

Dec. 12, 1939.

M. X. C. WEINBERGER

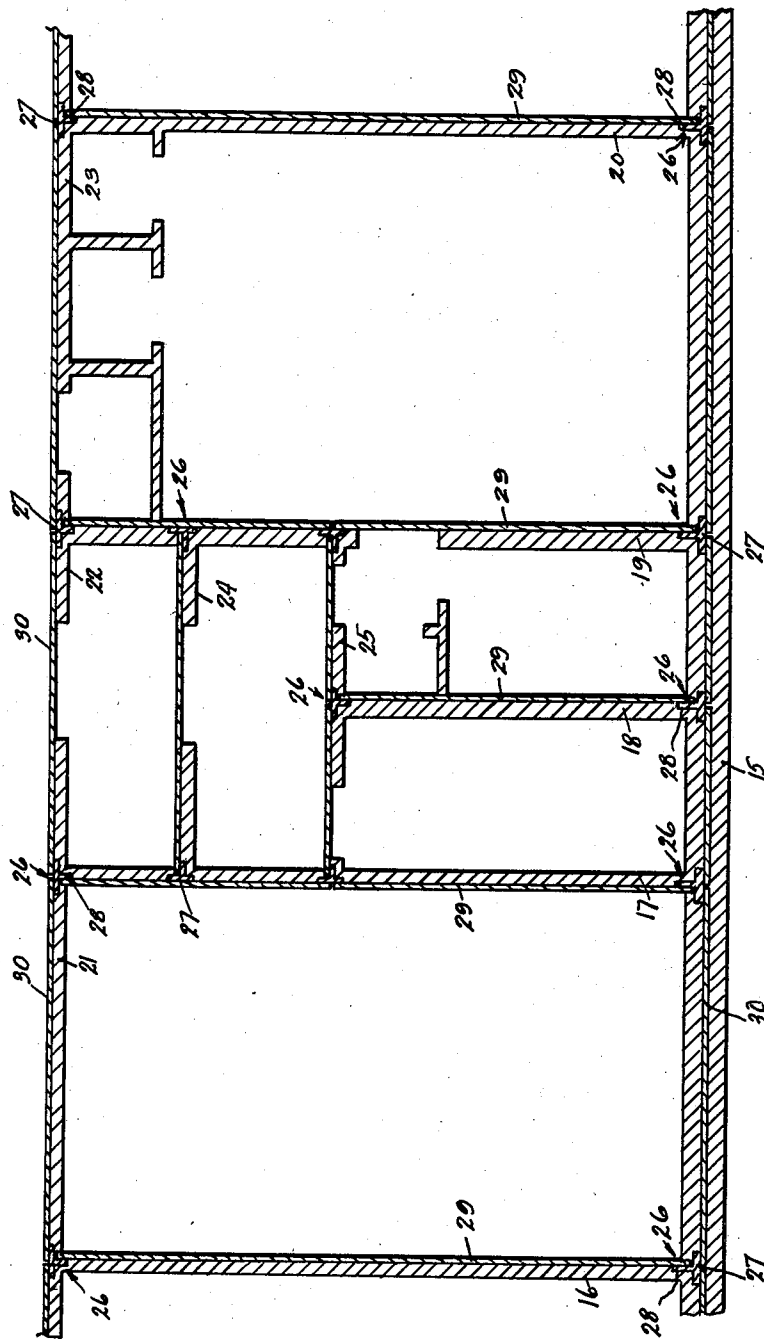
2,183,341

BUILDING CONSTRUCTION

Original Filed Oct. 21, 1937

2 Sheets-Sheet 1

Fig. 1



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FIG. 2

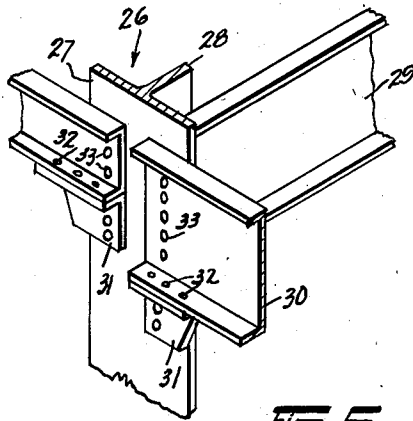


FIG. 3

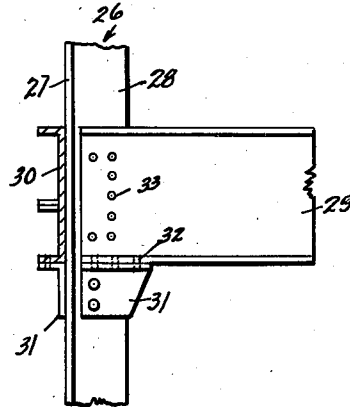


FIG. 4

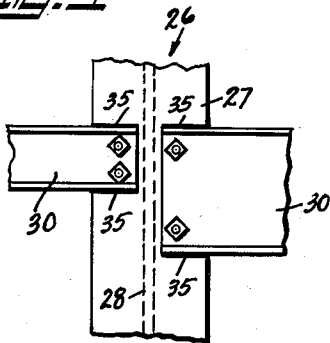


FIG. 5

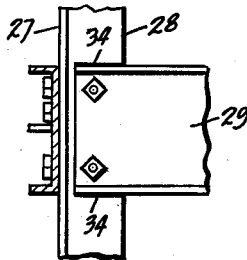


FIG. 6

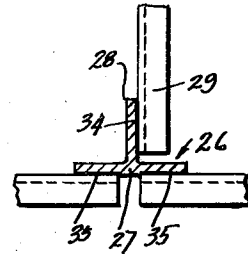


FIG. 7

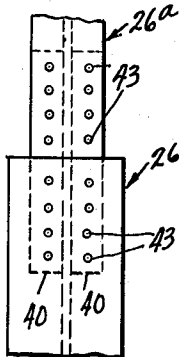


FIG. 8

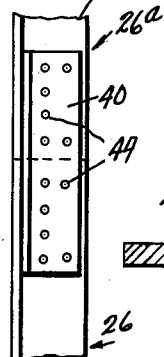


FIG. 9

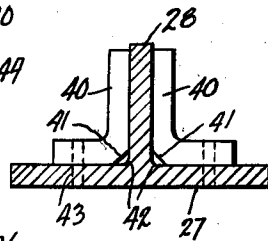
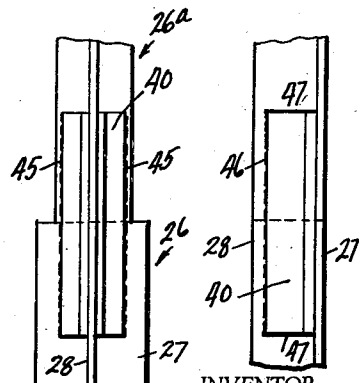


FIG. 10

FIG. 11



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2,183,341

BUILDING CONSTRUCTION

Maurice X. C. Weinberger, Brooklyn, N. Y.

Substitute for abandoned application Serial No.
170,157, October 21, 1937. This application
December 2, 1938, Serial No. 243,589

2 Claims. (Cl. 189—1)

This invention relates to building construction and more particularly to the structural steel portion of such construction, the said construction being especially adaptable for use in connection with apartment houses, office buildings, hotels and buildings having interior partition walls.

One object of the invention is the provision of a structural steel construction, the use of which will create an economy in design and a saving of material.

Another object of the invention is the elimination of H-shaped columns which are now commonly used in building construction and the resultant obstructions or extensions due to the use of such H-columns, by the use of T-shaped columns in place of such H-columns, two such T-shaped columns being obtained by longitudinally splitting or cutting the web of an H-column.

A further object of the invention is the provision of a system or method of structural steel framing, all of the connections of which frame into the T-column will be substantially concentric with either one or both axes of such T-columns.

A still further object of the invention is the provision of a T-column having a base or flange whose surfaces are parallel to each other instead of tapering as in the present day T-columns, so that both the flange and web or leg of the T-column may be used for either riveting or welding beams or girders thereto.

