 16 therethrough.

The free end of the member 16 is extended through the collar 9 of the anchor member 5′ with the notched side edges 17′ thereof overlying the body portion of the anchor member 5′, as in Fig. 2 of the drawings.

During this adjustment, the stirrup 11 is in a raised position to admit of the reduced end of the tie member 16 passing between its side walls below the lower ends of flanges 15. When the adjustment is accomplished, the stirrup 11 is lowered, enabling the flanges 15 to pass downwardly through the notches 17′, lying immediately above the wall 16′ of the recesses 10.

With the construction so assembled and with opposite ends of the tie member 16 releasably locked to the opposing anchor members 5 and 5′, the wall mould sections are precluded from separating or being forced together by outside pressure.

After the wall has been formed between the members 1 and has set or cured for the requisite period, the stirrup 11 is raised to position the lower end of flanges 15 above the upper surface of the tie member 16. The securing member for the anchor member 5 is removed and an endwise blow is delivered to the free end of the tie member 16, which blow will, due to the tapered construction of the tie member 16, release the same from the formed wall and permit its withdrawal lineally from the wall; thereafter the form members are removed and the anchor members 5′ are removed from their associated purlins.

It will be observed that the contact of the flange 17 with one edge of the collar 9 of the anchor member 5 and the contact of the stirrup 11 with one face of the collar 9 of the anchor member 5′, and the engagement of the stirrup flanges 15 in opposing notches 17′ of the tie member 16, preclude the separation of the wall forms when pressure is applied between the adjacent faces of the members 1 thereof.

It will also be observed that the engagement of the shoulder 18 with the end of the anchor member 5, and the contacting of the flanges 15 with the walls 16′ of the recesses 10, and the reception of the flanges 15 in the notches 17′, with the anchor members secured to the purlins, preclude movement of the mould forming walls toward each other.

It will be observed that the present wall tie structure is capable of quick assembly and dismantling, is composed of but few parts, and that the tie member 16 thereof, due to its tapered construction, is capable of being readily removed or driven from a formed wall as its faces are released from the wall structure immediately on the tie member being moved the slightest distance toward its large end.

I claim:—

1. A knock-down holding device for wall forming moulds comprising a pair of anchor members, a connecting tie member detachably uniting the anchor members in adjustable relation, said connecting tie member being tapered toward one end provided with a lateral projection at one end for cooperation with one of the anchor members, and slotted at its opposite end for cooperation with the other anchored member.

2. A knock-down holding device for wall forming moulds comprising a pair of anchor members, a connecting tie member overlying and detachably uniting the anchor members in adjustable relation, means for detachably connecting said connecting tie member and one anchor member for precluding relative endwise movement therebetween, and a stirrup embracing the other anchor member and through which one end of the connecting tie member projects, said stirrup being movable transversely of the connecting tie member and its mounting anchor member and into interlocking relation therewith for precluding relative lineal movement between the same.

3. A knock-down holding device for wall forming moulds comprising a pair of anchor members each provided with a guide collar, a connecting tie member uniting said anchor members and extending through the collars thereof, and means whereby relative lineal movement in either direction between said anchor members and connecting tie member is precluded.

4. A knock-down holding device for wall forming moulds comprising a pair of anchor members each provided with a guide collar,

a connecting tie member extending through said collars, said tie member at one end bearing against opposite faces of one of said collars to preclude relative lineal movement between one of said anchor members and the connecting tie member, and releasable means for detachable engagement with the other of said anchor members and said connecting tie member for locking the same against relative lineal movement.

5. A knock-down holding device for wall forming moulds comprising a pair of anchor members, a connecting tie member overlying and detachably connecting said anchor members, said tie member adapted to extend between the mold forming members and through the wall as it is formed, said tie member being tapered toward one end to facilitate its removal from the wall by movement in a direction reverse to its taper, and means for detachably interlocking said tie and anchor members from relative lineal movement.

6. A knock-down holding device for wall forming moulds comprising a pair of anchor members, each provided at one end with guide collars and one formed on opposite side edges with cut-out portions providing shoulders, a connecting tie member lineally movable longitudinally and overlying said anchor members and extending through said guide collars, said tie member provided near one end with spaced opposing flanges for cooperation with one tie member affording stops for releasably locking said tie member and anchor member from relative lineal movement, said tie member near its other end provided with shoulders for registering with the shoulders of the other of said anchor members, and means removably engaging said registering shoulders for precluding relative movement between said tie member and anchor member.

In testimony whereof I have signed my name to this specification.

WALTER E. BAUMBERGER.