W. C. BROUGHTON.

CONCRETE BUILDING.

APPLICATION FILED JULY 26, 1915.

**1,185,871.**

Patented June 6, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

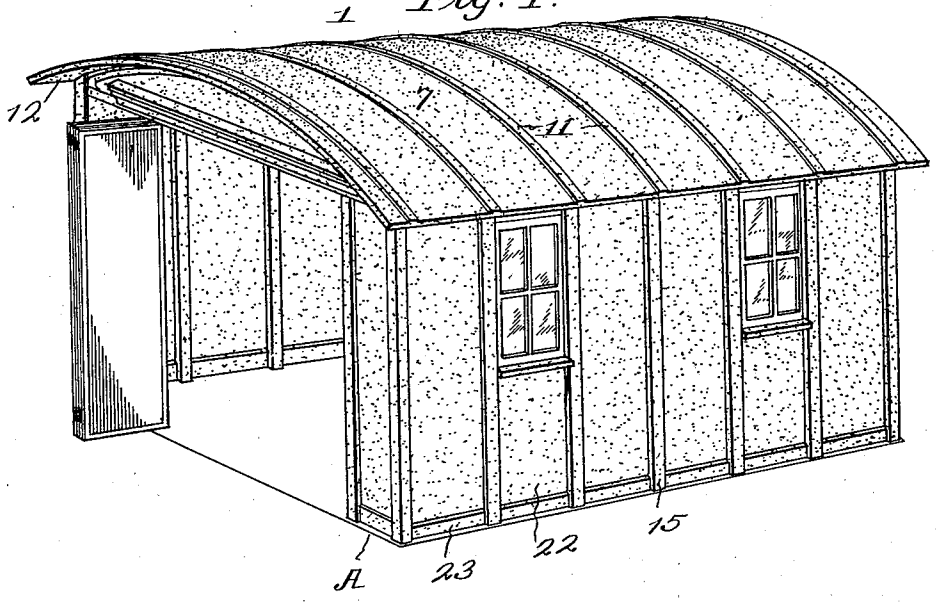



Fig. 2.

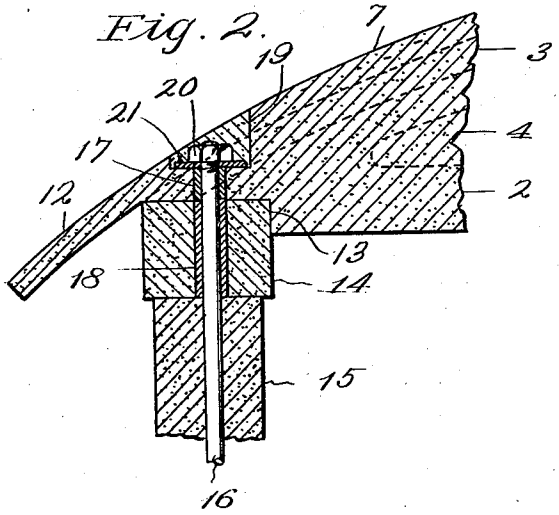
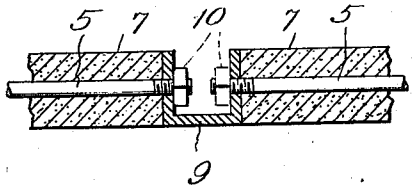



Fig. 3.




Inventor

Walter C. Broughton,

Witnesses:

R. Hamilton

L. J. Fischer

By F. G. Fischer

Attorney

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2 SHEETS—SHEET 2.

Fig. 4.

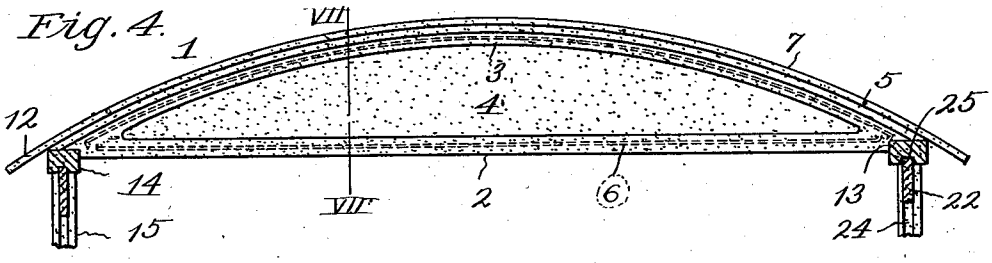
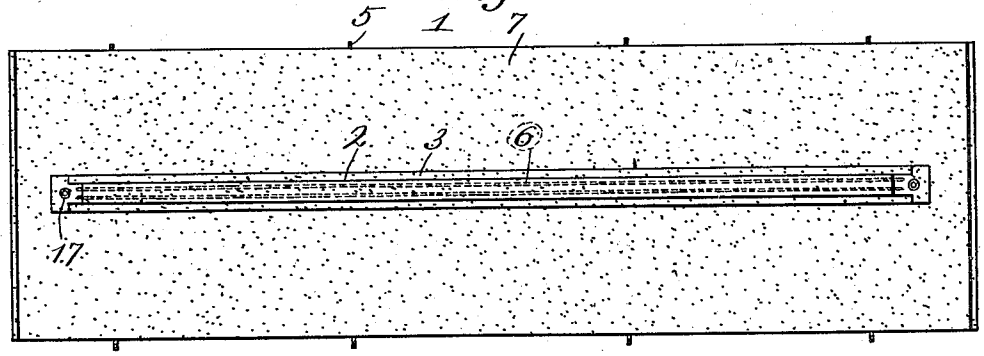



Fig. 5.



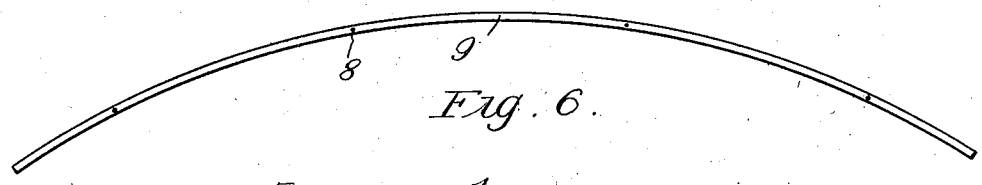




Fig. 6.

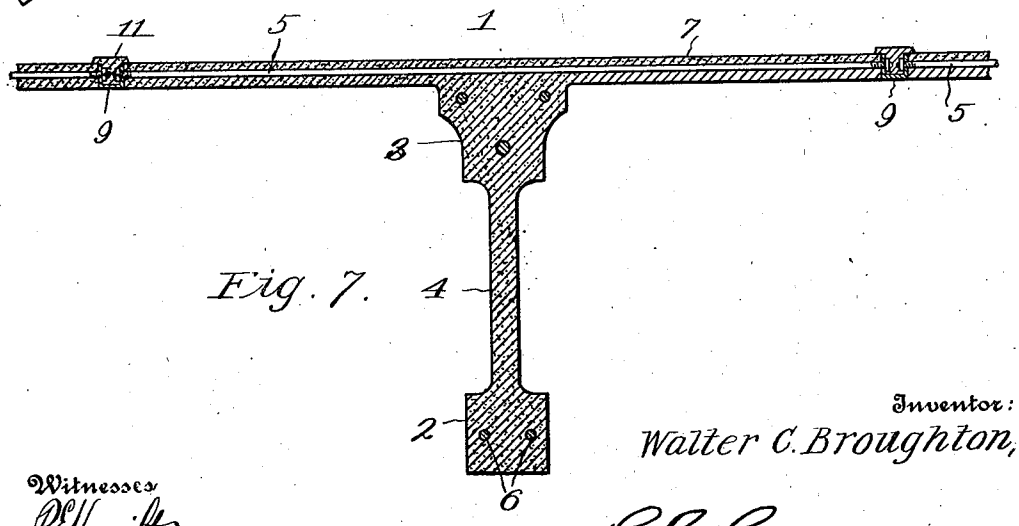



Fig. 7.

Witnesses

R. S. Hamilton

L. J. Fischer

Inventor:

Walter C. Broughton,

By F. G. Fischer,

Attorney

# UNITED STATES PATENT OFFICE.

WALTER C. BROUGHTON, OF KANSAS CITY, MISSOURI.

## CONCRETE BUILDING.

1,185,871. Specification of Letters Patent. Patented June 6, 1916.

Application filed July 26, 1915. Serial No. 41,915.

*To all whom it may concern:*

Be it known that I, WALTER C. BROUGHTON, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Concrete Buildings, of which the following is a specification.

My invention relates to concrete buildings, and an important feature of the invention resides in the roof construction of such buildings.

The general object of the invention is to provide a concrete building consisting of sectional parts which can be readily cast in molds and then assembled into a complete and substantial building which is both storm and fire proof.

Other objects of the invention will hereinafter appear, and in order that said invention may be fully understood, reference will now be made to the accompanying drawings, in which:

Figure 1 is a perspective view of a garage built in accordance with my invention. Fig. 2 is an enlarged, broken vertical section of an upper corner of the structure. Fig. 3 is a broken cross section, enlarged, of two roof sections connected together. Fig. 4 is a cross section of the upper portion of the building. Fig. 5 is an inverted plan view of one of the roof sections. Fig. 6 is a side elevation of a channel iron employed in connecting the roof sections. Fig. 7 is a cross section, enlarged, on line VII—VII of Fig. 4.

In carrying out my invention, I employ a roof section 1, reinforced by an integral longitudinal chord 2 and a rafter 3. