

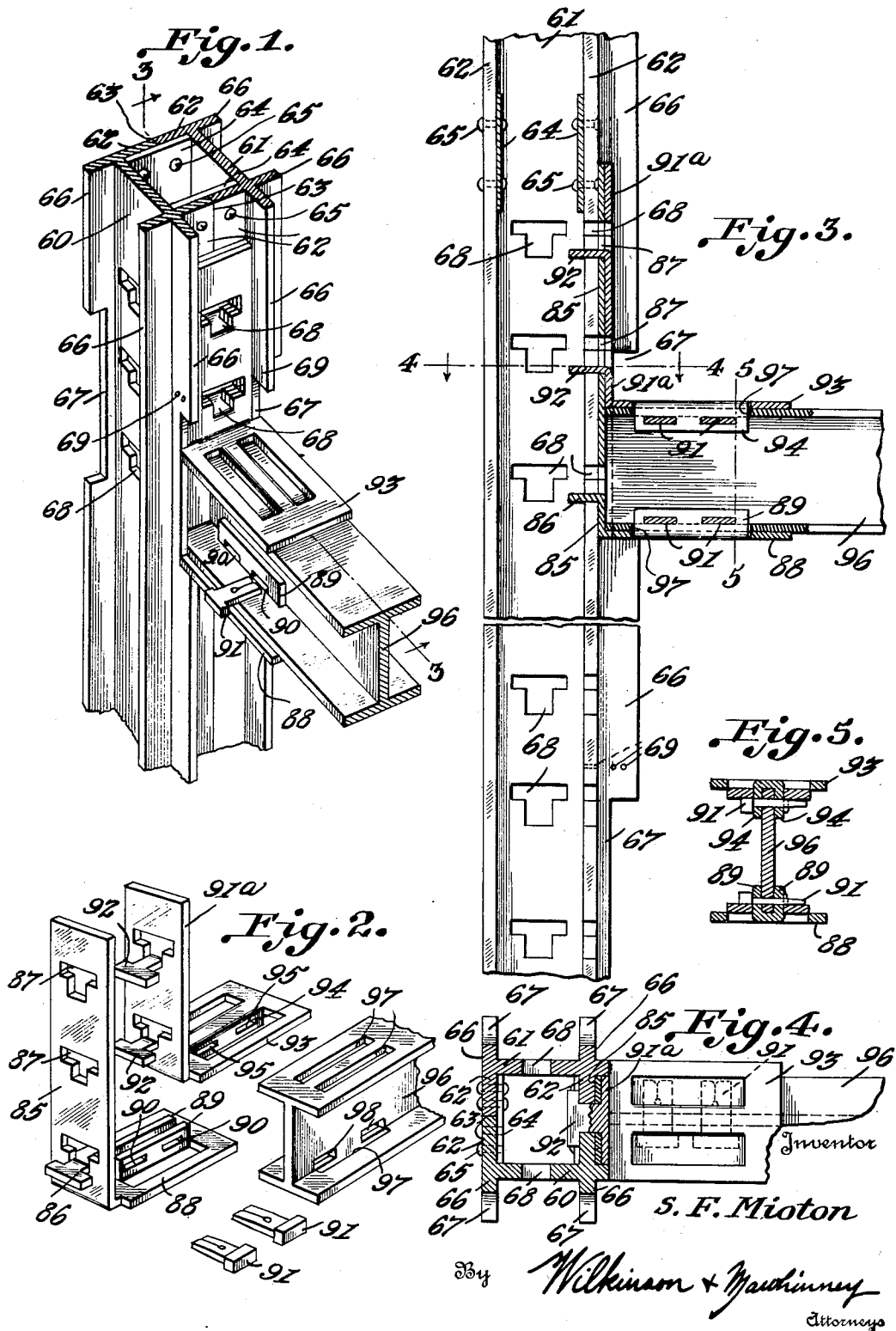
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STRUCTURAL BUILDING FRAME

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STRUCTURAL BUILDING FRAME

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3 Claims. (Cl. 189—35)

The present invention relates to metallic building construction, and more particularly to the structural frame work of buildings which may be more or less fire-proof in construction.

5 An object of the present invention is to provide standard building construction units which may be used in desired numbers and assembled in various ways to produce large or small houses or buildings.

10 Another object of the present invention is to provide improved means for interlocking or securing the units together in various combinations and which admits of the comparatively easy knocking down of the structure comprising the units and which when set up will provide a frame work which may be permanent, crack-proof and rigid, wherein the fire risk is diminished to a minimum and repairs are negligible, wherein the cost of construction of buildings is reduced over the present standard steel construction and wherein the parts may be quickly and easily locked in assembled position.

The invention further aims at the provision of an improved means for interlocking the staple or other holding elements in position to secure the units together, and a structure which conserves labor.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views.

35 Figure 1 is a fragmentary perspective view of a post and sill of a building frame secured together by the improved joint of this invention.

Figure 2 is a detail perspective view of the elements of the joint and the adjacent end of a joint adapted to interlock therewith.

40 Figure 3 is a vertical section taken through the joint on the line 3—3 of Figure 1.

Figure 4 is a transverse section taken on the line 4—4 of Figure 3 through the post and the adjacent parts of the joint, and

45 Figure 5 is a transverse section taken on the line 5—5 through the sill and adjacent part of the joint.

Referring now to the drawing, 60 and 61 designate a pair of complementary post sections which are of a length equal to the desired height of the post and which have their body portions arranged substantially in parallel relation.

Each section 60 and 61 is provided with spaced 55 flanges 62 which extend outwardly from the re-

spective section and are adapted to abut in edge to edge engagement as shown at 63, the flanges 62 comprising the spaced intermediate walls of the post. These flanges 62 may be proportioned in length as desired so as to provide a rectangular post structure as shown or a post of any adaptable cross sectional configuration. The post sections are of longitudinal structure so that their meeting edges 63 are lengthwise at opposite sides of the post. The sections are held together 65 by plates 64 which overlap the joints of the flanges 62 and are riveted or otherwise suitably secured to the flanges as shown at 65, however, they may be bolted, welded or interlocked to each other as is found most economical or desirable. The plates 64 when used are preferably disposed at the inner sides of the flanges 62 so as to leave the exterior surfaces of the post substantially flat and uninterrupted.

These post sections 60 and 61 are provided with 75 pairs of outstanding projecting elements or flanges 66 which are spaced apart at the corners of the post and extend throughout the length of the post. The projections or flanges 66 are provided with recesses or cut away portions 67 at 80 suitable points for the reception of joists, and other elements of the structure which are assembled in juxtaposition to the post. The intermediate portion of the post is shown wherein the cut away portions 67 are arranged intermediately 85 of the length of the post, but these cut away portions may be located where desired throughout the length of the post.

Between the flanges or projections 66 of each pair, the flat face or wall of the post is provided 90 at suitable intervals and in desired groups, with cut away socket openings or slots 68 which are utilized in conjunction with other units later to be described for interlocking those units with the post at desired points and sides thereon.

95 The projections or flanges 66 are provided at suitable intervals throughout their lengths with pairs of openings 69 suitably spaced apart to receive the prongs of a staple, or the like, and which are drilled or otherwise suitably formed through 100 the flanges 66 with their axes at an angle to each other so that the route of each opening diverges from that of the other. The openings 69 are so positioned as to deform the prongs of the fastening device and thus serve to clinch or retain it in position when it is forced through or into the flanges. These staples may be of any suitable conventional construction and may be used for 105 securing wire lath or meshing to the building frame.

It will be noted that in all forms of the post the tie plates 64 are suitably shaped and proportioned to accommodate the various angular relations between the flanges of the post sections when these are to be bolted or riveted but become entirely unnecessary when these sections are welded or interlocked.

In the drawing is shown a lock or connection for use between the post and a sill or like structure subsequently to be described. This lock or connecting device comprises upper and lower sections which are superposed one upon the other and adapted to interlock with each other and with the post and which is also provided with means for interlocking with a sill. The lower member or section of the sill lock as shown comprises a back plate 85 which is of a width adapted to fit between a pair of the projections or flanges 66 and which is adapted to lie flat against the side of the post. The back plate is provided, near its lower end, with a stamped and out-turned T-head 86 proportioned to pass through the upper part of one of the T-slots 68 in the side of the post. The shank of the T-head 86 is proportioned to accommodate the thickness of the post and to hold the back plate 85 snugly against the post. The back plate 85 is also provided with T-slots 87 adapted to register with the upper set of slots 68 of post.

The lower end of the back plate 85 is provided with an out-standing flange 88 which may rest upon the foundation of the building and which is provided with a pair of up-standing parallel flanges 89 provided near their opposite ends with registering apertures 90 through which a flat locking key 91 may pass. The locking key 91 may be of the cotter pin type and provided with a bifurcated outer end to admit of the spreading of the free end portions of the pin after the same has been moved into position for locking the pin from accidental displacement.

