

July 18, 1939.

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2,166,577

BUILDING SUITABLE FOR COUNTRIES LIABLE TO EARTHQUAKES

Filed Sept. 26, 1938

2 Sheets-Sheet 1

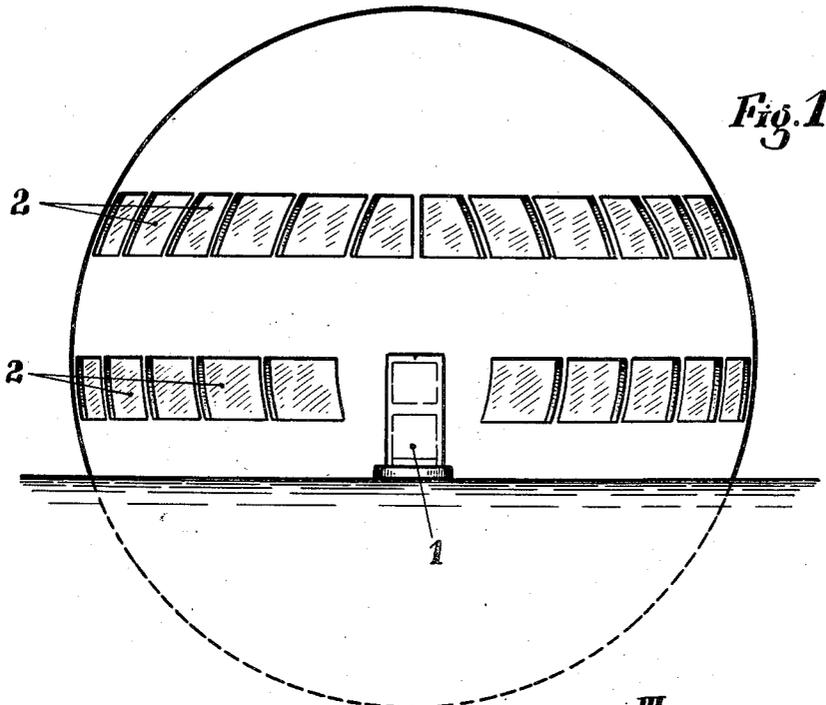


Fig. 1

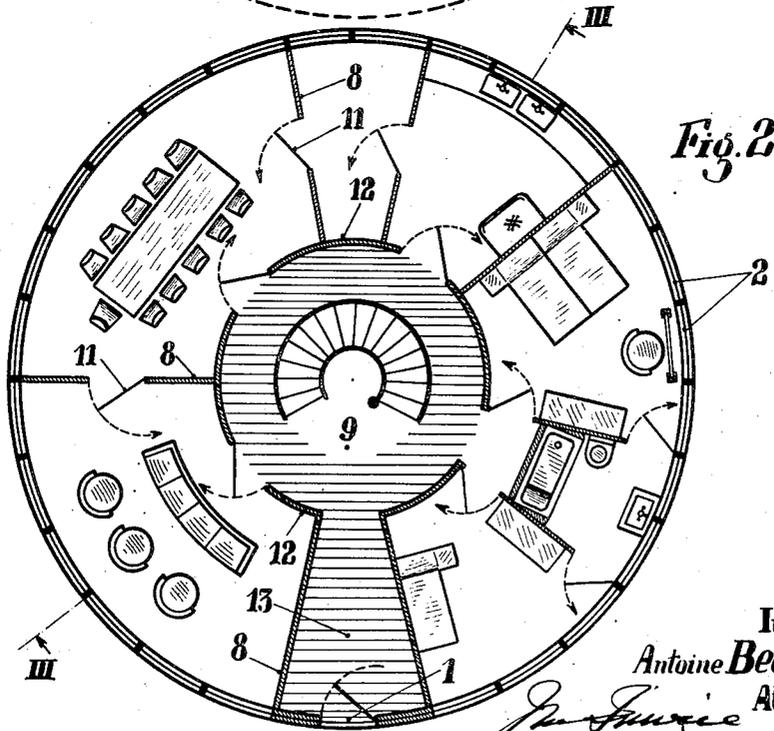


Fig. 2

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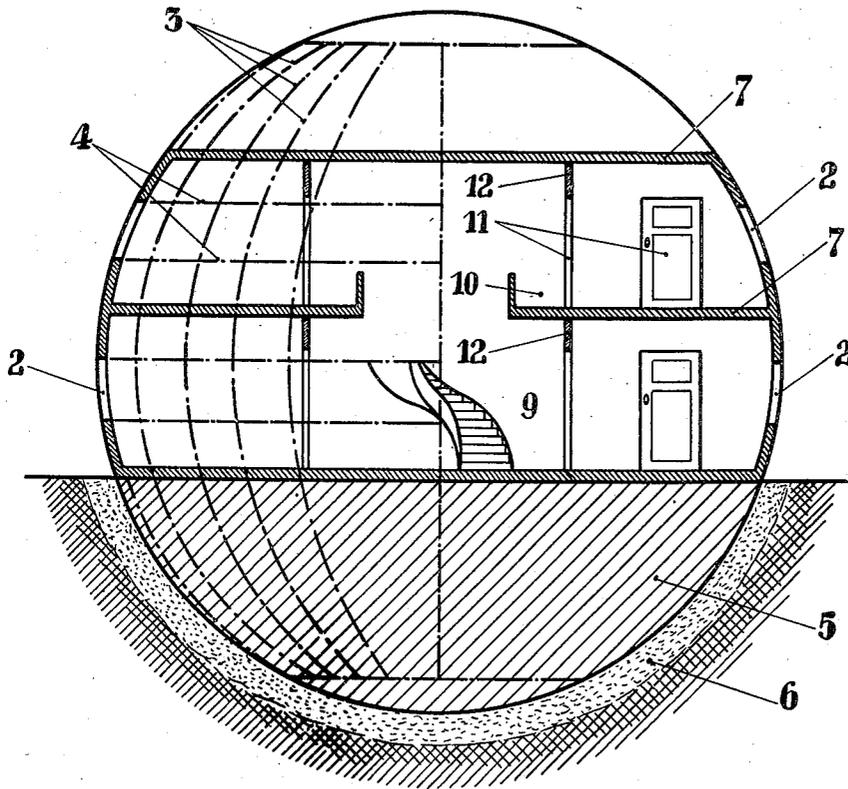
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Fig. 3



