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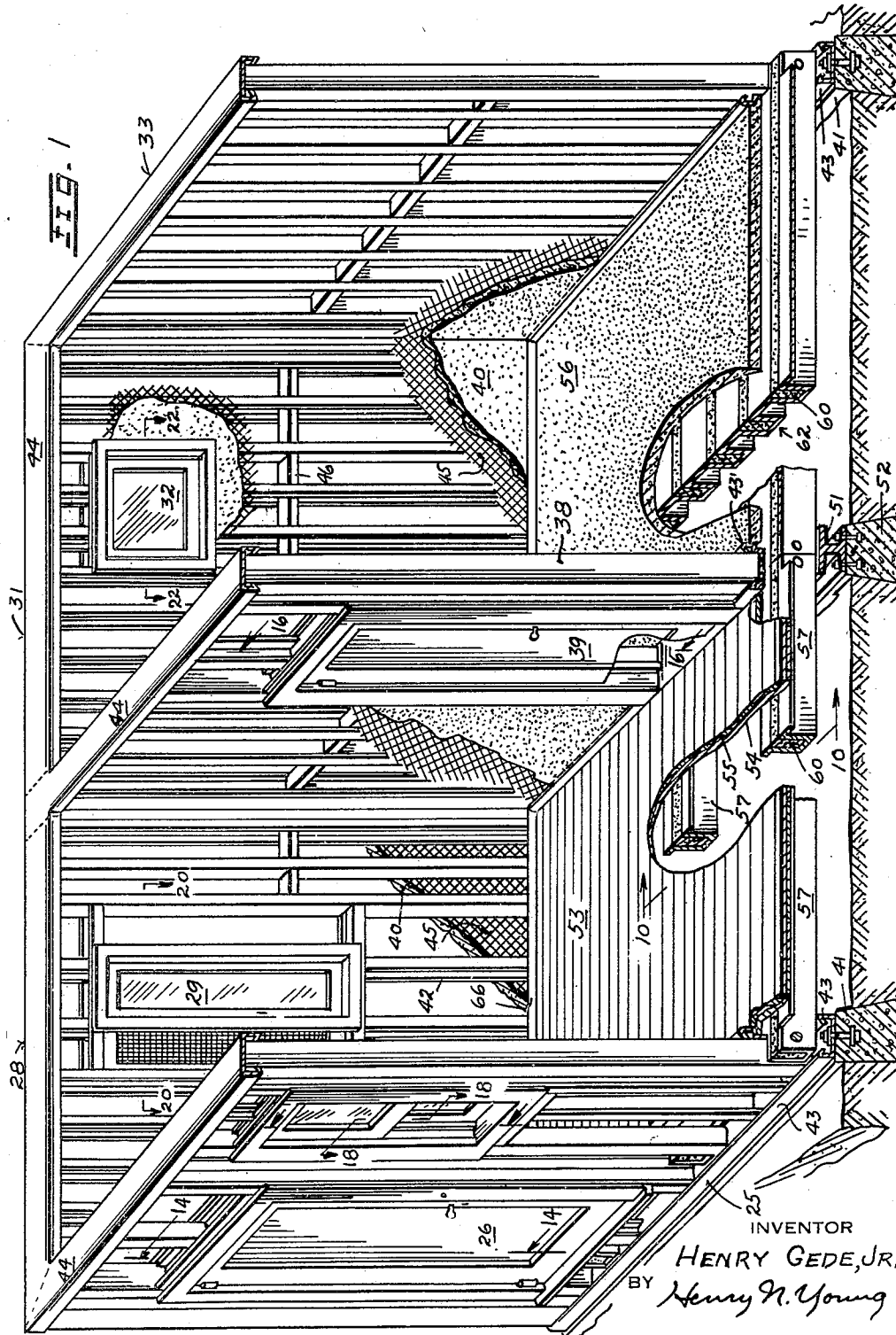
H. GEDE, JR

