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COMBINATION BUNKER AND RESIDENTIAL BUILDING STRUCTURE

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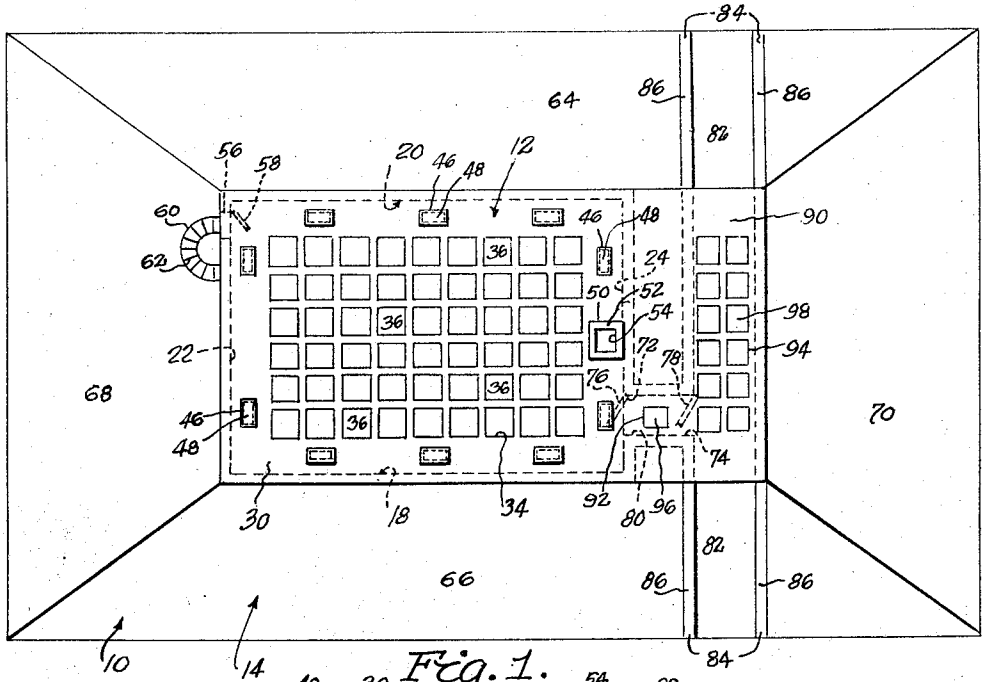


Fig. 1.

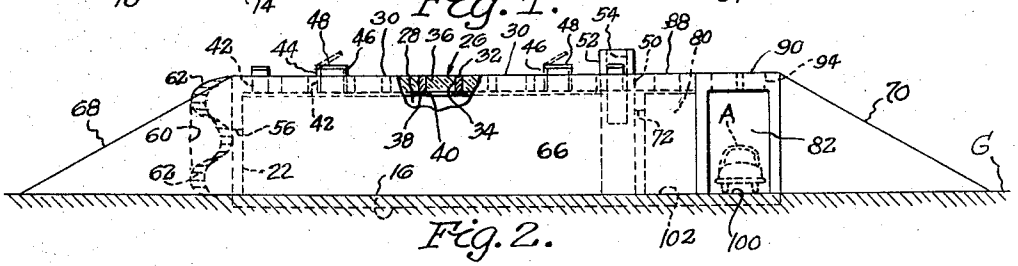


Fig. 2.

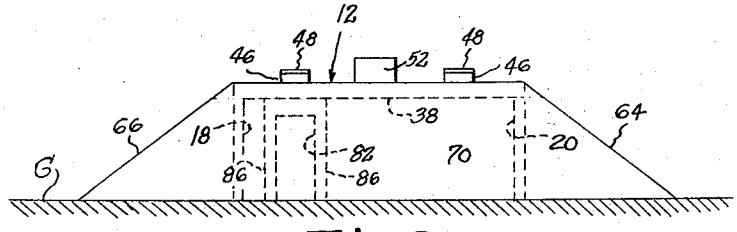


Fig. 3.

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COMBINATION BUNKER AND RESIDENTIAL BUILDING STRUCTURE

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1 Claim. (Cl. 72—1)

This invention relates to building structures for residential purposes and, in particular, to residential building structures providing protection against aerial bombs.

One object of this invention is to provide a combination bunker and residential building structure which is built on the surface of the ground to provide adequate drainage, yet which is banked in such a manner as to deflect the force of an aerial bomb blast other than a direct hit, and which may be lived in at all times in a comfortable and sanitary manner like an ordinary unprotected residence building.

