E. S. DODGE.

DWELLING HOUSE.

APPLICATION FILED MAR. 21, 1918.

1,268,439. Patented June 4, 1918.

Fig. 1.

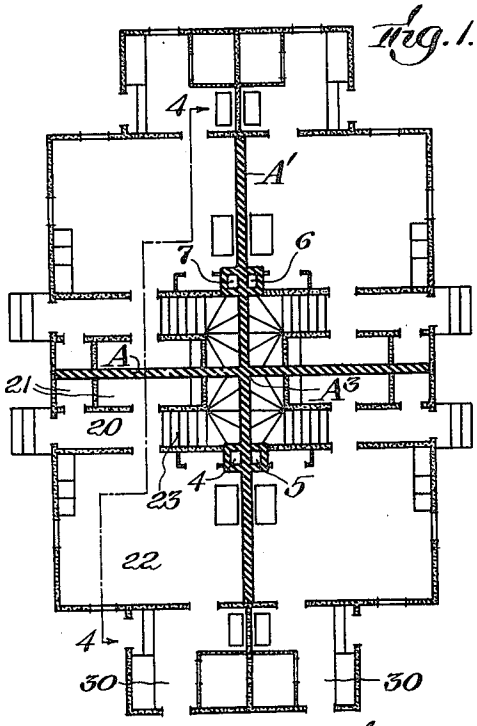


Fig. 2.

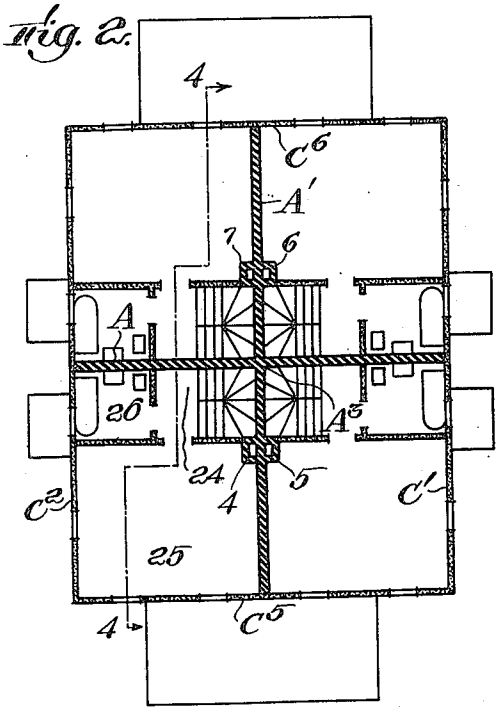


Fig. 3.

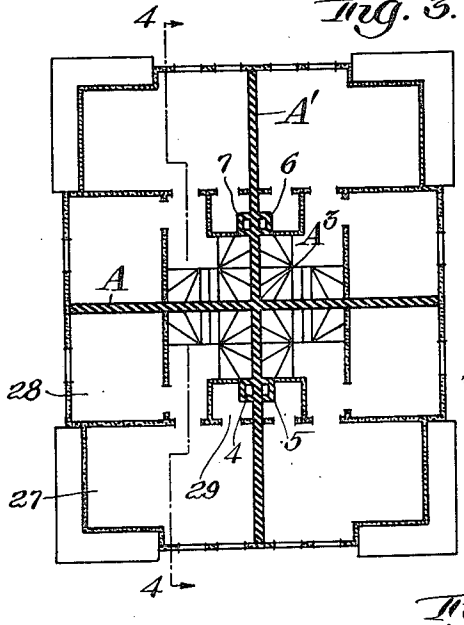


Fig. 4.

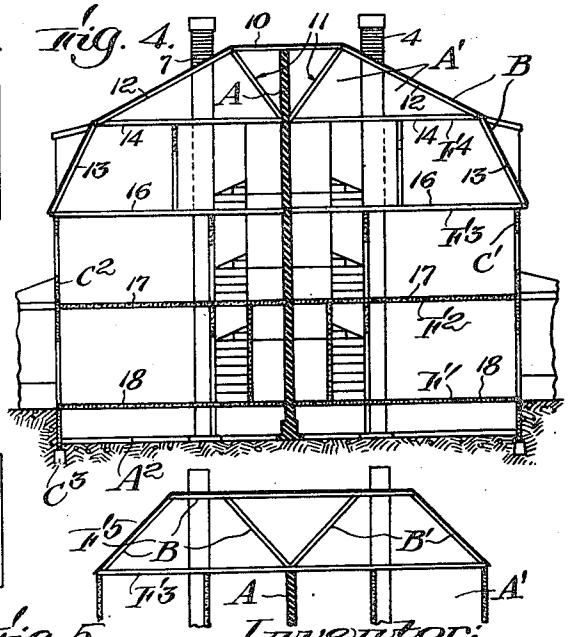


Fig. 5.

Inventor:
Darwin Sherrill Dodge,
by Roberts, Roberts & Cushman
his Attorneys.

UNITED STATES PATENT OFFICE.

EDWIN SHERRILL DODGE, OF BOSTON, MASSACHUSETTS.

DWELLING-HOUSE.

1,268,439. Specification of Letters Patent. Patented June 4, 1918.

Application filed March 21, 1918. Serial No. 223,834.

To all whom it may concern:

Be it known that I, EDWIN S. DODGE, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Dwelling-Houses, of which the following is a specification.

This invention relates to dwelling houses, and more particularly to a new genus of inexpensive tenement or multiple-family houses, which shall be adapted to be built rapidly and economically. It has for its principal objects to provide an economical distribution of structural elements making for permanence, strength and security of the houses comparable with cost or quality of the building materials, without preventing purely architectural treatment of their exterior elevations, or in relation to the interior arrangement of separate living quarters provided under one inclosure of sidewalls and roof.

So far as I am aware it has heretofore been the common practice of architects and builders to rely for the support of loads carried upon the floors and roof of dwelling houses mainly upon piers in or constituted by the exterior walls of the house, with certain exceptions, as in metal-frame buildings, or masonry city constructions, in which houses on narrow, thin lots are built in rows so that the support for the flooring and roofing members predominantly rests upon the fire-stop or party wall usually built on the party line between lots. But in this case reliance for lateral stability has been upon the front and rear walls of the structures. In the article of manufacture now to be described, a detached unit having light and air on all sides and having inherent stability against lateral forces, such as wind and earthquake pressures, is provided. It is characteristic of the new type of building that the lateral stability is wholly or in the main independent of the exterior or curtain walls inclosing the structure, and that by such provision the exterior or curtain walls are permitted to be of a cheapened construction not heretofore possible (because not adapted to bear crushing strains or lateral stresses of the degree heretofore imposed upon them) to the end that additional care and expense in constructing the exterior walls may be devoted to their heat-insulating properties or to their architectural appearance instead of to their mere strength, and still result in a building less expensive for the same class of construction than common practice now provides.

Referring now to the accompanying drawings which show one instance only of many architectural arrangements containing the new characteristics of construction hereinafter more particularly pointed out,

Figure 1 is a plan in horizontal section above the ground floor;

Fig. 2 is a similar plan in horizontal section above the second floor;

Fig. 3 is a similar plan in horizontal section above the third floor;

Fig. 4 is a typical section on line 4—4 of Figs. 1, 2, and 3;

Fig. 5 illustrates a modification.

In the typical building shown the purpose is to accommodate four families and to provide for their insulation from each other with respect to sound, fire, smells, etc., by the complete division of the house in which the four families are housed into separate parts. Whatever the architectural design of the construction, therefore, a characteristic feature of the building is a cruciform pier and partition wall A, A′, preferably of heavy masonry construction and having a foundation as at A^2, (Fig. 4) on the longitudinal and lateral bisectors of the plot covered by the building. These walls may be of brick, of poured cement concrete, of hollow tile, or of reinforced plastic construction, such as concrete reinforced with metal inclusions, or wood and mortar constructions in which the tensile element comprises planking or other timbering embedded in the plastic, or framework, or of other usual strong and rigid structure. Under these circumstances no other lateral support of the walls A, A′ than their juncture with each other is required and these walls alone are a pier of great lateral rigidity adapted to withstand strains in any direction, and adapted to support at their tops a large vertical crushing strain.

Conveniently, but not essentially, one of the walls as A′, provides as an integral part of its structure chimneys 4, 5, 6, and 7, which may be divided into as many flues as requisite, each to serve the habitation lying in the angle of the walls A, A′. As so

provided these chimney piers are additional elements of strength in a direction lateral of the walls in which they occur, and in the preferred form illustrated they may therefore be provided in the longer wall representing the greater turning moment under lateral stress upon the structure as a whole.

As illustrated in Fig. 4, the walls A, A′ are carried upward to the architectural contour of the roof B so as completely to divide the house into four parts. The roof may comprise any trussed structure of sufficient rigidity to insure effective support of the greater part of the weight of the roof or of loads supported by the roof on points of support for the roof, at junctures with the roof and the walls A, A′, especially. For instance, as shown in Fig. 4 the roof may comprise a top chord tension member 10, compression braces 11, 11, and any desired extension thereof depending upon the rigidity of the system, 10, 11, A, for support. As shown the beams 12 and 13 are supported by a tension connection respectively with the chord 10 and with each other, and by the compression members constituted by the joists 14 and 16 respectively of the attic floor F^4 and under the third floor F^3 of the house. The roof and third floor are thus independently balanced on the internal cruciform pier, without necessary substantial aid for support from the vertical rigidity of the curtain or exterior walls.

