

May 10, 1949.

R. G. LE TOURNEAU
BUILDING CONSTRUCTION

2,469,603

Filed Feb. 15, 1943

2 Sheets-Sheet 1

Fig. 1

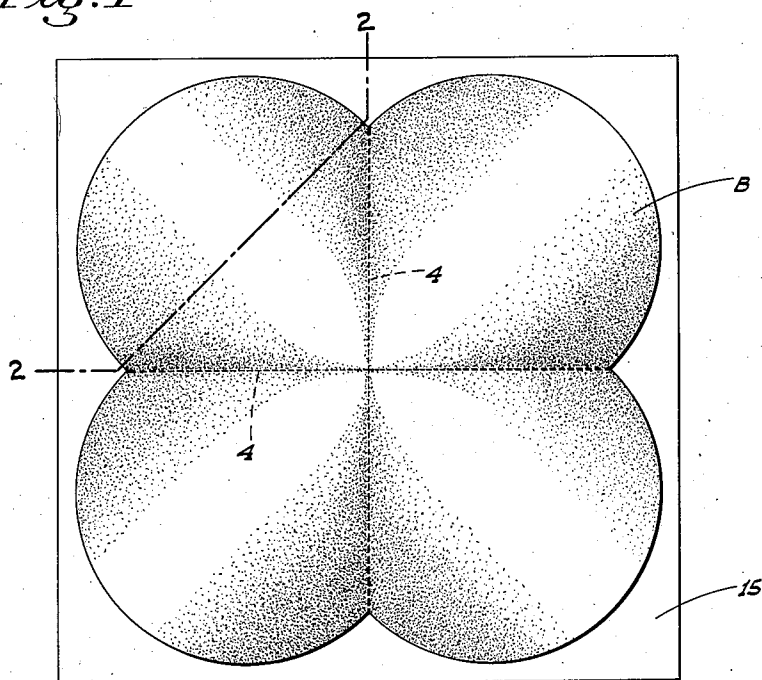
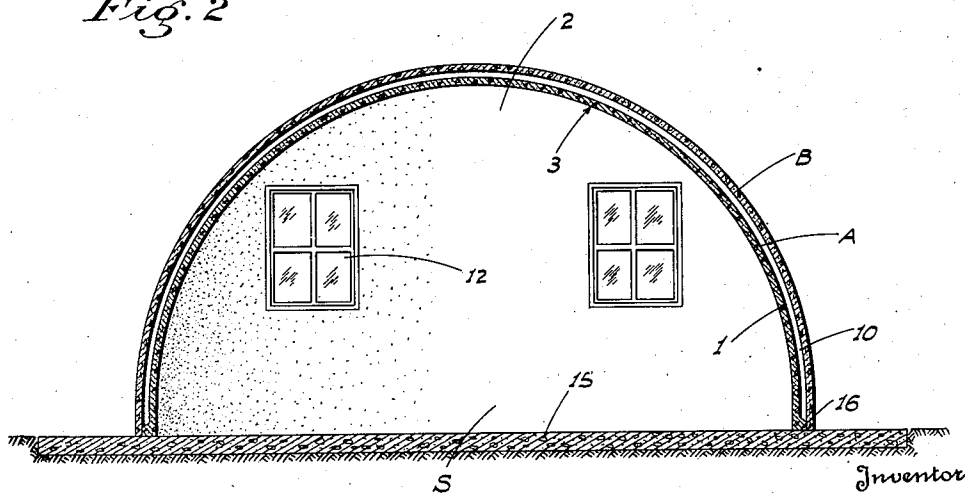


