April 11, 1939. F. F. MILLS 2,153,672

FOUNDATION PLATE

Filed Jan. 20, 1938

Fig. 1

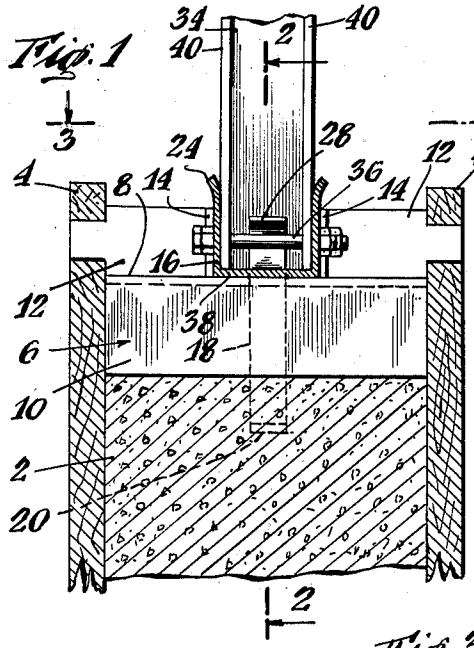


Fig. 2

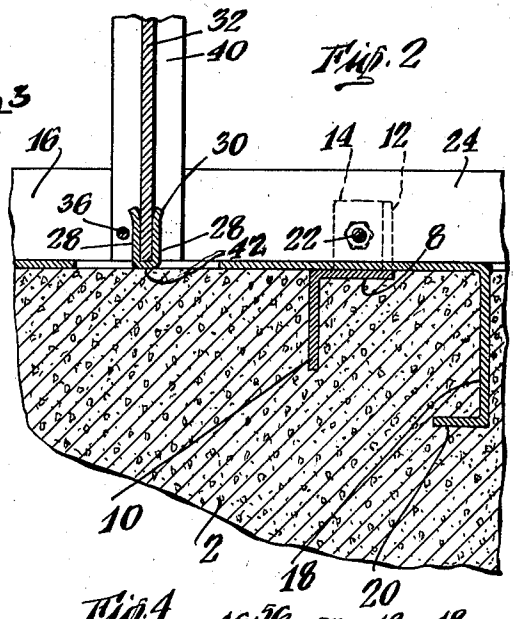


Fig. 3

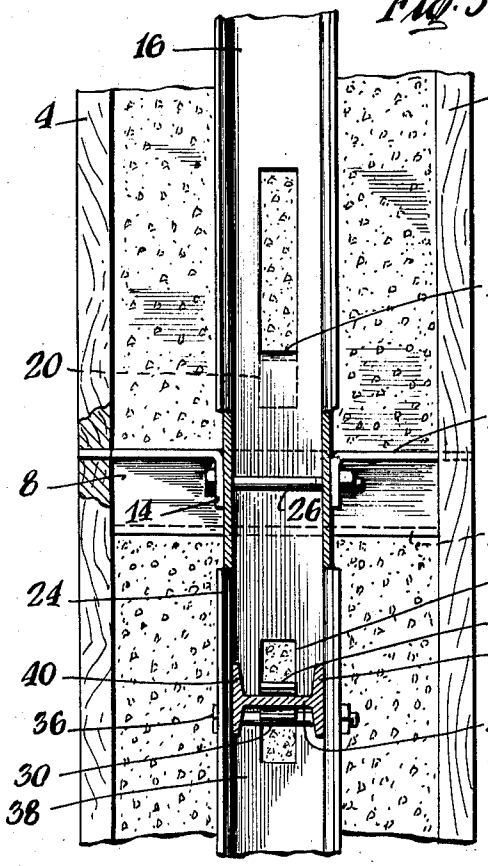
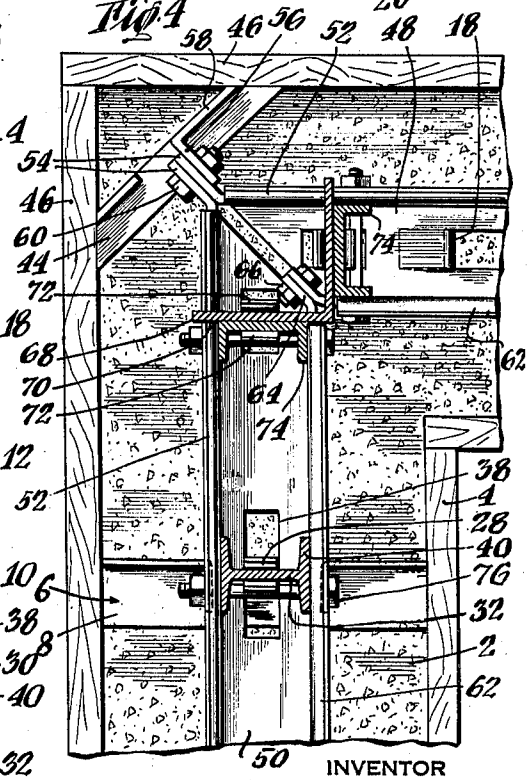