2,391,960

BUILDING CONSTRUCTION

Filed Jan. 18, 1941

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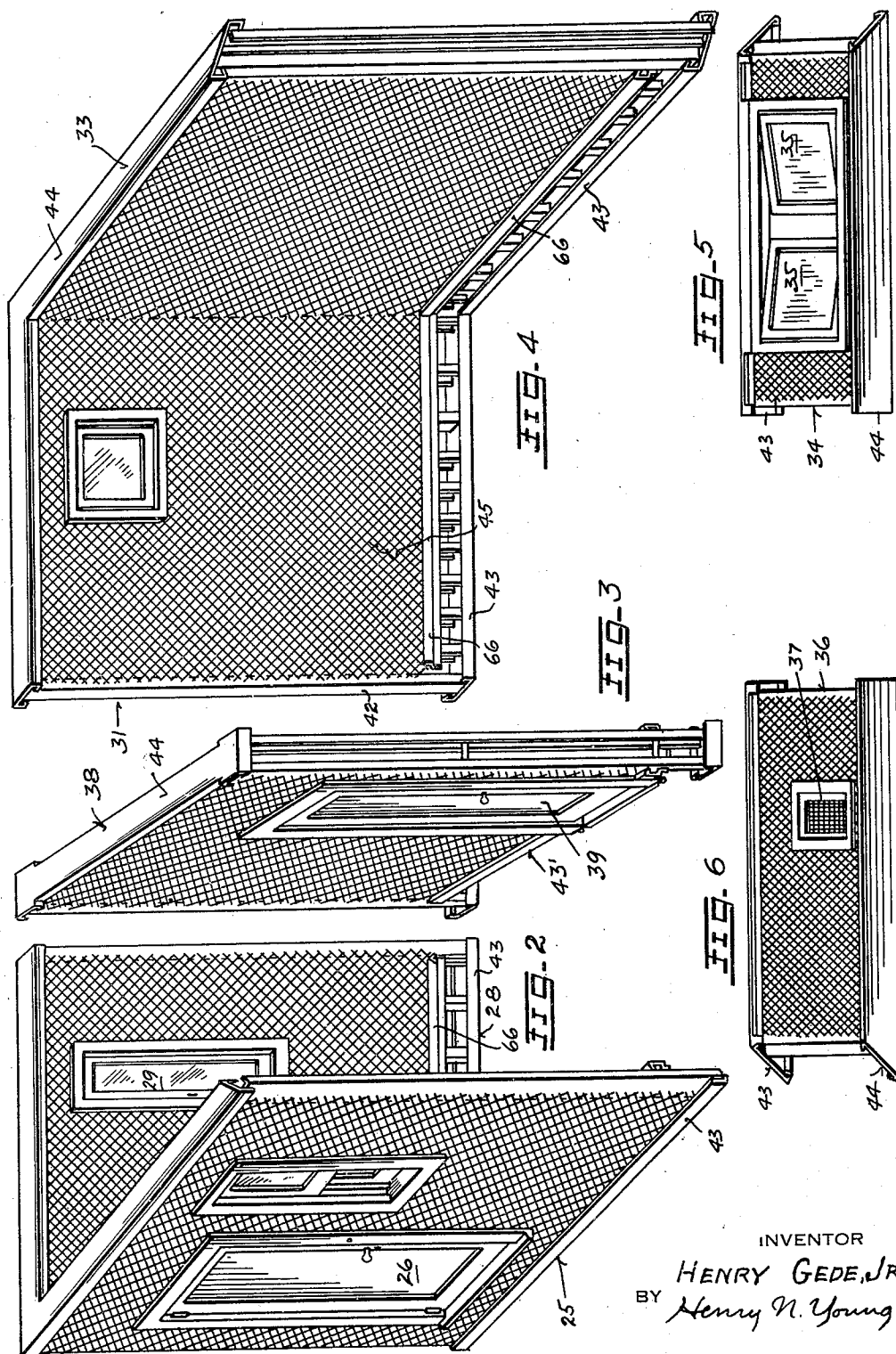
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BUILDING CONSTRUCTION