Fig. 2



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Fig. 3

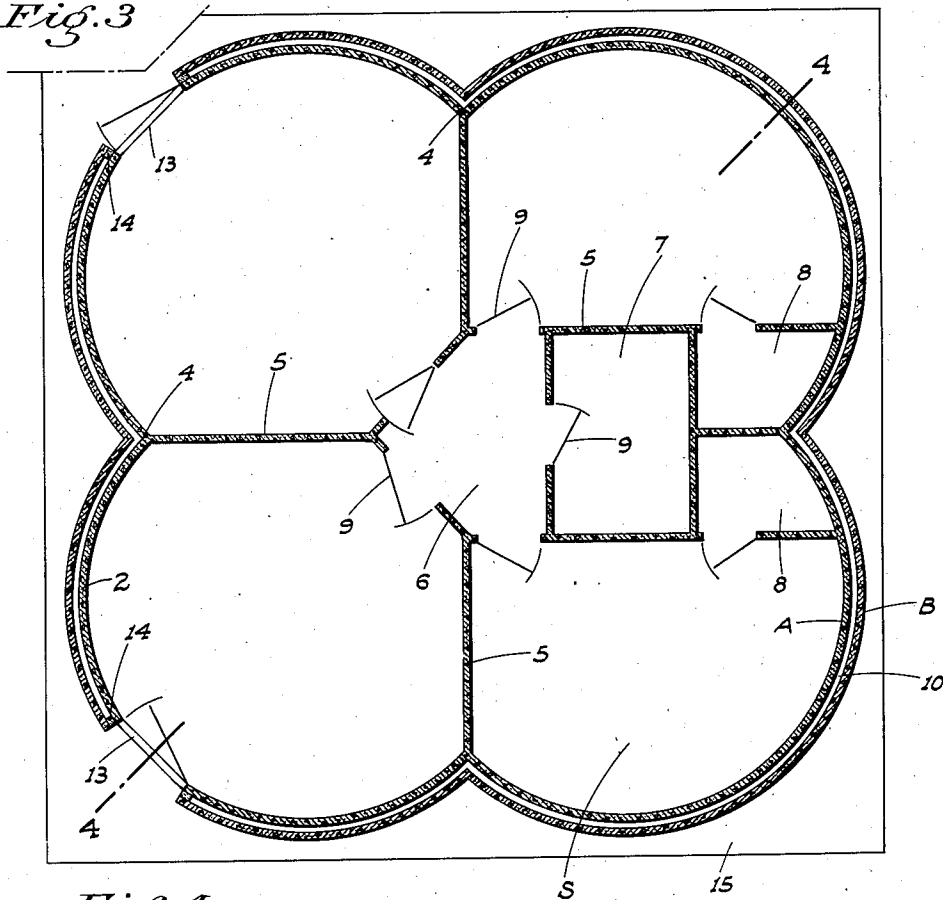


Fig. 4

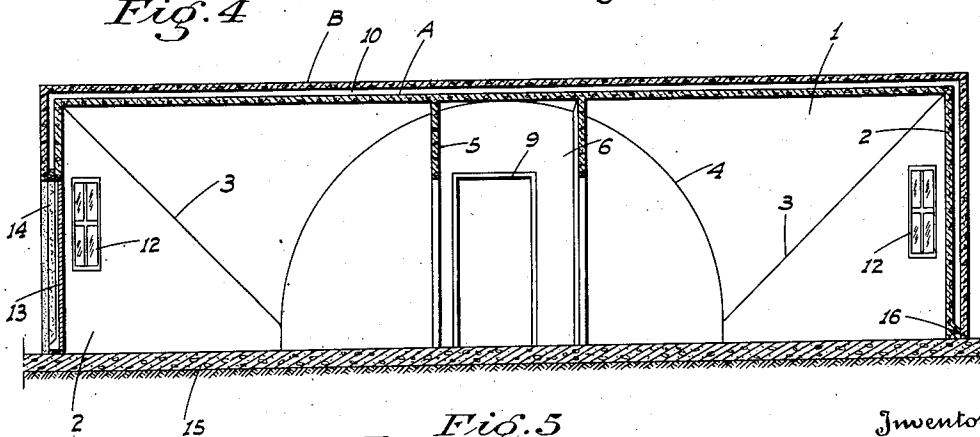
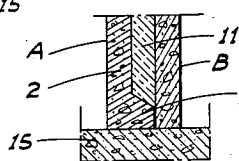


Fig. 5



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UNITED STATES PATENT OFFICE

2,469,603

BUILDING CONSTRUCTION

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Application February 15, 1943, Serial No. 475,885

4 Claims. (Cl. 72—1)

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This invention relates generally to an improved building construction, especially useful for relatively small residential buildings, although the invention is adaptable to many other types of buildings.