Another object is to provide a combination bunker and residential building structure of the foregoing character which also includes a carport or garage recess or tunnel from which a protected entrance passageway leads into the living quarters of the building structure.

Another object is to provide a combination bunker and residential building structure of the foregoing character wherein the roof of the structure, which is preferably of reinforced concrete lighted by glass blocks or other similar light-admitting means, also provides a recreation area or deck for use by a family in times of peace.

Another object is to provide a combination bunker and residential building structure as set forth in the preceding objects, wherein a stairway or ladder in a vertical well or tunnel provides not only emergency exit at the opposite end of the living quarters from the main entrance thereof, but also provides means for rapidly reaching the roof deck.

Another object is to provide a combination bunker and residential building structure of the foregoing character wherein the floor of the living quarters is at or near the ground level outside the structure, the structure being surrounded by a sloping earthwork or embankment which is adapted to be planted with grass, shrubbery, flowers or other foliage to enhance the appearance of the structure as well as to hold the earth in position and prevent erosion thereof as a result of rainfall on the roof deck.

Another object is to provide a combination bunker and residential building structure of the foregoing character wherein the carport or garage is in the form of a tunnel which is open at its opposite ends so that the force of an explosion can blow directly through it without interference other than from a possible automobile occupying the lower portion of the tunnel, thereby further protecting the entrances to the structure from being caved in by the force of such an explosion.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein:

Figure 1 is a top plan view of a combination bunker and residential building structure, according to one form of the invention;

Figure 2 is a side elevation, with the roof partly in section, of the structure shown in Figure 1; and

Figure 3 is a right-hand end elevation of the structure shown in Figures 1 and 2.

Referring to the drawings in detail, Figures 1 to 3 inclusive show a combined bunker and residential building structure, generally designated **10**, according to one form of the invention as consisting generally of a building structure **12** surrounded by a sloping earthwork **14**. The building structure **12** is preferably built of reinforced concrete with a floor **16** disposed approximately at or near the ground level G surrounding the structure **10**, opposite side walls **18** and **20**, opposite end walls **22** and **24** and a roof **26** enclosing a living space or living quarters **28**. The chamber **28** forming the living quarters is shown, for purposes of simplicity, as being without partitions but, in practice, such partitions would optionally be inserted for the convenience of the occupants at any location desired. The usual drainage arrangements (not shown) are provided for the floor **16**, and also the usual sanitary and plumbing facilities, together with the usual lighting fixtures. Air conditioning or dehumidifying and heating equipment is also provided in climates where these are necessary or desirable. An emergency power source, such as an electrical generator driven by a gasoline or Diesel engine is also preferably provided. Air filtering and washing equipment for screening out or removing noxious gases or particles in the air, such as particles of radioactive isotopes resulting from a nuclear explosion, is also provided. All of this optional or conventional equipment has been omitted from the drawings to simplify the showing.

The floor **16** and the side and end walls **18**, **20**, **22** and **24** are of conventional construction and are provided with the usual water-proofing coatings to prevent dampness from passing through these walls, as is well known in the building industry. The roof **26** (Figure 2) is also of reinforced concrete and is slightly higher in the center than at the edge in order to provide a slight drainage slope from the center to the edge so that rain water may flow freely off the surface **30** thereof. The usual eaves troughs and downspouts for carrying away such rain water are provided and are also not shown, for reasons of simplification.

The roof **26** includes a reinforced concrete portion **32** having a multiplicity of openings **34** in which transparent blocks **36** of glass or other suitable material are seated. The chamber **28** is provided with a ceiling **38** with slightly smaller openings **40** aligned with the openings **34** to provide entrance of daylight as well as to form seats for holding the transparent blocks **36** in position. Conventional shades, roller blinds, Venetian blinds or louvers or the like are preferably provided beneath the ceiling openings **40** to regulate the amount of daylight admitted as well as to shield the occupants from flash burns from heat or, to some extent, from radiation emitted by the explosion of a nuclear bomb. The roof **26** is also preferably provided with additional ventilation openings **42** spaced at intervals thereon and equipped with the stacks or conduits **44** of ventilators **46**, the conduits **44** in turn being provided with covers **48** hinged or otherwise adjustably secured thereto. The covers **48** are so arranged that they may be opened in normal weather and closed partially or wholly in bad weather and in times of pending aerial attack. The roof **26** is finally provided with a chimney opening **50** in which a chimbey **52** is mounted and provided with the usual flue **54** for connection to a stove, furnace, fireplace, water heater, or other heating appliance or appliances.

