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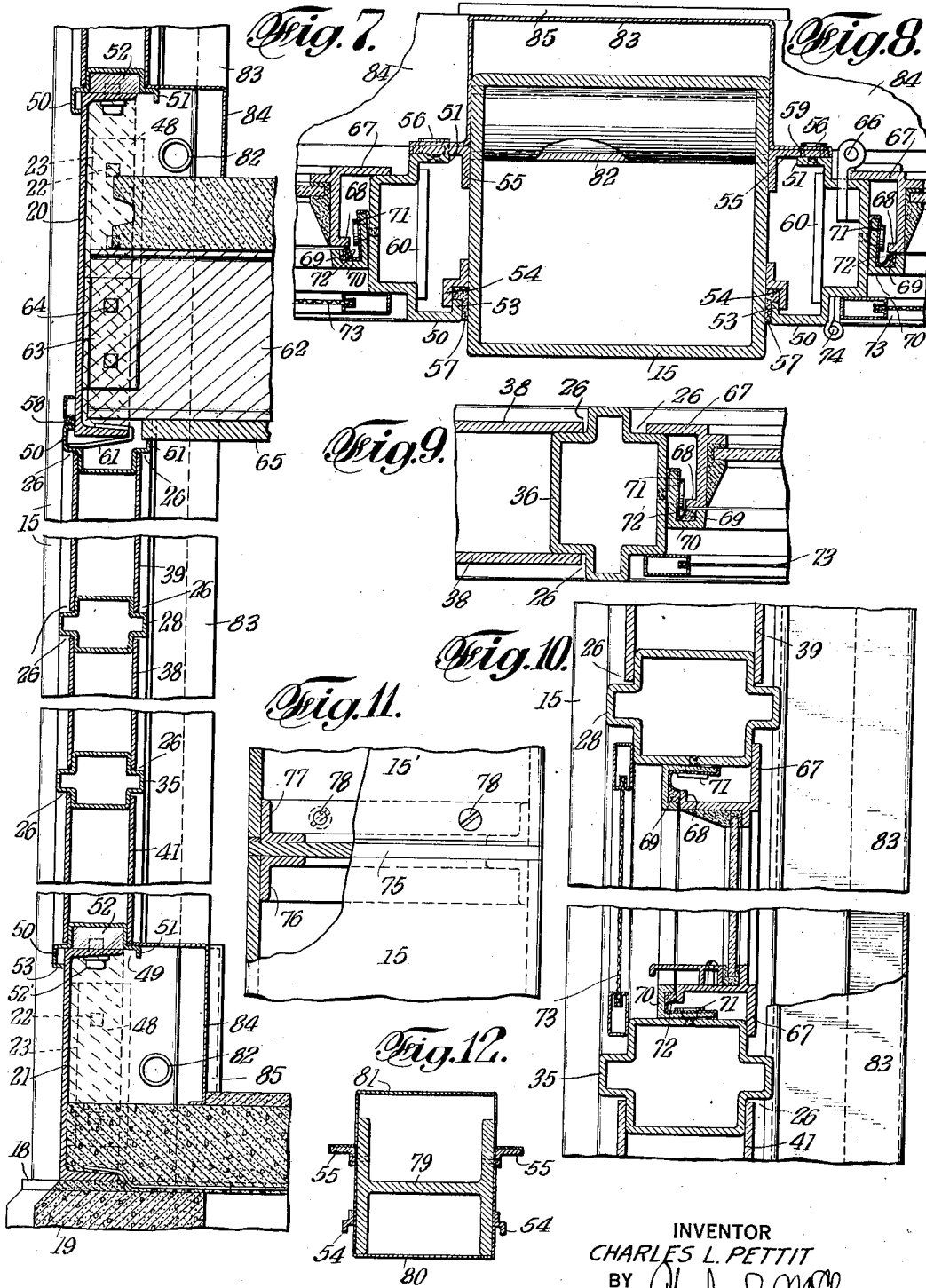
C. L. PETTIT

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SECTIONAL BUILDING

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INVENTOR
CHARLES L. PETTIT
BY *Philip S. McLean*
ATTORNEY

UNITED STATES PATENT OFFICE

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SECTIONAL BUILDING

Charles L. Pettit, New York, N. Y.

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8 Claims. (Cl. 189—1)

The objects of this invention are to enable the quick construction of dwellings and other forms of buildings, in accordance with desired architectural features and to provide the elements for such structures in the form of more or less standardized units of relatively light but durable construction, which can be manufactured at low cost and then be readily shipped, handled and assembled at the point of erection by ordinary labor.

The various novel features of the invention by which the foregoing and other desirable objects are attained are set forth in the following specification, illustrated in the accompanying drawings and broadly covered in the claims.