In particular the present invention is directed to, and it is an object to provide, a building which comprises, preferably with the portions thereof cast monolithically of plaster and concrete, a plurality of room sections in each of which the above-floor exterior surfaces comprise solely an arcuate roof and an arcuate sidewall in unique arrangement; such arrangement being inexpensive to construct, capable of being constructed expeditiously, relatively strong, resistant to cracking due to its ability to compensate for expansion and contraction, practical in use, and pleasing to the eye.

A further object of the invention is to provide a building construction as in the preceding paragraph in which the arcuate roof and the sidewall of each room section are disposed with the convex side outermost; the roof being formed on the arc of a circle whose axis is horizontal, the sidewall being formed on the arc of a circle whose axis is vertical, and the roof and sidewall merging symmetrically along substantially the full length of adjacent outer and upper edges respectively. In the present embodiment the roof and sidewall of each of said room sections define a straight line when intersected by a horizontal and a vertical plane respectively.

An additional object of this invention is to provide a building construction as in the preceding paragraphs in which the room sections are disposed relative to each other so that in plan the building is of a generally clover-leaf pattern; the arcuate roofs, which extend substantially from floor level to floor level, merging symmetrically along the full length of adjacent upwardly and inwardly extending edges, said edges running from floor level to the vertical center of the building whereby said roofs of the sections form a continuous unbroken roof on the building, and together with the sidewalls, form an enclosure which is suitably partitioned to define the several rooms.

It is also an object of this invention to provide a building which comprises a monolithic inner shell of cast plaster or concrete, a monolithic outer shell of similar material surrounding said inner shell in symmetrical but spaced relation, and an insulating medium in the space between said shells; the shells being secured in unitary

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relation and having windows and doors opening therethrough.

A further object of the invention is to provide a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a plan view of the building disposed on a foundation flooring.

Figure 2 is an enlarged sectional elevation on line 2—2 of Fig. 1.

Figure 3 is a sectional plan of the building taken near the foundation flooring.

Figure 4 is a sectional elevation taken on line 4—4 of Fig. 3.

Figure 5 is a fragmentary enlarged section of the wall shells, showing an insulating medium therebetween.

Referring now more particularly to the characters of reference on the drawings, the building comprises initially separate inner and outer shells indicated at A and B respectively, and each of which is of monolithic construction and formed of cast plaster or concrete; the building being of generally clover-leaf configuration in plan.

The inner shell comprises a plurality of room sections S and each of these sections, of which there are four in number, comprises—as its sole exterior surface—an arcuate roof 1 and an arcuate sidewall 2; both the roof and sidewall being concavo-convex with the convex side outermost. The roof 1 of each room section, where it joins the sidewall, extends circumferentially from floor level to floor level; the roof being formed on the arc of a circle whose axis is horizontal. The longitudinal axis of said arcuate roof intersects the sidewall centrally of its ends; i. e. the axes of said roof and sidewall extending in intersecting relation.

At their outer and upper edges respectively the arcuate roof 1 and arcuate sidewall 2 of each room section merge symmetrically along the full length of said edges, and which are defined by the lines 3.

As shown in Fig. 4, the roof 1 and sidewall 2 of each room define a straight line when intersected by a horizontal and vertical plane respectively, and extend through substantially 180° about their respective axes in the sections at

right angles to the axes and containing the extremities of the edge 3 adjacent the floor.

The roof of each room section extends horizontally inwardly of the inner ends of the sidewall 2, and said inwardly extended portion of the roof includes two inner edges which are straight lines at right angles to each other when projected into a horizontal plane, but which edges curve upwardly and inwardly in a vertical plane from floor level to the center point of the building; adjacent ones of said edges of the room sections merging symmetrically along the lines indicated at 4, and which lines define said roof edges. By virtue of this construction, the roofs of the several room sections merge as a continuous unbroken roof on the building, and said unbroken building roof, together with the sidewalls of the several room sections, form a complete enclosure or building.