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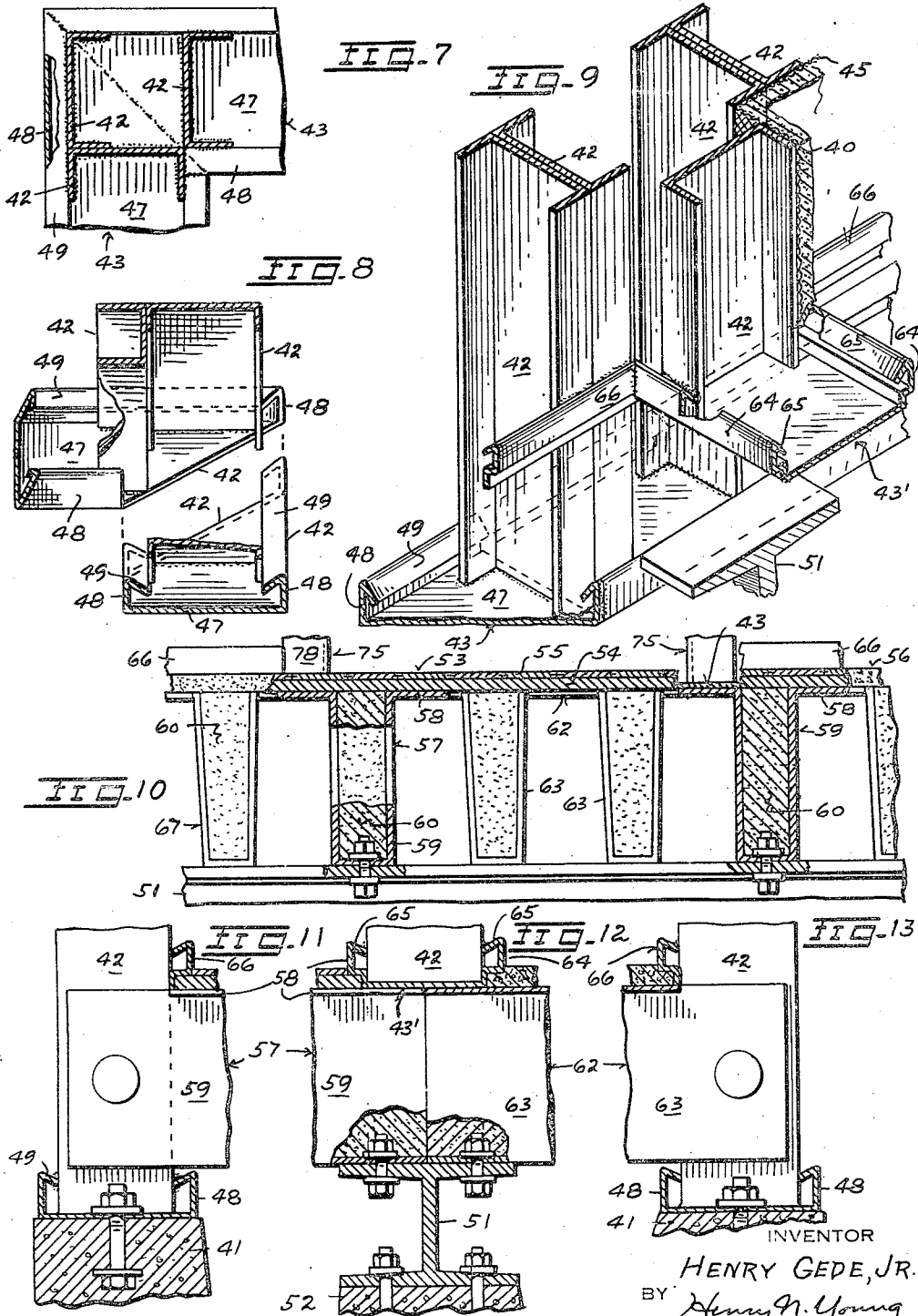
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BUILDING CONSTRUCTION

