March 2, 1943. O. SUMMERS 2,312,983

CONCRETE WALL FORM

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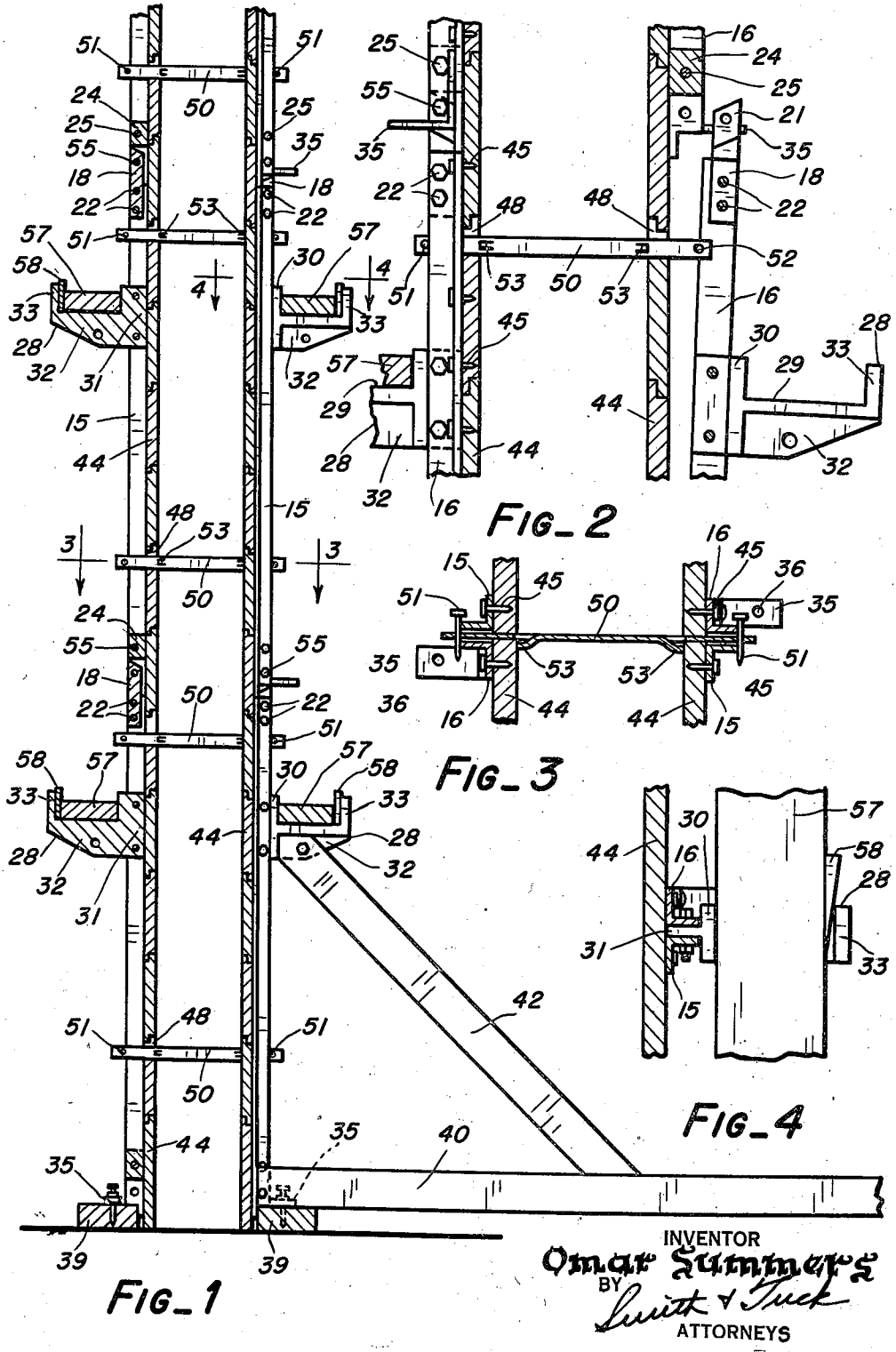


