M. M. EWING.

TIE AND SPACING MEMBER FOR CONCRETE FORMS.

APPLICATION FILED DEC. 6, 1917.

1,293,391. Patented Feb. 4, 1919.

FIG. 1.

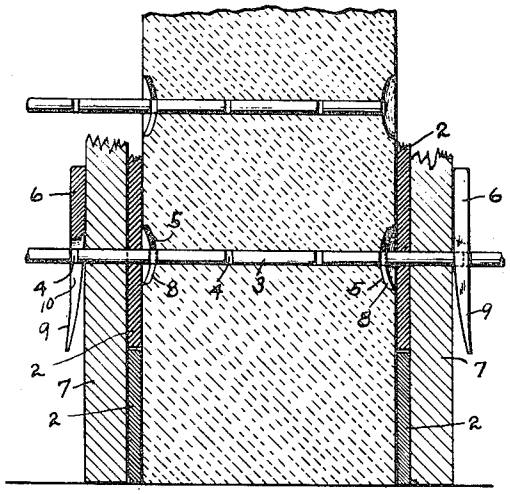


FIG. 2.

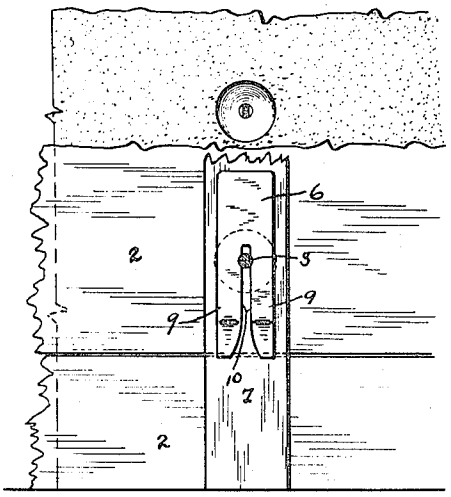


FIG. 3.

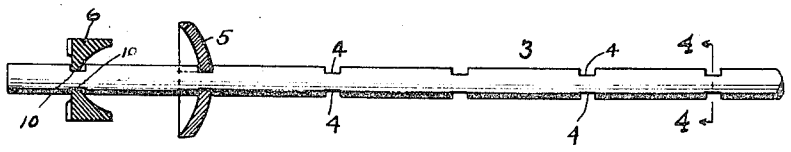


FIG. 4.



FIG. 5.

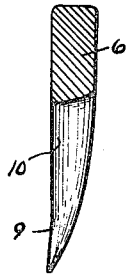


FIG. 6.

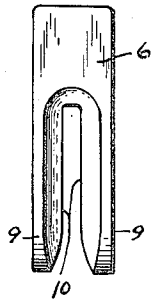


FIG. 7.

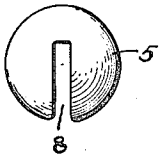
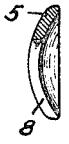


FIG. 8.



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TIE AND SPACING MEMBER FOR CONCRETE-FORMS.

1,293,391. Specification of Letters Patent. Patented Feb. 4, 1919.

Application filed December 6, 1917. Serial No. 205,738.

To all whom it may concern:

Be it known that I, MAURICE M. EWING, citizen of the United States, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Ties and Spacing Members for Concrete-Forms, of which the following is a specification.

My invention relates to a tie and spacing member for concrete forms, the object being to provide a simple and inexpensive means for securing plates, boards or falsework in predetermined spaced relations to provide a concrete form which, when filled with concrete, will safely carry the weight and strains upon the forms and permit convenient disassembling of the form after the concrete has hardened.

In the accompanying drawings, Figure 1 is a vertical transverse section of a concrete wall inclosed within a knockdown form which is secured together by my improved holding means, and Fig. 2 is a side elevation of the parts shown in Fig. 1. Fig. 3 is a plan view of a section of a notched tie rod with one locking washer and a wedge member shown in section and interlocked therewith. Fig. 4 is a transverse section of the tie rod on line 4—4, Fig. 3. Figs. 5 and 6 are section and side views, respectively, of the locking wedge. Figs. 7 and 8 are side and section views, respectively, of the locking disk.