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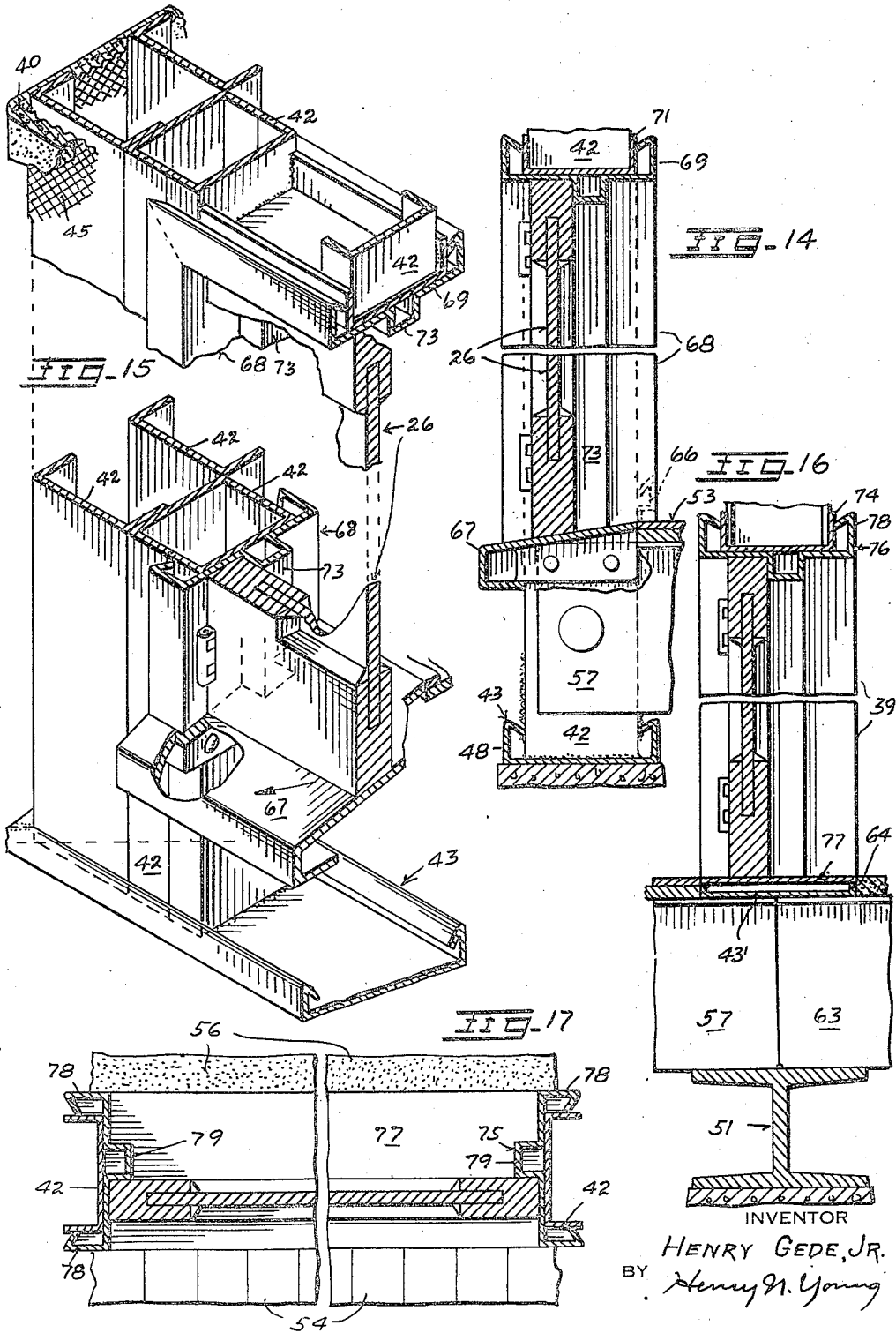
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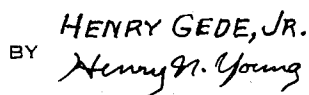
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BUILDING CONSTRUCTION

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UNITED STATES PATENT OFFICE

2,391,960

BUILDING CONSTRUCTION

Henry Gede, Jr., Oakland, Calif.

Application January 18, 1941, Serial No. 375,001

5 Claims. (Cl. 72-46)

The invention relates to improvements in building construction, and more particularly to metallic wall frames and floor joists for cooperative erection and connection to provide a building at a building site.

An object of the invention is to provide factory-built metallic wall frames which include all of the necessary trim for the finished wall.

Another object is to provide wall frame units particularly adapted to receive plaster facings for cooperation with the trim on the unit to complete the wall faces.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be apparent or be set forth in the following description of a typical embodiment of the invention, and in the accompanying drawings, in which,

Figure 1 is a fragmentary perspective view of an erected wall-and-floor assembly embodying the features of present invention.

Figures 2 to 6 inclusive are perspective views of a set of prefabricated wall elements which are arranged for cooperative assembly to provide a two-room structure.

Figure 7 is an enlarged fragmentary plan section of the frame structure at a corner of the building.