Fig. 4



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FOUNDATION PLATE

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3 Claims. (Cl. 72—77)

My invention relates to structural materials adapted for use in the erection of buildings and particularly to supporting structures such as foundation plates, floor or ceiling plates and related elements for supporting framework, studding, columns, posts and the like. While my invention is adapted for use in the construction and erection of pre-fabricated buildings to provide an improved support for elements thereof, the invention also is adapted for use in other types of construction and is especially useful in buildings and structural work wherein members formed of metal are employed.

In erecting structures it is important that members of the framework and particularly members which extend upwardly from a foundation or support such as studding, columns, posts and the like as well as inclined members such as stair stringers, and roof rafters should be firmly supported at their base. Ordinarily, it is equally important that the spacing and arrangement of the members of the framework be accurate. This is particularly true when the framework is formed of metal or the members thereof are provided with bolt holes or other elements which are not easily altered to compensate for misalignment of parts.

In accordance with my invention means are provided which serve to position and align the members of the framework and provide a firm support therefor which may be securely located with respect to the footing or foundation of a building or other parts of the structure. The invention includes a supporting structure of novel construction together with means for positioning the same and for positioning other members of a framework relative thereto. In a typical construction illustrated in the drawing, my invention is shown as applied to a foundation having a wall supported thereby and includes a spreader member for a form into which concrete is poured. A supporting member such as a foundation plate engages the spreader member and is formed with positioning elements or tongues extending upwardly from the base thereof to engage opposite sides of the webs of I-beams or other members of the framework employed as studding, columns, stair stringers or the like. The foundation plate also is provided with anchoring members extending downwardly from the base thereof for anchoring the plate to the concrete footing or other base.

One of the objects of my invention is to provide novel structural members which are inexpensive to produce and employ, and which serve to provide a firm support for the members of a framework.

Another object of my invention is to provide a foundation plate or similar member for assembly in combination with vertical or upwardly extending elements to align said elements and secure them in position without the use of bolts, rivets or other securing means.

A further object of my invention is to reduce the cost and increase the strength and rigidity of constructions such as pre-fabricated buildings or other structures having a framework formed of metal members.

These and other objects and features of my invention will appear from the following description thereof in which reference is made to the accompanying figures of the drawing wherein typical members embodying my invention are illustrated.

In the drawing:

Fig. 1 is a vertical sectional view of a typical foundation construction embodying my invention.

Fig. 2 is a vertical sectional view of the construction illustrated in Fig. 1 taken on the line 2—2 thereof.

Fig. 3 is a horizontal sectional view of the construction illustrated in Fig. 1 taken on the line 3—3 thereof; and

Fig. 4 is a horizontal sectional view of a corner construction using the members illustrated in Fig. 1.

In that form of my invention illustrated in the figures of the drawing a foundation or footing 2 is formed of concrete or other suitable material poured within a form 4. A spreader member 6 extends transversely of the form and is secured thereto in any suitable way to hold the sides of the form in position during setting of the concrete. The spreader member is formed with a horizontal portion 8 the upper face of which preferably is positioned substantially flush with the surface of the concrete footing. A vertical portion 10 of the spreader member extends downwardly into the concrete footing and an upwardly extending portion 12 of the spreader member extends above the footing. Lugs 14 struck inwardly from the upwardly extending portion 12 of the spreader machine project over the horizontal portion 8 thereof and serve to position a foundation plate 16 or other supporting member. The spreader member thus serves to hold the form and foundation plate in place during setting of the concrete insuring proper positioning of the plate and on setting of the concrete serves to prevent lateral displacement of the foundation plate relative to the footing.