The upper section or portion of the sill lock comprises a back plate 91a adapted to fit between a pair of the flanges or projections 66 and flat against the back plate 85 of the lower section.

Stamped and turned backwardly from the plate 91 is a pair of T-heads 92 suitably proportioned for passage through the slots 87 of the plate 85 and also the adjacent slots 68 of the post so that the T-heads 92 may move downwardly in the slots and interlock all of the members together. The back plate 91a is provided with an outwardly extending flange 93 which is supported in spaced relation above the flange 88 and which is provided with a pair of depending flanges 94 so disposed upon the flange 93 as to register with the up-standing flanges 89 of the lower section for supporting a sill therebetween. The depending flanges 94 have registering spaced slots 95 therein through which keys 91 may pass.

Secured to the post is a building frame element one type of which may be a sill 96 which is of I-beam cross section having upper and lower flanges. The end of the sill 96 is adapted to fit between the upper and lower lock members 91a and 85. The upper and lower flanges of the sill 96 are provided at the end of the sill with a pair of spaced longitudinal slots 97 whose inner walls are co-extensive opposite sides of the web of the sill, and the slots 97 are spaced apart a distance equal to the spacing apart of the upwardly and downwardly directed flanges 89 and 94 of the upper and lower lock members. These flanges 89 and 94 extend through the slots 97, and the sill 96 is provided in its web adjacent the upper and

lower flanges thereof with transverse slots or openings 98 adapted to register with the slots 90 and 95 of the sill lock so that the pins or keys 91 may pass entirely through the flanges of the sill lock and through the web of the sill.

The post and the sill are building construction members and these members may be any desired and adaptable portions of the frame of the building and may be modified to suit various conditions met with in the general construction. The upper and lower locking elements 91a and 85 may also be modified to adapt these to modifications in the frame members and to the weights, stresses and other conditions met with in the building construction.

In assembling the joint the locking elements 85 and 91a may be fitted to the end of the sill 96 and interlocked therewith by the cotter keys 91 and with each other by the tongues 92. The end of the sill 96 with the locking elements secured thereto may then be fitted against post and interlocked therewith by the tongues 86 and 92 engaging in the key slots 68 of the post. The slots 67 in the flanges 66 of the post may be so proportioned that when the tongues 86 and 92 are seated in the bottoms of their respective key slots 68 the lower end of the bottom locking element 85 seats upon the lower shoulders of the adjacent slots 67 to further brace and reinforce the joint.

It will thus be noted that by use of these structural units and their peculiar interlocking and connection joints that buildings of different sizes, shapes, and types may be constructed whether relatively small for individual garages and the like, or for relatively large buildings, such as homes. The interlocking of the joints admits of the proper expansion of the parts and admits of the quick and easy setting up of the frame of the building and the quick and easy knocking down thereof or of the subsequent insertion of partitions and walls where found necessary after the building is completed. It will be noted that no bolts or nuts are used in the joints between the posts and sills or other parts of the building frame where the improved joint is used. The relatively broad keys and interlocking flanges provide a strong and capable connection between the parts which will sustain considerable weight and which are within easy access both in the erection and in the taking down of the structure.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:

1. In a metallic building frame, a post having T-slots therein, a sill having a pair of slots therein, an angle plate having T-heads struck from one end thereon for interlocking engagement in the T-slots of the post and having a pair of out-standing flanges on its other end for engagement in the slots of the sill, said flanges and sill having registering slots therein, and pins adapted for engagement through the slots in the flanges and the sill for suspending the latter from the post through the angle plate.

2. A building construction joint comprising a pair of members adapted to be connected together with one member abutting at one end against the side of the other member, said other member having T-slots in its side and the first member hav-

ing pairs of spaced apart slots in its upper and lower portions, a pair of locking elements of angle shape having flanges adapted to overlap and fit against the side of said other member and having T-shape slots and tongues therein adapted to interfit with each other and with the said other member through the T-shaped slots therein, said locking members having angular portions adapted to engage against the upper and lower portions of said first member and having tongues projecting therefrom for engagement through the slots in said first member, a locking pin engaging through said tongues for holding the same in said other member.

3. A building construction joint for a pair of angularly disposed members, comprising a pair of angle irons adapted to engage at one end against the opposite faces of one of said members at the end thereof and with the other ends of the angle irons disposed in abutting relation with each other and against the adjacent side of the other member, interlocking means carried by said other ends of the angle irons for engagement with one another and with said other member, said angle irons having upon their first ends interlocking means adapted to engage the opposite side portions of said first member.

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