Sept. 27, 1932. W. B. EWING 1,880,125

ELEVATOR TOWER AND THE LIKE

Filed Feb. 18, 1931 2 Sheets-Sheet 1

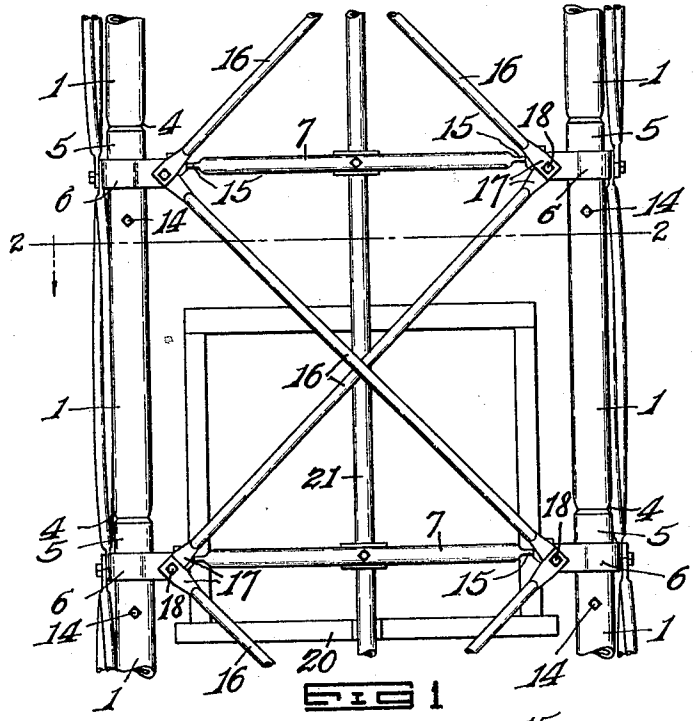


FIG 1

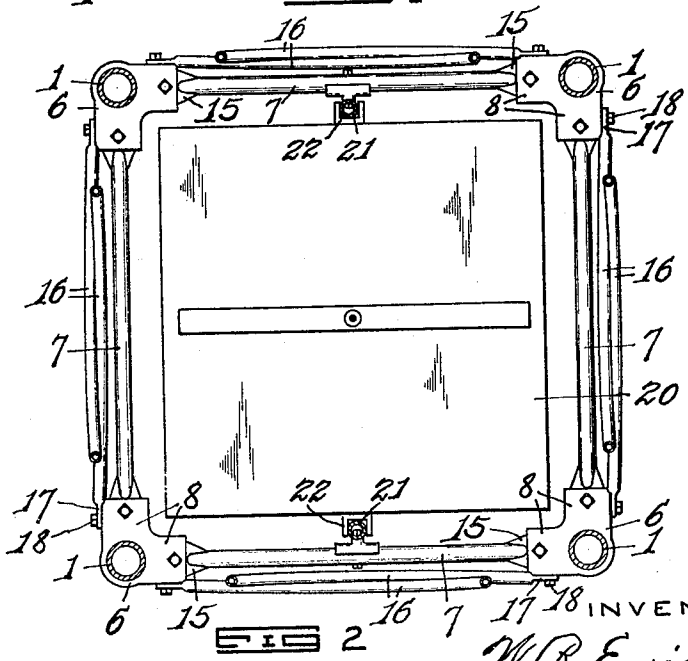


FIG 2

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ELEVATOR TOWER AND THE LIKE

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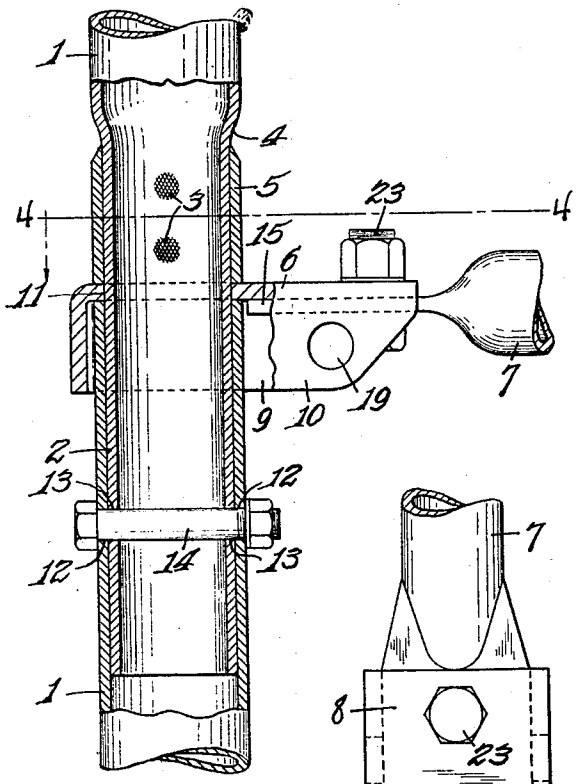


FIG 3