The tension connections between the beams 10, 12 and 13 may be of any known or desired type. The seats of the joists 14, 16, of the floor levels F^4 and F^3 with respect to the wall A may be recesses in the wall A of any desired type adapted to receive the thrusts of the respective joists 14 and 16 and thereby to sustain the weights loaded upon the upper surfaces of the floors F^3 and F^4. By the expedient mentioned it will be observed that the support with respect to the wall A of the floors F^3 and F^4 is independent of any penetration of each wall A by a continuous beam constituting a stiffening member passing through the wall A for the floor F^3 or the floor F^4, but I am aware that many advantages of the prescribed construction may be procured by a continuous length of joist for either of these floors at the line 14—14 or the line 16—16, and I do not regard the invention as limited to either form of this construction.

Having explained the support of the roof construction with reference to the wall A, it will not be necessary to explain the manner in which the roof may by any usual expedient also comprise a lateral truss or trusses like those of Fig. 4, for supporting the roof with respect to the wall A′, the respective members like those shown in Fig. 4 lying at right angles to the plane of said figure and preferably being employed when the contour of the roof in elevation at right angles to the wall A is other than rectangular, and in other cases if desired.

If desired the floors F′ and F^2 at their outer ends may be supported by a tension member, not shown, in the exterior inclosing or curtain walls C′ or C^2, but in the preferred construction the greater part of the strain, that is to say, the support of the roof and the reaction against lateral stresses of wind, etc., having been taken from the curtain walls C′ and C^2, there is no objection to calling upon these walls to take the compression strain of supporting the first floor F′ and the second floor F^2 at their outer ends, and these walls may therefore comprise vertical studding or masonary piers of any usual or desired sort adapted to support the outer ends of the joists 17, 17, 18, 18, in turn respectively supporting these floors.

In order to provide additional support adapted to prevent settling of the curtain walls themselves, they may each be provided with the usual footing C^3 below the frost line, as is common in house construction. Because of the marked lessening of the stresses upon the walls, both the construction of the walls C′ and C^2 and of the footings C, C^3 may be lighter than usual, or of inferior material, without detriment.

The end walls of the house C^5 and C^6 may be in all respects like in construction to the walls C′ and C^2.

In some cases, particularly where the attic floor F^3 is not penetrated by a stairway or other opening for access to the attic space F^5, and referring now to Fig. 5, most of the desired ends can be obtained by a construction by which the cruciform separation and pier walls A and A′ stop at the level F^3 of the attic floor. In this case the roof trusses B′ and B may be of any desired form constituting a built-up girder, for instance such as shown in Fig. 5, the structure as before being balanced upon and carried by the wall A in one dimension, and if desired also balanced upon and supported by the wall A′ in the other dimension, as explained above.

The exterior elevations and the specific interior arrangements of the houses are immaterial to the invention, but it may nevertheless be explained that a house of such form is peculiarly adapted to the needs of a working population. Referring to Figs. 1, 2, and 3, each part may contain an entrance hall 20, closets 21, 21, and living-room-kitchen 22, on the ground floor; the kitchen being on the lower floor affords advantages and economies in heating the entire section. A stairway 23 may lead to an upper hall 24; living or bed-room 25, and bath 26 on the second floor; and on the third floor, (Fig. 3), two bed-rooms 27, 28, and closet space 29 may be arranged. The house may be pro-

vided with such excrescent sheds or L's 30, 30, as desired for coal, ice, summer kitchens, etc.

What I claim is:

1. As a manufacture, a house having therein cruciform separation and pier walls, a roof resting upon said walls and curtain walls inclosing the living space covered by the roof.

2. As a manufacture, a house having therein unbroken cruciform separation and pier walls, a roof resting upon said walls, and curtain walls inclosing separated living spaces covered by the roof.

3. As a manufacture, a house having therein cruciform separation and pier walls, a roof resting upon said walls, and curtain walls inclosing the living space covered by the roof, the roof and one or more floors being supported by said separation walls, the curtain walls being independent of stresses due to the weight of the roof and floors so supported.

4. As a manufacture, a house having therein cruciform separation and pier walls, curtain walls inclosing said cruciform walls and forming therewith separate living spaces, and a roof common to all of said living spaces.

5. As a manufacture, a house having therein unbroken cruciform separation and pier walls, curtain walls inclosing said cruciform walls and forming therewith separate living spaces, and a roof common to all of said living spaces.

Signed by me at Boston, Massachusetts, this fifteenth day of March, 1918.

EDWIN SHERRILL DODGE.