FIG_1



FIG_2



FIG_3



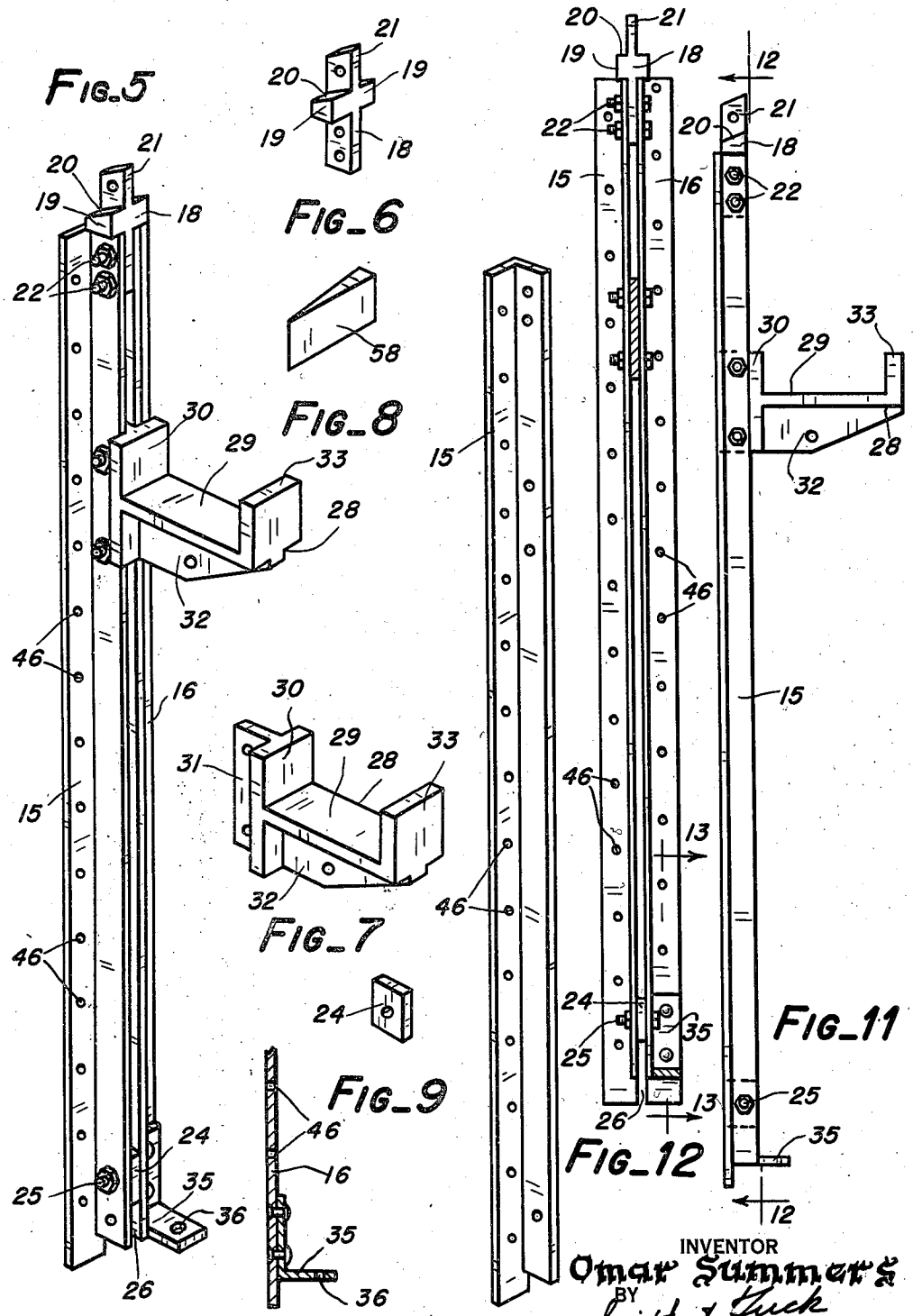
FIG_4

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# UNITED STATES PATENT OFFICE

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## CONCRETE WALL FORM

Omar Summers, Seattle, Wash.