The foundation plate 16 shown is in the form

of a channel member 16 of U shaped cross section located between the lugs 14 on the spreader members 6. The lower face of the channel member rests upon the horizontal portions 8 of the spreader members and preferably also rests upon the footing 2 between the spreader members so as to be supported throughout the length thereof. The base of the channel member 16 is formed with an anchoring member 18 struck therefrom and extending downwardly with the lower portion 20 turned at right angles so that when embedded in the concrete of the footing the channel member is securely anchored in place preventing displacement of the channel member with respect to the footing and the spreader member. Positioning holes or means 22 are formed in the lugs 14 and in the upwardly extending sides 24 of the channel member to locate the channel member with respect to the spreader members and footing before pouring concrete into the forms and to hold the elements in place during pouring and setting of the concrete footing. If desired, bolts 26 may extend through the holes 22 but such bolts ordinarily are unnecessary after the parts are accurately positioned and the material of the foundation is set.

The base of the foundation plate or channel member 16 also is provided with positioning tongues 28 struck upward therefrom with the upper extremities 30 thereof flared outwardly. The tongues are formed in pairs and are located in predetermined positions to receive therebetween the webs 32 of vertical or upwardly extending framework member such as I-beams 34 employed as studding, columns, stair stringers or the like. The webs 32 of the I-beams extend at right angles to the channel member whereas the flanges 40 thereof extend parallel to the upwardly extending sides 24 of the channel member 16 and lie closely adjacent the inner faces thereof. The sides 24 and flanges 40 of the I-beams may be provided with openings for receiving positioning means such as bolts 36 to secure the stud in place more firmly and prevent vertical movement thereof. However, the bolt 36 need not be used with vertical members such as studding and posts to which considerable weight is applied and even when the upwardly extending members are inclined, as in the case of stair stringers and roof rafters. Therefore the bolts 36 are not essential to the construction unless the lateral thrust thereon is sufficient to deform the tongues 28.

As shown in Figs. 1 and 3 of the drawing, the tongues 28 preferably are narrower than the channel member so that when struck up therefrom marginal supporting portions 38 are presented against which the flanges 40 of the I-beam may bear so that the whole weight of the stud or post is not carried by the narrow section 42 of the channel member which is located between the tongues 28.

In forming the corners of structures in accordance with my invention a spreader member 44 may be secured to the outer members 46 of the form and positioned at substantially 45° with respect thereto as shown in Fig. 4. The bases of the U shaped channel members 48 and 50 are chamfered so that they do not overlap and the outer upwardly extending sides 52 of the channel member are bent at 45° to provide ears 54 which lie adjacent a portion 56 struck inwardly at right angles from the upwardly projecting portion 58 of the spreader member 44. A bolt 60 may extend through aligned openings in the portion 56 of the spreader member and the ears 54 of the channel members to secure the parts in place during pouring and setting of the concrete within the forms for the footing. The inner sides 62 of the channel members are also extended and bent at 45° to provide ears 64 which lie adjacent each other and a bolt or pin 66 may be passed through openings therein to hold the parts in position.

A corner post 68 in the form of an angle member extends vertically upward from the channel members and has the sides thereof located in slots 70 in the inner and outer channel members respectively. Tongues 72 struck upwardly from the base of the channel members serve to hold the corner posts in position and end studs 74 in the form of channel members may be positioned with their bases against the adjacent sides of the corner member to provide additional strength in the corners. The tongues 72 thus serve to hold both the corner member and the end studs in place and in contact with each other.

In using the construction described the spreader members 6 are placed between the opposite sides of the form 4 with the horizontal portion 8 thereof flush with the line to which concrete is to be poured. The corner spreader members 44 are similarly positioned as shown in Fig. 4. The channel members 16 are then placed between the lugs 14 on the upwardly extending portions 8 of the spreader members with the feet 18 of the channel members extending downward into the form. The ends of the channel members are positioned with respect to the spreader members 44 to form the corners and the parts are accurately positioned with respect to the spreader members by means of the positioning holes 22, through which bolts may be passed and the positioning bolts 60 and 66 for the corner members to hold the parts in position during pouring and setting of the concrete.