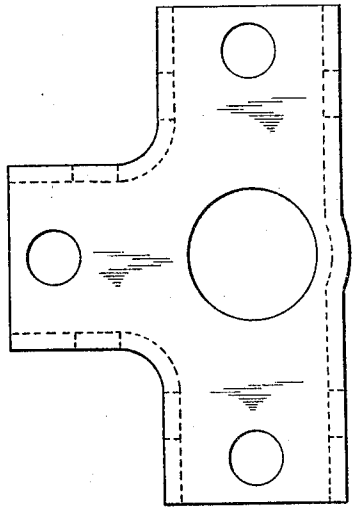


FIG 7

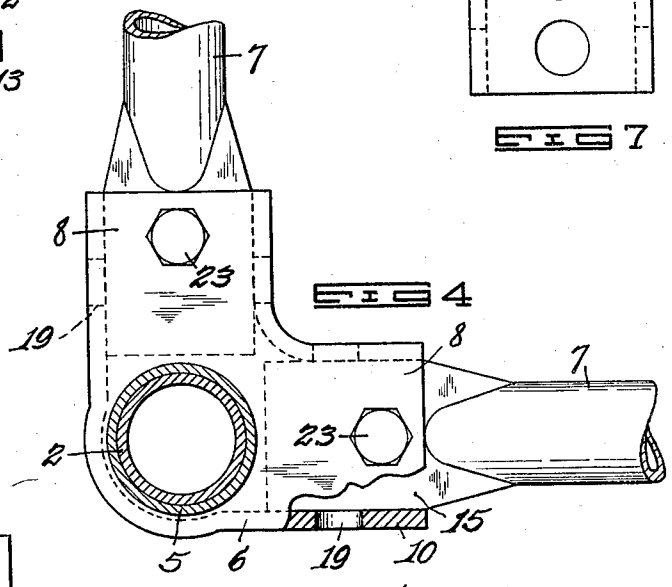


FIG 4

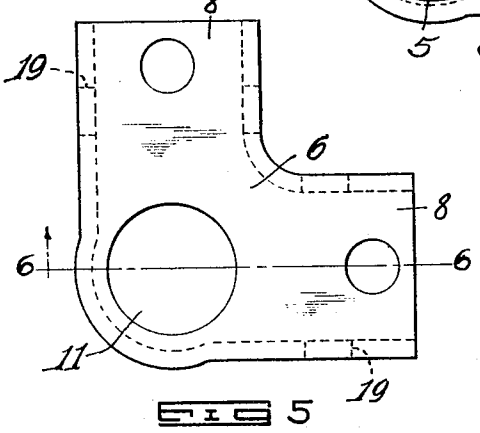


FIG 5

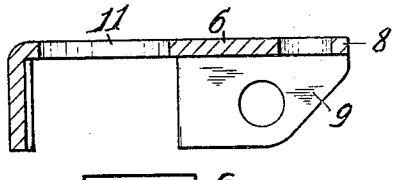


FIG 6

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UNITED STATES PATENT OFFICE

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ELEVATOR TOWER AND THE LIKE

Application filed February 18, 1931. Serial No. 516,599.