Yet another object of the invention is the provision of a T-column of the nature referred to which may be buried completely in the masonry enclosing structure or the intermediate fire-proof partitions forming subdivisions of the structure, so that practically no additional fire-proofing of such T-columns is necessary and the expensive plastering of corners of masonry is eliminated. The use of such T-section columns also confines the riveting or welding work to two surfaces instead of three as heretofore, one web and one flange, instead of one web and two flanges.

Other objects and advantages will appear as the nature of the improvements is better understood, the invention consisting substantially in the novel arrangement and co-relation of parts herein fully described and illustrated in the accompanying drawings, wherein similar reference characters are used to describe corresponding parts throughout the several views, and then finally pointed out and specifically defined and indicated in the appended claims.

The disclosure made the basis of exemplifying the present inventive concept suggests a practical embodiment thereof, but the invention is not to be restricted to the exact details of this disclosure, and the latter, therefore, is to be understood from an illustrative, rather than a restrictive standpoint.

In the accompanying drawings—

Figure 1 is a fragmental sectional floor plan view of a building showing my improvements as applied thereto;

Fig. 2 is a fragmental perspective view showing the girders or beams riveted to the flange and leg of my improved T-section;

Fig. 3 is a side view thereof looking from the right of Figure 2;

Fig. 4 is a fragmental view in front elevations showing the girders welded to the T-column;

Fig. 5 is a side view looking from the right of Figure 4;

Fig. 6 is a view looking from the top of Figure 4;

Figs. 7, 8 and 9 are respectively front, side and end views of a column splice in which the connecting L shaped angles are riveted to the column sections; and

Figs. 10 and 11 are respectively front and side views of a splice in which the angles are welded to the column sections.