Figure 8 is a fragmentary perspective view showing the corner structure of Figure 7 with its major elements separated.

Figure 9 is an enlarged fragmentary perspective view of the frame structure at the juncture of a partition thereof with outside wall members of the building.

Figure 10 is an enlarged fragmentary and partly sectional view taken at the line 10-10 in Figure 1.

Figures 11 and 12 and 13 are enlarged sectional views taken generally at the forward plane of the showing of Figure 1.

Figure 14 is a fragmentary section at the line 14-14 in Figure 1.

Figure 15 is a perspective view including the showing of Figure 14.

Figure 16 is an upright section taken on the line 16-16 in Figure 1.

Figure 17 is a fragmentary plan section of the showing of Figure 16.

Figure 18 is a stepped plan section of a double-hung window of the structure, and is taken at the line 18-18 in Figure 1.

Figure 19 is a fragmentary perspective view at the window structure of Figure 18.

Figure 20 is an enlarged fragmentary plan

section at the line 20-20 in Figure 1 and shows the structure at and adjacent a sliding closure for a wall opening.

Figure 21 is a fragmentary perspective view of the wall structure at the closure of Figure 20.

Figure 22 is a perspective plan section taken at the lines 22-22 in Figure 1 and showing a casement window construction.

Figure 23 is a vertical section of the window structure of Figure 22.

The wall frame of the present building is made up of a wall section 25 provided with door-way and window openings respectively receiving a door 26 and a double-sash window 27, an outside wall member 28 providing an opening for closure by a laterally slidable window 29, a wall member 31 provided with an opening for closure by a casement window 32, a wall member 33 lacking any opening, a wall member 34 providing a door opening for closure by swinging doors 35, a wall member 36 provided with a window opening which is closed by a sash 36, and a partition member 38 provided with a door-way opening for receiving a door 39. In the present building the wall 25 is a front wall, walls 28 and 31 provide one side wall, wall 33 comprises the rear wall, and walls 34 and 36 jointly provide the other side wall.

A usual foundation 41 is provided for supporting the outer walls of the building, said foundation having bolts or other securing elements extending from its upper face for securing the building frame elements thereto. The various wall frame elements are each built up of a plurality of upright studs 42 engaged by and between base and top plates 43 and 44 respectively comprising edging elements of the stud assemblies. The studs 42 of the section comprise metal channels, or other sections, providing mutually parallel flanges, the elements 42 being of like width in each member. The present wall frame members are particularly designed to receive a coat of plaster as a wall-covering slab, and to that end are provided with a facing of metal lath 45 in the form of wire mesh or expanded metal sheets for receiving the plaster coatings 40. The metal lath 45 may be welded or otherwise secured to the wall frame members, and, with the plates 43 and 44 and any bracing 46 connecting them, aid in providing wall frame members which are rigid against distortion in their plane. It will be understood that each assembly of studs 42 and any connecting bracing 46 of a wall frame member comprises a central core assembly with respect to the edging members and/or the metal

lath which complete the members, and may be so considered and referred to.

It will now be particularly noted that the base plates 43 are of generally channel section but are wider than the studs 42 which rest upon their webs 47, whereby one or both of their sides 48 may be spaced from the planes of the stud sides and the metal lath thereon. At the edges of the sides 48 opposite the webs 47, flanges 49 are intumed obliquely toward the web 47. The free edges of the flanges 49 are arranged to contact the metal studs or the metal lath thereon, and may be secured to the latter as by welding. The spacing of the sides 48 from the metal lath 45 is preferably such that said flanges may be flush with the outer face of a finished plaster coat 40 on the wall, while the portion of the plaster coat or slab behind the flange 49 is keyed in place by reason of its bevel form. It will be noted that the flanges 49 of the plates 43 are utilized to secure the bottoms of the plaster coats on the various outside walls, this being particularly brought out in Figures 11 and 13 and 14. The top plates 44 of the various wall frame members may be similar to the base plates 43 as shown, or comprise straight-side channels snugly receiving the stud tops between their sides.