This invention relates broadly to sectional metal towers and similar structures, and more especially to that type of tower or structure which is employed as a support and guideway for the elevators used in conveying persons and materials to and from the ground level in the erection or razing of buildings.

The primary object of the invention is to provide a tower of the character referred to consisting of a frame having rectangular form in cross section, the upright corner members of said frame having columnar form and being composed of sections adapting it for convenient extension as may be required from time to time to increase its height, and embodying simple and practical means whereby the sections may be detachably coupled to provide a strong and rigid structure.

A further object is to provide, in association with upright supporting columns composed of coupled lengths of tubing, a simple, inexpensive and practical form of device whereby rigid attachment of the necessary tie-rods, struts and like structural members may be made to said columns and which requires the use of but one attaching bolt in making connection with each of such tie-rods, struts and the like.

In describing the invention in detail, reference is herein had to the accompanying drawings, in which—

Figure 1 is a side elevation of a fragmentary length of an elevator tower constructed in accordance with my invention;

Figure 2 is a cross section on line 2—2, Fig. 1;

Figure 3 is an enlarged view, partly in section and partly in side elevation, showing the joint between the coupled ends of the tubular sections of the colums as also the bracket by means of which attachment of tie-rods and the like to said columns is effected;

Figure 4 is a section on line 4—4, Fig. 3;

Figure 5 is a top plan view of the bracket, detached;

Figure 6 is a section on line 6—6, Fig. 5; and—

Figure 7 is a top plan view of a modified form of the bracket.

Referring to said drawings, 1 designates lengths or sections of tubing which are coupled to form the upright corner members or supporting columns of an elevator tower, said columns being positioned relatively in a rectangular arrangement. Each of said tubing sections, which may be made in any appropriate length, has a suitable length of its lower end portion contracted or reduced, as by swaging, to a diameter which renders said end portion snugly receivable within, or in telescoped relation to, the opposite end of a corresponding section, as is most clearly illustrated in Fig. 3.

Suitably attached, as by spot welds 3, to each of the reduced end portions 2 of the tubing sections 1, preferably directly below the shoulder 4 produced in the swaging, or end reducing, operation, is a band or collar 5. Said band or collar is designed to have its lower end rest in seated overlying relation to a bracket 6 which, in the coupled relation of the tubing sections 1, rests upon the upper end of each section and which constitutes means whereby horizontally disposed tie-rods 7 joining the adjacent columns of the tower may be rigidly connected to the latter at suitably spaced distances throughout its height.

The bracket 6, which may be provided either in the form of a metal casting or that of a heavy sheet metal stamping, comprises a flat plate-like body consisting of two right-angularly related arms 8 disposed in a common plane and vertical integral flanges 9 and 10 depending from the inner and outer edges, respectively, of said body. A circular aperture 11 is provided in the outer angle portion of said body, the diameter thereof corresponding substantially with the external

diameter of the reduced end portion 2 of the tubing sections.

In coupling adjacent tubing sections 1, the bracket is held in seated overlying relation to the upper end of the lower of said sections with the aperture 11 thereof in alined or registering relation to the bore of said section following which the reduced end 2 of the upper of the two sections is entered in said lower section through said bracket aperture 11 and is telescoped within said lower section throughout the distance required to seat the previously applied collar 5 upon said bracket. With the sections so disposed, holes 12 and 13 provided in the telescopically related ends occupy registering relation, and a bolt 14 directed through said holes provides means whereby the sections are detachably secured one to the other.