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BUILDING SUITABLE FOR COUNTRIES LIABLE TO EARTHQUAKES

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Application September 26, 1938, Serial No. 231,792
In Luxemburg October 6, 1937

4 Claims. (Cl. 72—77)

The subject matter of the present invention is a special structure which can be used as a dwelling, or for other purposes, and which is intended for countries where earthquakes are prevalent.

The essential feature of this structure is the spherical shape of its metallic framework, within which the house is built and supported; this framework is rigid and cannot be put out of shape; it rests in an excavation made in the ground and which has the shape of an inverted skull-cap, the part of the framework thus buried under the level of the ground, being let into a mass of concrete, which occupies at least one quarter of the volume of the sphere formed by this framework. The mass of concrete, as well as the weight, and the distribution of the parts above this mass, are calculated in such a way that the centre of gravity of the whole is located in the depth of the concrete mass, perceptibly on the diametrical vertical axis, so that the whole constitutes a loaded sphere which cannot be upset.

The steel girders, preferably T-shaped, constitute the meridians of the sphere; they are assembled together by other girders which constitute parallels and equator of the sphere; they thus form a spherical framework or casing which cannot be put out of shape and the elements of which—parallels and meridians—can be used as supports or as stays for the partitions, ceilings, floors, which are made of masonry, concrete, wood, tiles, etc. One can also pass radial or secant girders in the sphere itself, these bearing on the meridians, equator and parallels.

The stairs, if any, must be located in the centre of the structure—following the vertical axis—and the structure will preferably be divided by radial partitions, so as to distribute the loads and the weight as uniformly as possible.

As said, the girders of the framework can form an integral part of the exterior walls, the masonry, the concrete, etc., being fitted between these girders, or the latter being let into the concrete. One can, however, erect square or rectangular structure in the sphere, which will be exactly encircled by the metallic framework. In any case, as the difference between the weight of the concrete block which fills the inferior part of the sphere, and the superior part of the structure is of capital importance for the stability, it is necessary to use, for the partitions, material as light as possible. Ceilings may be made of concrete, wood, or any other usual material. The roof truss is constituted by the upper part of the

metallic framework, the covering being made of eternit, copper, zinc, etc.

As the structure as a whole is not fastened to the ground, it remains independent—as far as equilibrium and stability are concerned—of earthquake shocks, thanks to the inferior ballasting, the weight of which is higher than that of the part which is above ground.

An example of the subject matter of the invention is shown in the annexed drawings, wherein:

Fig. 1 is an elevation showing a two-storied building;

Fig. 2 is an horizontal section through the equatorial plane showing a specimen laying out of a ground-floor.

Fig. 3 is a vertical section on line III—III of Fig. 1.

The dwelling-house according to the invention is (Fig. 1) in the shape of a spherical cupola, a third of which is under the level of the ground. 1 is the entrance door, and 2 a belt of windows, at each story.

Fig. 3 shows the framework consisting of meridians 3 made of metallic girders rigidly assembled by circles 4 forming parallels and equator; the buried part of the framework is let into a concrete mass 5; the ground is simply hollowed out in the shape of a skull-cap, and covered by a thick layer of sand 6 which is not indispensable.

The floors and ceilings 7 are supported by corresponding circles—parallels—and, eventually, by diametrical girders.

Fig. 2 gives the schematic lay-out of the ground-floor, divided into several rooms—supposed to be furnished—by radial partitions 8 opening on a circular central vestibule 9, and to a circular gallery 10 for the floor; 11 are the connecting doors. The vestibule or hall is lined with a cylindrical partition 12, and also has a part 13 which leads to the entrance door of the dwelling. This lay-out of the dwelling-rooms in the shape of a crown divided into successive sections, is not restrictive; one may evidently in the case of a house without story, conceive a quite different lay-out, with suites of rooms on either side of a rectangular diametrical vestibule.

Having now fully described by said invention, what I claim and desire to secure by Letters Patent, is:

1. A building structure comprising a metallic framework of spherical shape, the lower portion to the extent of at least one-fourth of the volume of the entire framework resting freely in a correspondingly shaped excavation in the ground,

and a mass of concrete or the like forming a base for and maintaining the shape of the metallic framework, said mass of concrete being in such volume that the center of gravity of the entire structure is within the mass of concrete.

2. A construction as defined in claim 1, wherein that portion of the framework above the mass of concrete is usable as a habitation.

3. A construction as defined in claim 1, where-

in the spherical-shaped framework is made up of meridian girders connected by parallel girders and secant planes.

4. A construction as defined in claim 1, wherein the metallic framework and mass of concrete are wholly free of any connection with the surface relative to which it is mounted.

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