After the side walls of the present structure have been mounted on the foundation 41 and unitarily fixed together at their lines of abutment, floor joists are mounted on the studs of the section 25 above their bottoms while their other ends are supported on a suitable beam 51 extending within the foundation area and supported directly on a suitable foundation or piers 52, the beam 51, in the present instance, being disposed in the plane in which the partition member 38 is to be mounted. As shown, the room space provided at the side of the partition nearest the front door 26 has a wooden floor 53, while the room space at the other side of the partition is provided with a concrete floor 56. In the present instance, the floor 53 comprises a wood sub-floor 54 directly resting upon floor joists 57, and a top floor 55 fixed to and upon the sub-floor 54 in the usual manner. Preferably, and as shown, the floor joists 57 comprise metallic channels having flanges 58 extending oppositely from their sides 59 in a common plane to provide for the support of the floor. The channel spaces are preferably filled with a self-setting concrete material 60 for stiffening the joists and permitting their formation of relatively thin material.

As illustrated, the webs 61 of the floor joists 57 rest directly upon the beam 51 and their other ends are secured to studs 42 at the web portions 47 thereof, as by being bolted or riveted, whereby to support the joist itself directly upon the studs. To permit the described fixing of joist ends to the outer wall studs 42, flanges 58 of the joists are appropriately notched out for receiving a stud web 47 flat against its side 59. The joist ends which lie on the beam 51 may be bolted or riveted to the beam at their webs, as is brought out in Figure 12.

The concrete floor 56 is provided upon a foundation plate 62 providing a succession of channel offsets 63 which are the collective equivalent of the channel floor joists 57 having their flanges 58 laterally joined. The channels of the plate 62 are filled with the self-setting concrete material 60 and said material is extended above the upper plate surface to provide the concrete floor 56; in this manner, the plate 62 provides both the form and joist for the completed concrete floor.

One end of the plate 62 is supported directly upon, and secured to, the beam 51. At the other plate end, the upper plate portion is notched out opposite the studs 42 to permit the securing of the channel portions of the plate to the stud webs as in the case of the joists 57.

It will now be noted that the base plate 43' of the partition member 38 is arranged to rest directly on one or both of the floor joist assemblies; in the present instance the partition base plate spans the juncture line of the joist for the floors 53 and 56, the top planes of the two sets of joists being coplanar. The sides 64 of this base plate are stepped whereby they may receive the sub-floor 54 beneath their overhang at one side and receive an adjacent edge portion of the concrete floor slab 56 beneath this overhang at the other partition side; while this structural feature provides a means for holding down the floor edges, it is not generally essential. The tops of the base plate 43' are provided with intumed flanges 65 corresponding to the intumed flanges 49 of the base plates 43 for the exterior walls. The arrangement is understood to provide a base mold along the bottom of the partition and above the floor level.

At the inner surfaces of the outside wall members, metal moldings 66 are provided except at the door openings. Said moldings have substantially the same cross-section as the side-and-flange portions 64-65 of the partition base plates 43'. In the case of the wood floor 53, the top floor 55 is arranged to abut the upper and outer portions of the molding sides 64, and the upwardly extending portions of said sides constitute a uniform continuation of the base mold around the room from the partition. It will be understood that the arrangement provides for the same keying of the engaged edge of a plaster coat as do the exterior portions of the base plate 43 of the outside wall structures.

It will now be noted that the side and top facings for the door and window openings in the present wall structures are formed as channels with their sides providing face moldings or trim around the openings in the same manner as the sides of the base plates 43. In each instance the casing element is of metal and provides an intumed flange for keying the plaster coat against the wall thereat.

By particular reference to Figures 14 and 15, it will be seen that the casing for the outer door 26 comprises a threshold member 67, complementary side members 68 and a top member 69. The threshold member 67 provides an outwardly sloping top face and is fixed between the studs 42 which define the door opening between them. The casing members 68 and 69 are respectively fixed to the aforesaid opening-defining studs and a header plate 71 connecting said studs, have the same width as the base plate 43 of the wall section, and have their sides 72 formed generally as the sides of the base plate to provide trim molding around the door opening. It will be understood that the side portions 72 of members 68 and 69 may be narrower or wider than the side portion 48 of the base plate 43 without changing the function of said sides. Also, the door casing members 67 and 68 and 69 are welded or otherwise fixed together and to the wall core elements between which the door opening is defined. It will be noted that the casing members 68 and 69 provide inwardly directed stop off-sets 73 against which the door 26 is arranged to seat when closed.