Application March 24, 1941, Serial No. 384,833

3 Claims. (Cl. 25—131)

This invention relates to improvements in concrete form construction for use in preparing for the casting of concrete in forms and for use during the casting and setting operation to hold the concrete in place.

The customary practice in making concrete forms for walls, for example, has been to erect vertical stud members of wood in spaced apart rows and to sheath them on their adjacent faces with horizontal boards nailed thereto to complete the form. These forms are seldom true or accurate due to the warp of the wood of which they are constructed and also due to the fact that the basic element, the stud, is seldom absolutely straight. In addition these materials used in the forms are seldom capable of reuse because of the warp that they take following their exposure to great quantities of liquid in the concrete cast in the forms and due to the damage they suffer from being dismantled when they are removed from the cast concrete.

It has been an important object of my invention to provide an improved studding structure for use in the production of forms for cast concrete work.

Another object of my invention has been to provide an improved stud structure for concrete forms which may be used in multiples and tied together for proper alignment of the form walls.

A further object of the invention lies in the provision of a metal studding cooperable with the standard types of sheathing employed in lining concrete forms.

Other objects and advantages of the invention will be apparent during the course of the following description which, taken in connection with the accompanying drawings, discloses a preferred embodiment of my invention.

In the drawings:

Figure 1 is a vertical elevational view of opposed pairs of studs according to my invention in position in a concrete mold and showing portions in section for the purposes of illustration,

Figure 2 is an enlarged fragmentary view of the nature of Figure 1 and showing the manner in which extensible elements of the stud may be joined together,

Figure 3 is a transverse sectional view taken on line 3—3 of Figure 1,

Figure 4 is a fragmentary plan and sectional view taken on line 4—4 of Figure 1,

Figure 5 is a perspective view in elevation of a unitary section of my improved stud construction,

Figure 6 is a perspective view of the coupler link employed in joining sections of stud together,

Figure 7 is a perspective of a stringer stirrup that I use in tieing the various studs of one wall together and in proper alignment,

Figure 8 is a perspective view of a wedge used in connection with the stirrups in aligning a wall structure,

Figure 9 is a perspective view of a filler block that I use in my invention,

Figure 10 is a perspective view of one of a pair of stud leg members that I associate together to make a unitary stud section,

Figure 11 is a vertical side elevational view of a stud section.

Figure 12 is a vertical front elevation view partially in section as though taken on line 12—12 of Figure 11, and

Figure 13 is fragmentary sectional view taken on line 13—13 of Figure 12.

Referring to the drawings, throughout which like numerals designate like parts, the numerals 15 and 16 indicate paired vertical structural shapes, in this instance angle irons, which are arranged together in pairs but slightly spaced apart as shown in the different views.

In one end of the space between the members 15 and 16 I mount the connector link 18 having the side lugs 19 and the upwardly disposed sloping faces 20. The tongue 21 extends outwardly from the body 18 past the lugs 19 for joinder with a second unitary stud section. The link 18 is positioned between the ends of the members 15 and 16 so that bolts 22 passing therethrough and engaging in aligned bolt holes in the body 18 will secure the elements together.

Spaced from the opposite ends of the stud members is the filler block 24 retained therein by the bolt 25 which by reason of this spacing, leaves the slot 26 for the accommodation of the tongue 21 on the link 18.

A stirrup designated as a whole by the reference character 28, has a foot plate 29 that stands outward from the T-shaped structural upright 30. The insert tongue 31 of the member 30 is adapted to be fitted into the slot between the flanges of the spaced apart members 15 and 16 of a stud unit. Suitable brace webs 32 fit in the angle between the face of the T-member 30 and the underside of the foot plate 29. Plate 29 also has an upstanding lip 33 for retaining a stringer that may be laid therein and for retaining a wedge that it may be wished be driven between the stringer and the stirrup for alignment reasons.

On the lower end of the member 16 I provide the angle clip 35 suitably secured thereto and having a nail hole 36 in its outstanding leg for a purpose later to be described.