In the drawings, Fig. 1 is a broken elevation of a portion of a wall made up of various forms of wall sections.

Fig. 2 is an enlarged horizontal sectional view across the base portion of one of the columns and associated parts, as on line 2—2 of Fig. 1.

Figs. 3 and 4 are broken views illustrating details at the head and foot portions of one of the columns.

Fig. 5 is a vertical sectional view through a chambered portion of one of the wall sections, designed to hold a radiator or the like, as on line 5—5 of Fig. 1.

Fig. 6 is a front elevation of the air intake grille or louver portion at the lower end of the chambered section shown in Figs. 1 and 5.

Fig. 7 is a broken vertical sectional view through the wall as on line 7—7 of Fig. 1.

Fig. 8 is a broken horizontal sectional view illustrating details of window structure as on line 8—8 of Fig. 1.

Fig. 9 is another horizontal window detail as on line 9—9 of Fig. 1.

Fig. 10 is a broken vertical sectional view of window and panel details as on line 10—10 of Fig. 1.

Fig. 11 is a broken part sectional view illustrating a method of superposing hollow columns one on top of the other.

Fig. 12 is a cross sectional view illustrating an H form column instead of the square hollow column first shown.

Reference is first made to Fig. 1, which shows a wall made up of hollow vertical columns 15, approximately the height of one floor, spaced desired distances apart and having set between them standard wall sections 16, 17.

The columns may be substantially square in cross section as indicated in Fig. 2 and are shown as having welded or otherwise attached flat bases

18, which may be set directly on the building foundation 19.

The columns are connected, at top and bottom by the channels 20, 21, Fig. 7, faced with the flanges of the same turned inwardly and secured to the columns as by bolts 22, Fig. 2, extended through angle brackets 23, which are welded in the ends of the channels, into screw seats 24 formed in the columns.

The wall sections 16, 17, etc., are in the nature of panels set into the rectangular frames so provided as above between the columns.

The spacing between the columns may vary in accordance with architectural requirements. At the left in Fig. 1, the spacing is such as to receive a door panel section, while the spacing at the right in this view is wider to receive double window panel sections. Irrespective of size, the panel sections are alike in being made up of hollow rectangular cross section framing 25, having offsets or shoulders 26, in the outer and inner faces of the same. These shouldered square section hollow frame members may be made up of tubing of the required shape, welded at the ends as indicated at 27 in Fig. 1, to form closed continuous dead air spaces.

These hollow frames may be broken up with various horizontal and vertical members to provide different architectural and lighting effects and desired spacing for windows, doors, solid wall panels, etc. Thus in the door section at the left in Fig. 1, there is a horizontal transom bar 28 and extending from this down to the bottom bar of the frame, two vertical bars 29 defining the door opening, all of the same general hollow cross section as the frame bars 25 and welded or otherwise secured at opposite ends to form sealed dead air spaces. The doors indicated generally at 30, are suitably hinged on the framing thus provided, these doors being shown as having window lights 31 and kick plates 31' of suitable ornamental design set therein and narrow side frames at the opposite sides of the door with fixed window lights 32. Above the transom bar, a solid sheet of panelling 33 is shown set in the framing, secured against the shoulders 26 as by welding or the like.

The wall section at the right in Fig. 1 is a combination section having both solid portions and window portions. Here, in addition to an intermediate horizontal bar corresponding to the transom bar at 28 previously described, there is a single intermediate vertical bar 34, running from top to bottom of the frame, a horizontal bar 35 at window sill height and intermediate vertical

bars 36 between the two horizontal bars, defining convenient size spaces for windows 37 and alongside such windows, the solid panels 38. The spaces above the windows 37 and side panels 38 are closed by the solid panels 39.

The spaces below the sill bar 35 are shown as closed by solid panel 40 and by a chambered panel 41. The construction of the latter is shown more fully in Fig. 5, which illustrates a channeled frame 42, secured as by welding within the frame, below the sill bar 35 and covered over at the inside by a chambered member 43, adapted to receive a radiator, air conditioning device, or the like. The lower portion of the inset frame 42 is shown as forming a chamber 44 in communication at the top with the main chamber 43, by means of a slide or other form of damper 45, the same being designed as an air inlet chamber and therefore screened over at the front at 46 and protected by a suitable louver plate 47. This compartment panel, being constructed for air flow, may be lined with a suitable insulating material, such as indicated at 48.

The wall sections are fabricated at the factory from more or less standardized elements and are made up in unit sections to meet various architectural and building requirements. It is contemplated that more or less standardized wall sections may be made up and kept in stock, ready for immediate shipment to various points of assembly. At the building location, the columns are set on the foundation, connected by the top and bottom channels as before described, and when this framing is up, or, as it is being put up, the wall sections may be set in place.