In order to provide access from the living quarters or chamber **28** to the roof surface **30**, the end wall **22** is provided with an emergency exit doorway **56** equipped with a door **58** and opening into an upwardly-directed well or tunnel **60** of partially circular cross-section and equipped with a stairway or ladder **62**. The emergency exit door **58** is preferably of the air-tight and water-tight

compartment doors found in naval vessels at sea and provided with dogging cams and levers for sealing it hermetically.

The earthwork **14** surrounding the building structure **12** is preferably in the form of an embankment of frusto-pyramidal shape with elongated sloping side portions **64** and **66** and sloping end portions **68** and **70** interconnecting them. The earth of which this embankment **14** is composed is sloped at such an angle as to most effectively deflect the blast coming from an explosion off to one side of the structure **10**, such as from an aerial nuclear bomb. This earthwork or embankment **14** is preferably planted with grass, shrubbery or other foliage tending not only to beautify the structure **10** but also to hold the earth in position against erosion by water draining from the roof surface **30**.

Main access to the living quarters or chamber **28** is provided through inner and outer doorways **72** and **74** closed by doors **76** and **78** preferably of the same type as the door **58**, at opposite ends of a reinforced concrete entryway, passageway or tunnel **80**. The roof **26** preferably extends over the passageway **80** and likewise over a tunnel **82** with parallel walls **84** sloping downward at their opposite ends as at **86** to accord with the slope of the embankment **14**. The roof extension portion **88** over the entrance passageway **80** and the further extension **90** over the transverse tunnel **82** are optionally apertured as at **92** and **94** respectively and equipped with transparent blocks **96** and **98** respectively for admission of daylight. The outer doorway **74** opens into the transverse tunnel **82**, which is provided with a floor **100** connected by a passageway floor **102** to the main floor **16**. The floors **100** and **102** are likewise preferably of concrete and suitably drained to permit water to flow away.

In the use of the combined bunker and residential building structure **10** of the invention, the occupants live in it as in an ordinary dwelling, and employ the tunnel or carport **82** for the purpose of holding the family automobile A, the latter being driven past the main entrance opening or doorway **74** in order to avoid obstructing the latter. The ventilators **46**, with or without motor-driven fans or other ventilating equipment, provide adequate ventilation in times of peace and the covers **48** thereof may be raised or lowered in accordance with the desires of the occupant. The daylight coming through the transparent blocks **36**, **96** and **98** may be regulated by the shades, blinds or louvers and these in turn may be used to provide blackout protection to prevent light from interior lighting from being visible in the sky overhead in time of war or imminent attack. By reason of its being banked by the sloping earthwork **14**, the living quarters or chamber **28** is cool in summer and warm in winter. The roof surface **30** provides a recreation area for the family which may be equipped with awnings, beach umbrellas, or other suitable porch or lawn equipment or furniture.

In time of war or imminent attack, the ventilators **48** are closed and the shutters or blinds over the ceiling openings **40** likewise closed to prevent emission of light from the interior, so as to prevent detection by hostile aircraft overhead. If an aerial bomb explodes in the vicinity of the structure **10** and not directly overhead, its force will be deflected by the sloping embankment or earthwork **14**, thus preventing collapsing of the side walls and roof **18** to **26** inclusive, protecting the residents of the structure from injury. The thickness of the earth and the roof **26** provide adequate protection for the residents against the heat blast accompanying the explosion and also, in most cases, against the radiation blast which also results from a nuclear explosion. Moreover, the force of an explosion tends to pass harmlessly through the open-ended transverse tunnel **82** without serious damage other than possibly to an automobile A therein, thereby protecting the main entrance **80** through the doorways **72** and **74** and doors **76** and **78**.

What I claim is:

A combined bunker and residential building construction comprising a concrete building structure having space inclosing side walls extending upwardly from the ground and a substantially flat roof spanning the space between said side walls and defining a living chamber, ventilators extending through said roof for ventilating said chamber, a protective earth embankment disposed against and outwardly of said side walls and surrounding said structure, said embankment having inclined exposed surfaces sloping upwardly from the ground level substantially to the roof level, an elongated outer concrete access tunnel extending through said embankment from side to side thereof past said building structure and spaced laterally outward away from one side wall of said structure, and an elongated inner concrete access tunnel disposed within said embankment substantially at right angles to said outer access tunnel and extending from said one side wall to said outer access tunnel at a location intermediate the opposite ends of said outer access tunnel and communicating with said chamber, said inner access tunnel having a door closing it off from said outer access tunnel, said outer access tunnel being open at both of its opposite ends and also substantially throughout its entire extent from end to end, said roof having spaced multiple window openings therethrough and relatively thick blocks of light-transmitting material disposed in said openings.

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