By reference to Figures 1 and 16 and 17, it will be noted that the opening for the partition door 39 is defined between studs 42, the partition base plate 43', and a header 74. Side and head casing members 75 and 76 are fixed to said studs and header respectively, and said casing members are formed generally as the front door casing members 68 and 69 to provide trim sides 78 and stops 79 as integral parts of single casing members. The sides 64 of the base plate 43' are appropriately notched out between outer edges of the sides 78 of the side casing members 75 for a flush jointure of the channel sides thereat, and the threshold plate 77 is fixed to the plate 43' between the side casings 75; in this manner, the threshold member may provide a flush or raised connection between the joined floors in accordance with its spaced disposition with respect to the bottom of the plate 43'.

As brought out in Figures 1 and 18 and 19, the opening for the window 29 of the wall section 28 is provided with a casing which comprises side members 81, a top member 82 and a sill member 83, all suitably fixed together at their points of abutment and fixedly attached to the wall members defining the opening, preferably by welding. All of the members 81 and 82 and 83 are of channel cross-section, have the same width as the base plate 43 of the section 28, and are provided with sides 84 and intumed edge flanges 85 which correspond to the flanges 49 of the plate 43; in this manner, a complete trim is provided as an integral part of the window casing.

The present casing members 81 and 82 have their web portions 86 provided with complementary off-sets 87 and 87' and 87'' to cooperatively provide the necessary guide grooves for the different sides of the window, and the web portions 86 thereof are provided with openings for pulley cords 88 which extend from pulleys 89 mounted on studs 42 at the sides of the window opening, said cords carrying the different window sash at one end and counterbalance weights 90 at the other. The sill member 83 is provided with a stop off-set 91 adjacent its inner edge and in the plane of the inner off-sets 87 of the members 81 and 82, with the balance of its upper face sloping downwardly beneath the sash in a usual manner.

Figures 1 and 22 and 23 bring out the structure at the casement window 32 of the wall section 31. Casing members 93 and 94 and 95 respectively provide the sides and top and sill for the opening which receives a single sash 96, and said members have the same form and width as the plates 43 of the section whereby they may function as the other previously described casings to provide the trim for the window opening while anchoring the edge of a plaster coat thereat. In the present structure, the casing members 93 and 94 provide an integral and mutually coplanar stop bead 97 against which the sash is arranged to be swung when a window is closed. Also, it will be noted that the members 93 and 95 may be directly fixed against the webs of channel-shaped cross members 98 and 99 connecting the studs 42 at the opposite window sides and above and below the window, the said cross members have the same width as the studs for the attachment of metal lath opposite the sides and flanges of the casing members.

The window 29 of the wall section 28 comprises a sliding sash having glass and screen panes 102 and 103 respectively for selective presentation across the window opening. As brought out in

Figures 1 and 20 and 21, the sash 101 is arranged for horizontal movement to optionally dispose its glass and screen panes in an opening defined jointly between side and top and bottom casing members 104 and 105 and 106 respectively. The side members 104 and the studs 42 which support them are provided with aligned slots receiving the sash 101 therein for its movement between positions determined, in the present instance, by studs laterally beyond those which mount the casing assembly. The casing members have the same side construction as those for the other window openings, and have the same width as the base plate 43 of the wall section; in this manner, the trim is provided as for the other described openings. The bottom, or sill, member 106 has outer and downwardly sloping sash supporting portions extending from a shoulder at the inner-face plane of the sash, as is illustrated in Figure 21. It will be understood that the sash 29 may be placed in intermediate positions whereby the window opening may be closed by the glass and screen in any desired ratio of glass to screen areas.

It will now be particularly noted that the various wall members with the necessary casing and trim may be manufactured at places remote from the location at which a building is to be erected therewith. The metal lath 45 is preferably, but not necessarily, mounted on the wall frame members at the factory. Furthermore, a partial assembly of wall frame members may be provided at the factory; for instance, the pairs of members 25 and 28, and the pairs of members 31 and 33, which provide different wall corners for the building, may be fixed together at the factory for transportation in nested engagement, and be put together at the building site. Figures 7 and 8 indicate a typical juncture arrangement of the wall section at an outside corner, the juncture being entirely provided by welding either at the factory or on the job. Figure 9 discloses one manner of joining the outside sections 21 and 31 and partition section 38 at their common line of abutment in the building.