In forming a mold or form wall for concrete casting a ground stringer 39—39 is laid along the edges of the space above which a wall, for instance is to be cast. To these stringers, the inner one first and preferably, the vertical stud units are secured by having the flange 35 nailed thereto as is shown in Figure 1. A lateral tie 40 may be laid out generally at right angles to the wall to be formed and a diagonal brace 42 positioned therebetween and the stirrup web 32 to erect the stud unit in a vertical or adjusted position as indicated.

Sheathing boards 44 are positioned against the inner face of the stud unit and retained thereon by nails 45 passing through the holes 46 in the angle members 15 and 16. Certain of the upper edges of the boards 44 will be provided with notches 48 for the reception of the tie straps 50 that are used to tie spaced apart walls together. The ends of the straps are slipped between members 15 and 16 in the space provided and as shown in Figure 3 a nail 51 or other tie member is inserted in a hole 52 with the lug 53 on the strap a distance from the end abutting the inner face of the board 44 alongside a notch 48.

When one panel has been erected as described a complementary panel is also erected in the same manner and tied to the first panel by means of the tie straps described or by other similar means.

Additional upper extensions are also formed by joining further stud units to these first erected by inserting the tongue 21 into the space 26 on the end of a stud member and inserting a tie bolt 55 therethrough. Sheathing is applied and tied in place in the before described manner to increase the height and volume of the form.

When a wall panel is constructed and erected it must of course be aligned with the plane in which it is desired the subsequently cast wall is to lie. For this purpose stringers 57 are rested in stirrups that are supported from the stud members. These stringers are usually wooden timbers and are consequently subject to variations due to warping and the like. In such instances as it is desired to shift and swing the wall to accommodate the curved or crooked stringers and to tighten the stringers in the stirrups, wedges 58 shown in Figure 8 are driven between the lip 33 and the stringer edge or between the upright T-member 30 and the stringer edge. In some cases a combination of wedges on both sides will be used.

It will be seen that the slot formed between the members 15 and 16 by reason of their being spaced apart by the link 18 and the filler block 24 will accommodate the ends of any tie means that may be used anywhere along the length of the stud. This is a distinct advantage over those studs where the tie must be engaged in a fixed hook or on a lug or the like that is provided in the stud for that purpose. My tie means is merely inserted between the spaced apart angle members wherever it comes and a nail or the like inserted through it to hold it in place.

In dismantling forms constructed according to my disclosure, when the angles 15 and 16 are removed from the form lumber, all the nails employed to hold the structure together are also stripped so that the lumber is clean and ready for further use.

While I have described this device as being used with a strap metal tie as shown in the drawings, I do not wish to be limited thereby, beyond the scope of the subjoined claims, as that is only a single form of tie that may be used. For example the conventional twisted wire tie works satisfactorily although not with the facility that the strap tie is attached in place.

By use of my stud arrangement, the forms are in effect sectional panels that, when a wall is cast, may be removed as a unit of a size convenient to handle from the setting concrete and set up at another point for subsequent use in casting another concrete body.

The foregoing description and the accompanying drawings are believed to clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

I claim:

1. A wall for concrete forms comprising a panel of sheeting material having a plurality of stud members secured thereto in a manner to stand in a vertical position, each stud member comprising a bar having divergently extending flanges on one edge, forming a broad face, means for securing said member to the sheeting material, said bar being slotted therethrough substantially its full length at right angles to said broad face, and a stirrup secured in the slot in said bar for the reception of structural stringer members to lie transversely of said bar and to tie a plurality of said bars together.

2. A stud member for use in the construction of concrete forms comprising a bar having divergently extending flanges on one edge forming a broad face to receive and be secured to sheet form material, said bar being slotted therethrough substantially its full length at right angles to said broad face, and a stirrup having a tongue secured in said slot for the reception of structural stringer members to lie transversely of said bar and to tie a plurality of said bars together.

3. A stud member for use in the construction of concrete forms comprising a bar having divergently extending flanges on one edge forming a broad face to receive and be secured to sheet form material, said bar being slotted therethrough substantially its full length at right angles to said broad face, a notch in one end of said bar and an oblique tongue on the other end of said bar cut at an obtuse angle to said broad face and adapted to fit into a similar notch of another and similar bar, said tongue being slidably removable from said notch in another bar by movement normal to said broad face.

OMAR SUMMERS.