In the building of a concrete structure, and referring more particularly to the building of a vertical wall, my first step is to erect two sets of plates or boards 2, either metal or wood, vertically edge to edge and with the two sets of plates spaced at any desired distance apart corresponding to the thickness of the wall desired. The bottom plates or boards rest upon a suitable base, and a solid wall is built up by each set of plates 2 to any desired length, and the plates may be of any given width, length and thickness. In building up these walls, selected plates 2 are united at intervals to make a rigid and firm structure by means of iron rods 3 having square cornered notches 4 at opposite sides thereof and at uniformly spaced intervals longitudinally. These notches serve several important purposes; first, they provide locking shoulders at spaced intervals adapted to be engaged by locking disks or washers 5 and also locking wedges 6; second, they provide recesses in the rod adapted to be filled with concrete to lock the rod within the concrete wall when completed and which rod becomes a fixed reinforcement within the wall; third, the oppositely spaced notches 4 reduce the cross section of the rod at intervals and provide sharp corners, so that the rod may be snapped or broken off or cut to any given length wherever the notches occur, not only initially when the rod is placed in the form but also after the rod is embedded within the concrete.

To explain further, when the plates are first erected the rod 3 is cut or broken into a given length which is greater than the thickness of the wall adapted to extend through holes or openings in opposite plates and also coinciding holes or openings in the vertical uprights or timbers 7 placed against the outside faces of the plates at predetermined intervals. Two washers 5, each having a radial slot 8 extending from the edge to the center of the washer, are used to engage the rod at two separated notched places 4 on the rod. The distance between such notched places corresponds roughly to the thickness of the wall desired, and the washers 5 serve as backing members or rests for the plates. Moreover, each washer 5 is of concave-convex formation to bring the plate about half an inch outwardly beyond the notched portion 4 engaged by the washer. In this way each washer forms a cupped recess in the concrete wall when the form is filled with concrete, but the washer does not remain within the concrete wall. It is a detachable part of the rod and it is easily removed after the rod is broken or cut off at the reduced portion of the rod where the notches 4 are engaged by the washer. The washer when embedded in the face of the wall, forms a rigid iron base which facilitates the breaking of the rod where notched without disturbing the setting of the rod in the wall and when the rod is broken off short at the notch engaged by the washer, the washer itself will drop off or is easily pried loose.

A locking wedge 6 or its equivalent is required to unite the parts, and this wedge is a bifurcated member of metal having two curved prongs 9 tapered to a point and also flaring inwardly to provide opposite wedge-shaped edges 10 adapted to engage the square shoulders of notches 4 in the rod when the said locking wedge is slipped over

the rod with the rounded or beveled face of the wedge bearing against the outer face of the upright 7 as shown in Figs. 1 and 2. Thus, the washers 5 are seated adjacent but separated from the locking wedges 9, the distance between them corresponding to the thickness of the plates and uprights. In disassembling the parts it is only necessary to drive the wedges loose and disengage them from the rod, and then remove the uprights and plates. Then each short projecting end of the rod is cut, snapped or broken off, the washers serving as a solid base to promote such breaking. This frees the washers, which either drop off or are pried loose. The piece of rod which is embedded in the wall is now of less length than the thickness of the wall and the ends are retired within a cavity or recess formed by the washer and at such distance from the front face of the wall that these ends are completely embedded when the final concrete facing is applied to the wall. Or, the cavities may alone be filled with concrete to cover and close the ends of the rods and to make the entire face or surface of the wall flush and even. The washers and wedges are capable of being used repeatedly while the rod 3 is furnished in any convenient length which will facilitate transportation and the erection of the forms, and the part which remains in the wall is interlocked with the cement and remains as a reinforcement.

What I claim is:

1. A tie and spacing mechanism for concrete forms comprising a smooth surfaced rod having opposite notches at intervals at breakable depth, and substantially disk shaped spacing members having open radial slots adapted to be seated astride said rod in opposite notches, in combination with walls engaged on their inside by said spacing members and locking devices engaging in other notches in said rod and bearing against the outside of said wall.

2. A rod having opposite notches at intervals, in combination with slotted concave-convex washers adapted to interlock with the rod in said notches and slotted wedges adapted to lock with other slotted portions of said rod outside said washers.

Signed at Cleveland, in the county of Cuyahoga and State of Ohio, this 3rd day of December, 1917.

MAURICE M. EWING.