Each of the opposite ends of the tie-rods 7, preferably also formed of lengths of tubing, is flattened to form a tongue 15 of substantially rectangular form which is snugly receivable between the parallel flanges 9 and 10 of the adjacent bracket arm 6 and which is attached to the latter by means of a bolt 23.

Crossed tubular struts 16 having a form similar to that of the tie-rods 7 serve to brace the structure, as shown in Figs. 1 and 2, the flattened ends 17 thereof being attached to diagonally related brackets 6 means of bolts 18 directed through holes 19 provided therefor in the flanges 10 of the bracket arms 8. To facilitate the positioning of said struts in crossed relation, each thereof is suitably bowed intermediate its ends, as shown in Fig. 2.

Suitable guides for the elevator 20 are provided on the tower. While other forms of such guides may be employed, I have herein shown tubular uprights 21 suitably attached in rigidly supported relation to the successive tie-rods 7 at each of opposite sides of the tower, and channel members 22 carried on opposite sides of the elevator platform, said members being disposed in permanent partially embracing relation to and slidable on said uprights.

It is frequently desirable that two elevators be employed, the same operable in side-by-side relation, in which case the tower structure hereinbefore described is substantially duplicated, making one side common to both of the thereby formed companion elevator runways or shafts. In such case, the brackets carried by the two supporting columns which are included in the side that is common to both shafts may, and preferably do, have the T-shape shown in Fig. 7 of the drawings, thus to permit attachment thereto of three tie-rods instead of the two required in the hereinbefore described tower structure.

It is to be noted that the form of splice joints employed in coupling the tubing sections of the upright supporting columns of the tower affords unusual strength and rigidity to the structure; also that the bracket associated with each joint and its manner of mounting provide a simple, rigid and effective means of attaching both the tie-rods and the structure-bracing struts to said columns. Moreover, as is evident, a minimum of labor and skill is involved in erecting the tower, in adding to its height from time to time, and in dismantling to effect its removal.

What is claimed is:—

1. A tower of the character described comprising upright sectional columns having a rectangular arrangement, each section consisting of a length of tubing having its integral lower end reduced and telescopically received within the upper end of the next lower length, a collar fixed upon said reduced end in spaced relation to the extremity of the latter, a bracket interposed between and abutted on opposite sides of said collar and said upper end of the next lower length, each bracket including angularly related horizontal arms having flanges disposed at a right angle to the general plane of said bracket, horizontally extending tie rods connecting the horizontally alined arms of adjacent columns, and crossed struts connecting diagonally related brackets of adjacent columns.

2. A tower of the character described comprising upright sectional columns having a rectangular arrangement, each section consisting of a length of tubing having its integral lower end reduced and telescopically received within the upper end of the next lower length, a collar fixed upon said reduced end in spaced relation to the extremity of the latter, a bracket interposed between and abutted on opposite sides by said collar and said upper end of the next lower length and embracing the integral reduced end of the upper length, each bracket including angularly related horizontal arms having flanges disposed at a right angle to the general plane of said bracket, horizontally extending tie rods connecting the horizontally alined arms of adjacent columns, and crossed struts connected to the flanges of said bracket and connecting diagonally related brackets of adjacent columns, said struts having their ends bolted to the flanges of the bracket arms.

3. An elevator tower of the character described comprising upright sectional columns having a rectangular arrangement, an elevator platform located between said sectional columns and vertically movable therein, each section of said columns consisting of a length of tubing having its lower end reduced and telescopically received within the upper end of the next lower length, a collar fixed upon said reduced end in spaced relation to the extremity of the latter, a bracket interposed between and abutted on opposite sides by said collar and said upper end of the

next lower length and embracing the upper length, each bracket including flanges located at a right angle to the general plane of said bracket, horizontally extending tie rods connecting alined brackets of adjacent columns, crossed struts connecting diagonally related brackets of adjacent columns, and a vertically extending guideway for said elevator platform connected to oppositely disposed tie rods.

In testimony whereof, I affix my signature.

WYLIE B. EWING.