The enclosure as here shown is suitably partitioned by walls 5 to separate the room sections one from the other, and is also partitioned to define a central hall 6, a bathroom 7 and closets 8. Doors 9 opening through the partitions give access to the several rooms. A different partitioning arrangement may of course be employed.

The monolithic inner shell A, as above described, is enclosed within the monolithic outer shell B which is of symmetrical but slightly larger configuration, whereby to provide a space 10 between said shells and which space may be filled with an insulating medium 11, as is shown in detail in Fig. 5.

Windows 12 and doors 13 open through the assembly of shells at appropriate points and the space between said shells about the window and door openings is sealed by material shown at 14.

The building, comprising the inner and outer shells, is mounted on and grouted to a combination concrete foundation-floor 15 which has been previously poured, and such foundation-floor may be rectangular as shown, or conform to the configuration of the building at its lower end. If necessary tie elements may connect the shells.

The casting of the inner and outer shells is accomplished separately and by the use of suitable inner and outer forms, the latter being of collapsible type to facilitate removal. The shells, after casting thereof, are transported separately to the point of use and are there assembled on the foundation-floor by suitable equipment, including a crane of sufficient lifting capacity to raise the outer shell and deposit the same over the inner shell.

The windows and doors, together with their jams, are secured in the form for the inner shell and are cast in place.

One of the important features of the above described building structure is the employment therein of exterior surfaces, namely roof and sidewall portions, all of which are formed on a radius, i. e. or arcuate, as defined, whereby a structure of relatively great strength is obtained with a minimum of wall thickness and a minimum of reinforcing being necessary. A further advantage of the structure is the dual shell arrangement which provides for intermediate insulation and assures adequate resistance to heat as well as prevents access of moisture to the interior of the building.

If desired, the inner shell may be formed with an outwardly projecting footing flange 16 or the like to serve as a locating and centralizing means for the outer shell so as to insure that the space

between the two shells is substantially the same at all points.

The outer shell particularly is inherently self-supporting, so that while spaced from the inner shell, no supporting elements between the shells are necessary, and thus a practically unbroken space is provided between the shells over the entire roof area especially, and no heat or cold is directly transmitted from one shell to the other.

From the foregoing description it will be readily seen that we have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. In a building structure, a room section the above floor exterior portion of which consists of a wall section and a roof section, the wall section being of arcuate form about a substantially vertical axis, said wall section standing substantially vertical throughout its length, the top edge of said wall sloping downwardly from the median vertical line thereof to a point adjacent the floor level, the roof section being of arcuate form about a horizontal axis, said roof section extending substantially horizontally throughout its length, the peripheral edges of the roof section sloping upwardly from a point adjacent the floor level to the median horizontal line of the roof section, the sloping edge at one end of the roof section merging with the sloping top edge of the wall section.

2. A building structure comprising a plurality of room sections arranged in generally clover-leaf configuration in plan, the above floor exterior portion of each section consisting of a wall section and a roof section, the wall section being of arcuate form about a vertical axis, said wall section standing substantially vertical throughout its length, the top edge of the section sloping downwardly from the median vertical line of the section to a point adjacent the floor level, each roof section being of arcuate form on a horizontal axis and such section extending substantially horizontal throughout its length, the peripheral edges of such roof section sloping from a point adjacent the floor level in both directions to the median horizontal line of the roof section, the sloping edge at one end of the roof section merging with the sloping top edge of one of the wall sections, and the other sloping edge of such roof section merging with the sloping edge of an adjacent roof section.

3. A building structure as in claim 2 in which the median horizontal lines of the roof sections meet at substantially the center point of the clover leaf.

4. A building structure including a roof, such roof comprising a plurality of sections, each section being curved about a horizontal axis and each having a like constant radius, the inner ends of the sections being inter-fitted with each other about a common center point with the horizontal axes of the sections all intersecting at such center point, a side wall for each roof section each such side wall being curved about a vertical axis and which vertical axis intersects the horizontal axis of the adjacent

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roof section, the radius of curvature of said side wall section being the same as that of the adjacent roof section, and each of said side wall sections being interfitted with the outer end of the adjacent roof section.

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