After the forms, spreader members and foundation plates have been arranged the concrete is poured until level with the bottoms of the foundation plates so that the portions 8 of the spreader members are flush with the surface of the concrete and the feet 18 of the foundation plates are embedded therein. The concrete is then allowed to set and the vertical I-beams 34 and the corner posts 68 as well as any pillars, stair stringers and the like may be positioned with the lower ends thereof between the upstanding tongues 28 or 72 in the base of the channel member, being guided into position by the flared edges 30 of the tongues. Bolts 36 may then be passed through the sides of the channel member and the base of the I-beams to hold them in vertical position until the upper portions are secured in place as the structure is erected.

As shown in Fig. 4 the location of the upstanding tongues 28 for positioning the studs or other members of the framework and the location of the spreader members 6 may be chosen to provide additional support for those studs or posts which are required to carry the heaviest loads. For this purpose the spreader members are positioned with the horizontal portions 8 thereof beneath the tongues 28 and those portions of the channel members against which the bases of the studs bear. In this way additional strength is supplied where needed without change in the construction of any of the elements. Moreover a single bolt or positioning pin 76 will then serve to locate both the foundation plate and the stud

with respect to the spreader member whereby the parts may be positioned very accurately.

The construction described assures accurate location and spacing of the studding, posts and other members of the construction so that each of the members of the framework of a building or the like may be formed, stamped or fabricated to fit in a given location and can be positioned and secured in place very quickly and easily without the use of nails, bolts or rivets. Furthermore the accuracy of location of each member is not left to the judgment of those erecting the building but is assured by the manufacturer of the foundation plates and other parts of the structure. Therefore little if any skilled labor is required for the erection of the framework of the structure.

While my invention is of particular value in the construction and erection of prefabricated buildings and other structures having steel framework it will be apparent that foundation plates and other elements of the structure may be used in supporting and positioning wooden studding, posts and the like. In such cases it is only necessary that the spacing of the tongues **28** and **72** from one another be sufficient to receive the studs or other wooden members therebetween.

It will also be apparent that the present invention may be used in forming sills and floor supports and where necessary or desirable the foundation plate may be located in a vertical position to support and locate horizontally extending beams or the like for building, bridges, roadways or other structures. It should therefore be understood that the form of my invention herein described and shown in the drawing is intended to be illustrative of a typical embodiment of my invention and is not intended to limit the scope thereof.

I claim:

1. A building construction comprising a footing formed of concrete, a plurality of members each having a portion thereof embedded in the concrete of said footing and another portion projecting above the upper surface of said footing and provided with spaced lugs, a foundation plate located between the lugs on the projecting portions of said members, said lugs and foundation plate being formed with cooperating means for positioning the foundation plate, said foundation plate resisting upon the upper surface of said footing and having elements extending downwardly therefrom and embedded in the concrete of said footing and having spaced elements extending upwardly therefrom and structural members supported by said foundation plate and located between the spaced upwardly extending elements thereof.

2. A building construction comprising a footing formed of concrete, a plurality of members each having a portion thereof embedded in the concrete of said footing and another portion projecting above the upper surface of said footing and provided with spaced lugs, a foundation plate located between the lugs on the projecting portions of said members, said lugs and foundation plate being formed with cooperating means for positioning the foundation plate, said foundation plate resting upon the upper surface of said footing and having elements extending downwardly therefrom and embedded in the concrete of said footing and having spaced elements extending upwardly therefrom, and upwardly extending I-beams having the lower ends thereof bearing against said foundation plate and positioned with the webs thereof located between the spaced upwardly extending elements on said foundation plate.

3. A building construction comprising a footing formed of concrete, members partially embedded in the concrete of said footing provided with spaced lugs projecting above the upper surface of said footing, a foundation plate of U shaped cross section located between the lugs on said members, said members and lugs having cooperating means for positioning said foundation plate with respect to said footing and said foundation plate having an element struck downward from the base of said plate and embedded in the concrete of said footing, said foundation plate also having other elements struck upward from the base of said plate between the sides of said channel, the latter elements being spaced apart to receive a structural member therebetween to position said member with respect to said foundation plate.

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