The present structure has been particularly designed to provide a building unit having a living-room and garage under one roof, as is a common practice in so-called "auto camps" which provide for the housing of travelers and their automobiles, but the various construction features thereof are understood to be of general application. The doors 35 of the wall section 34 are mounted in a wide enough door opening to provide for the ingress and egress of an automobile, and their casing structure would otherwise be as that for the front door 26. The wall section 36 is generally similar to the section 31, and needs no further description. The sections 34 and 36 would be attached to the sections 33 and 38 and 25 as are the sections 31 and 28 respectively.

While the present structure is particularly arranged for providing a building for plastered outside and inside walls, it will be understood that the spaces provided behind the sides of the base and top plates and the casing members may receive and secure the edges of preformed sheets of wall board of suitable composition, with or without the provision of the intumed flanges of the channel side.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the invention will be readily understood by those skilled in the art to which the

invention appertains. While I have described the features of a structure which I now consider to comprise a preferred embodiment of the invention, I desire to have it understood that the showing is primarily illustrative, and that such changes may be made, when desired, as fall within the scope of the following claims.

I claim:

1. In a metallic wall frame unit, a central core of open structure having transverse edges, an edge plate for said core fixed thereto at a transverse edge thereof and provided with an integral extension disposed opposite a face of the core, said extension being spaced from the core and being provided with an obliquely inturned flange having its free edge in line abutment with the opposed core elements and positively fixed to the core elements at its line of engagement therewith, and metal lath fixed on said core face for receiving a plaster coat thereon and extending inwardly over said core face from the line of abutment of said flange edge with the core for receiving the edge portion of a plaster coat thereon in keyed relation between it and the flange whereby said extension is arranged to provide a core facing in flush relation with the exposed face of the plaster coat.

2. In a prefabricated metallic wall unit arranged for the mounting at the side faces thereof of wall-covering slabs, a central core assembly having transverse bounding edges, a metallic edging element of rectangular channel section having its web disposed opposite an edge of the core assembly to receive the adjacent core portion between its flanges in spaced relation thereto, and flat and integral extensions of said flanges directed inwardly toward the web from the flange edges and having their free edges directly engaging and rigidly fixed to the core portion adjacent said core edge whereby the extensions and core cooperate to define grooves for complementarily receiving edges of mounted wall-covering slabs as an edge-securing means for the slabs and the flanges of the mounted element comprise face casings for the slab portions behind them.

3. In a prefabricated metallic wall frame unit, a central core of open structure having a transverse opening defined therein, metal lath fixed to a face of said core for receiving a plaster coat

thereon, members fixed in said opening to provide a casing for the opening and provided with transverse integral extensions directed outwardly of the opening and opposite the adjacent core portion as face trim at the opening, said extensions being spaced from the metal lath and being provided with inturned flat edge flanges extending obliquely toward the opening and terminating at edges directly and rigidly fixed to the core in line engagement therewith for the cooperation of the flanges with the opposed metal lath portions to provide a V-shaped edge-keying groove for receiving the edge portion of a plaster coat applied to the lath thereat.

4. In a prefabricated wall frame unit arranged for the mounting at and against a side face thereof of a wall-covering slab, a central core of open structure having transverse edges, an edge plate for said core mounted at a said edge thereof in fixed relation thereto and provided with an integral extension disposed opposite the slab-receiving face of the core in transversely spaced relation thereto, said extension being provided with a return flange portion having its free edge directly abutting the core and welded thereto at its line of abutment with the core and being directly cooperative with the engaged face of the core to define a groove for complementarily receiving and securing an edge portion of a mounted wall-covering slab while the extension provides a face casing for the slab portion behind it.

5. In a prefabricated metallic wall frame unit arranged for the mounting at and against its side faces of wall-covering slabs, a central core of open structure having transverse edges, an edge plate for said core mounted at a said edge thereof and provided with integral side extensions extending opposite the side faces of the core in transversely spaced relation thereto, said extensions being provided with return flange portions having free edges directly abutting the core and welded to the core at their line of abutment therewith and being cooperative with the engaged faces of the core to define grooves for complementarily receiving and securing edge portions of the mounted wall-covering slabs while the extensions provide face casings for the slab portions behind them.

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