Referring now to Figure 1 of the drawings in detail, 15 indicates an exterior wall of a building, and 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25 some of the interior partition walls. At the junctions or intersections of the lateral partition walls 16, 17, 18, 19 and 20 and the exterior wall 15 as well as at the intersections of the said lateral partition walls and the longitudinal partition walls 21, 22, 23, 24 and 25 I have columns 26 which are T-shaped in cross section, the said T-shaped columns being obtained by cutting or splitting the usual rolled H-columns longitudinally across their webs. Inasmuch as the flange surfaces of the H-columns are parallel to each other the resultant T-columns will likewise have parallel faced flanges 27 instead of the tapering faced flanges existing in the T-shaped columns now commonly used. Due to the fact that the flange surfaces of my improved T-columns are parallel both surfaces of the said flange 27 as well as substantially the entire depth of the column webs or legs 28 may be utilized in framing or connecting of girders or beams therewith.

Another very important advantage derived by the use of my improved T-columns as will be readily seen by referring to Figure 1 of the

drawings, is the fact that the said columns can be entirely enclosed in the exterior and interior walls of the building, thus eliminating the bulky protuberances, obstructions or extensions, as well as the incidental fireproofing and plastering necessary with the present day use of H-columns.

A still further advantage derived from the use of my improved T-columns is the fact that the lateral beams or girders 29 can be directly secured to the column webs 28 instead of using angles which are now normally secured to the flanges of the H-columns where such columns are used. This direct securing of the beams or girders 29 to the webs 28 also eliminates almost all eccentricities of stresses and produces a much firmer and stable structure and is time saving as in the preparation of shop drawings no such eccentricities need be figured. It will therefore be seen that in my improved method of construction, all the connections framing into the T-columns will be substantially concentric with either one or both axes of the said T-column, as the lateral beams or girders fasten directly to the webs 28 and the longitudinal beams or girders 30 are directly secured to the flanges 27 column 26.

It will also be understood that due to the fact that a greater number of T- than H-columns can be used in a given area, the width and depth of the connecting girders can be greatly reduced. This also implies considerable economy in the material of the floor system and a saving in the weight of steel required in the floor framing or assembly. In other words, a building constructed with my improved T-column will weigh considerably less than when built with the usual H-column.

In Figures 2 and 3, I have shown in detail one form of securing or connecting the girders or beams to the T column. In this form of my invention brackets or angles 31 are riveted to the columns and to the beam flanges, and the beams or girders 29 and 30 are riveted to the said angles by rivets 32 and to the column by rivets 33.

In Figures 4, 5 and 6 I have shown the girders 29 and 30 as welded along respective lines 34 and 35 to the web and flange respectively of the T-column 26. It will be noted that the girder 29 forms a face to face weld joint with the web 28, such joint being much more desirable than a butt end joint as would be the case when using an H-column.

In Figures 7, 8 and 9, I have shown one form of splice joint where two T-columns are joined in end to end relation, such joint being possible only because of the use of my parallel flanged T-column. In this form of my invention I have shown a T-column 26 joined or spliced to a somewhat narrower T-column 26a by means of a pair of standard angles 40 having chamfered corners 41 sufficiently large enough to clear the fillets 42 at the juncture of the web 28 and flange 27, the said angles being riveted to the flanges and webs of the T-columns 26 and 26a by means of rivets 43 and 44 respectively.

In Figures 10 and 11, I have shown the splice joint as welded instead of riveted, the angles 40

being welded to flanges of the T-columns along lines 45 and to the webs along lines 46 and 47.

It will be understood that by the use of T shaped columns, the spliced connections in end to end relation for continuing lengths will be much more simple and rigid, than the present day method, because right angular sections (angles) with chamfered corners can be used, which is an advantage in building construction. The splices can be made more uniform and produced in multiple, used regardless of the flange or web width, whereas heretofore in building construction the splices were all of different sizes.

I am aware that T-sections have been used as parts of a structural framework, but in no case have such T-sections been used as independent elements acting strictly as columns or struts.

From the foregoing it will be seen that I have provided a parallel flanged T-shaped steel construction column the use of which in building construction will create an economy of design and a saving in material, will provide more rentable floor space, will eliminate eccentricities, unsightly protuberances, and will greatly enhance structural steel building construction in its various phases.

It is to be understood that the T-columns herein referred to relate to integral columns in contradistinction to built-up columns comprising two L-shaped members with or without an additional central web between them, this latter type being known as a fabricated T.

It will further be seen that in the forming of the splice between two sections of my improved T-columns, no special design of angle is necessary to perform this function; by this I mean that angles do not have to be specially rolled to conform to the contour of the fillets, flanges and webs of the T-sections now commonly used, inasmuch as such sections, in many instances, comprise tapering surfaces of flange and stem.

This application is a substitute for abandoned application No. 170,157, filed October 21, 1937.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a building having intersecting walls, a structural frame for the building comprising a plurality of T-columns disposed in the walls in spaced relation to each other, each column having a web and flanges, the web and flanges each having parallel side faces, and girders between said columns secured to side faces of the webs and flanges of said columns, the said columns being located at intersections of the walls with the flanges and web of each column entirely encased in the said intersecting walls.

2. In a building having intersecting walls, a structural frame for the building comprising a plurality of T-columns extending vertically in the walls at intersections thereof, each column having a web and flanges, and girders extending between the columns and secured thereto, the said columns having their webs and flanges entirely encased in the intersecting walls.

MAURICE X. C. WEINBERGER.