The wall sections are mounted by placing them on the bottom channels 21 and securing them to the upper channels 20 and to the columns.

The hollow shouldered framing 25 is shown as cut away or open at 49, entirely about the exterior of the same to leave the spaced flanges 50, 51, about the outside and inside faces of the frame for cooperation with the surrounding structure. Thus, as shown in Fig. 7, the lower hollow side of the frame is set down over the upper flange of the base channel 21, with blocks 52, in line with the vertical members of the frame secured on the channel by bolts 52' and with the intumed edges 53 of the outside flanges 50 overlapping the faces of channels 20 and 21. At the columns, as shown in Fig. 8, these intumed flanges 53 are entered into pockets enclosed by the angular flanges 54, on the side of the column and the inside flanges 51, about against flange strips 55, on the columns to which they are secured by screws or bolts 56. Suitable caulking 57 is placed in the flange pockets described, to seal the vertical joints between the frames and columns at the outside of the structure, Fig. 8 and similar caulking as indicated at 58 in Fig. 7, may be provided at the horizontal joints between the frame and channels connecting the columns. This caulking permits expansion and contracting of the frames in accordance with variations in temperature and to allow for such changes, the bolts 56 securing the frames to the columns may work through slots 59, Fig. 8, provided in the column flanges 55. To prevent spreading or other bending of the separated flanges about the outside of the frame, these may be connected in their spaced relation by the welded or otherwise secured stays 60, Fig. 8.

Bendable clips 61 are shown in Fig. 7 welded or otherwise secured in the hollow of the frame

at the top and bent up over the lower flanges of the upper channels 20.

Floor beams, such as indicated at 62, Figs. 2 and 7, may be secured as by brackets 63 and bolts 64, to the spacing channels and the columns.

The ceiling is indicated at 65 in Fig. 7, provided as by means of gypsum blocks between the girders 62 and wall board or other ceiling finish secured to such blocks.

The caulking 57 is shown in Figs. 1 and 2 as extended continuously along the sides of the columns, past the ends of the base beams 21 and the upper beams 20, so as to provide continuous seals between the columns and wall sections adapted to keep the joints tight regardless of contraction and expansion and possible variations due to settling of the foundation, etc.

Casement windows are indicated hinged at the inside as at 66, in Fig. 8, so as to swing inwardly, the inside flanges 67 of such windows cooperating with the inside shoulders of the frame and the outside flanges 68 of the window sash cooperating with weathering 69, carried in the troughs of stop frames 70, secured in the framing by screws 71. Sheet metal strips 72 are shown also held by the screws in position fastening the weathering in place. Screens 73 or the like may be mounted as by hinges 74 or equivalent against the outside shoulders of the framing, over the window spaces.

For superposing one column length on top of another, the structure illustrated in Fig. 11 may be employed, where a cap plate 75 is shown secured by inside flanges 76, closing the top of the hollow column and carrying an upstanding angular flange 77, over which the lower end of an upper column section 15' is slipped and secured in place as by screws 78.

In place of hollow square columns, a construction such as shown in Fig. 12 may be employed, involving H beams 79, having cover plates 80, 81, secured over the opposite outer and inner faces of the same to produce the equivalent hollow effect of the square columns.

To pass wiring, pipes, or the like, through the columns or panel structures without opening the closed dead air spaces within the same, ferrules such as indicated at 82, Figs. 1, 2, 7 and 8, may be welded or otherwise secured in position extending across or through the columns or hollow panel sections.

At the outside, the columns, beams and wall sections may be painted, covered with a cement, or given any other suitable treatment. At the inside, a suitable wall trim may be added. In the illustration, hollow column covers are shown at 83, extending up over the inner portions of the columns, these being cut away at the bottom to meet the hollow wall baseboards 84, these combining to provide vertically and horizontally extending chases or wire raceways.

The joints between the lower ends of the column covers and abutting ends of the wall baseboards may be covered by column base cover plates such as indicated at 85.

The hollow columns, column-spacing beams or channels, floor girders, substantially square shouldered frame bars, and panels or spandrels are all relatively simple, inexpensive structural members, light in weight but strong and durable. The frame bars are readily made up at the factory into frames of the required sizes and shapes, having the necessary horizontal and vertical intermediates to provide door and window openings, panels for architectural effects, etc., door and 75

5 window sills, window mullions and the like. The wall sections as made up at the factory are all insulated with closed dead air spaces and when assembled with the columns, the open channels about the wall sections form in conjunction with the columns and beams, closed dead air spaces, so that sufficient insulation is afforded without using special fillings of wall insulating materials. If desired, however, insulating materials may be filled into the wall spaces, either in solid blocks or in loose form. The cross beams form supporting sills for the wall sections and the vertical members of the wall sections are stepped directly on said sills through the medium of the blocks 52, so as to be capable of carrying vertical loads. The wall sections are quickly and easily attached to the columns and the structure as a whole can be assembled in short time by ordinary labor. The wall sections are mounted so as to allow for necessary expansion and contraction and are sealed so as not to open up joints in such expansion and contraction. The dead air spaces constitute the most effective form of thermal insulation, making the structure particularly suited for dwellings. The spandrel panels may be of glass or other materials than metal. Heating or cooling units, ventilating devices or the like, may be readily mounted in desired locations in the wall sections or chambers simply be provided therefor, ready to receive such devices when the parts are assembled. The design is sufficiently flexible to meet various architectural and ornamental requirements.

10 The solid panels, such as indicated at 38 in Fig. 9, may be secured by welding in the shouldered seats of the frame bars, so as to form the solid or closed portions of the wall. As will be clear from Figs. 7 and 8, when the wall sections are set up and the caulking applied, the open troughs about the frames of the wall sections are closed and sealed by the surrounding structure and hence form closed dead air spaces, equivalent in effect to the dead air spaces throughout the other portions of the wall sections.

15 The blocks 52, Figs. 1 and 7, may be welded or otherwise secured in the open trough along the bottom of the wall sections, in line with the verticals of the frame and may have one or a number of screw seats therein to receive the fastening bolts 52', which are passed up through the lower sill member or column spacing beam 21.

20 What is claimed is:

1. A sectional building, comprising hollow columns, beams connecting the same in spaced relation, unitary wall sections completely filling the spaces between the columns and column spacing beams, means for securing said unitary wall sections to the columns with slip joints allowing for expansion and contraction and means for sealing the wall sections in position and arranged to permit the necessary expansion and contraction of said slip joints.

2. As a new article of manufacture, a unitary wall section comprising a frame open about the outside of the same and having about the outside of the same spaced flanges to receive portions of adjoining structure, said frame having intermediate hollow bars of rectangular cross section shouldered at opposite sides of the wall section and sealed at their ends to form closed insulating air spaces, and doors, window and panel units set into said shouldered of the intermediate framing.

3. A sectional building comprising hollow col-

umns, beams connecting said columns at top and bottom, preformed unitary wall sections completely closing the spaces between said columns and beams, said wall sections having intermediate horizontal and vertical hollow rails and bars defining door and window and panel spaces, said wall sections being hollow and having closed dead air spaces providing insulation between the inner and outer faces of the wall sections and means for securing and sealing the wall sections to said columns and beams with allowances for necessary contraction and expansion.

4. A sectional building comprising columns having spaced flanges on the side of the same, unitary wall sections having flanges cooperatively related to said column flanges, means for securing the inside flanges of the wall sections to the inside flanges of the columns, the outside flanges of the columns and wall sections cooperating to form caulking pockets and caulking material engaged in said pockets.

5. A sectional building comprising columns having spaced flanges on the side of the same, unitary wall sections having flanges cooperatively related to said column flanges, means for securing the inside flanges of the wall sections to the inside flanges of the columns, the outside flanges of the columns and wall sections cooperating to form caulking pockets and caulking material engaged in said pockets, said securing means for the inside flanges including slotted connections enabling expansive and contractive movements of the wall sections and the flanges at the caulking pockets described being disposed for relative movement in such contractive and expansive action.

6. In sectional building construction, the combination of hollow columns, unitary hollow wall sections filling the spaces between the columns, said columns and wall sections having closed dead air spaces and ferrules for wiring and the like, extending through said dead air spaces but closed in respect thereto and whereby wiring and the like, may be extended through the hollow structure of the columns and wall sections without opening up the dead air spaces aforesaid.

7. A sectional building, comprising hollow columns, unitary hollow wall sections engaged with said columns and comprising hollow framing with spaced flanges at the outside of the sections engaged with said hollow columns, said hollow framing including intermediate horizontal and vertical rectangular tubing with indented corners providing inset shoulders at the opposite sides of the wall sections, said vertical and horizontal intermediate framing being disposed to outline transom, window and base frames and transom window and base panel elements secured in said transom, window and base frames on said inset shoulders.

8. A sectional building, comprising in combination, hollow vertical columns, horizontal beams connecting the same and defining frames for wall sections and wall sections of a size to fit in said frames, comprising hollow framing and attached wall panels spaced to form sealed air spaces in the wall, means securing said wall sections in the frames defined by the columns and beams and including fastenings permitting expansion and contraction between said wall sections and the framing therefor and means for sealing said expansion joints thus provided between said wall sections and framing.

CHARLES L. PETTIT.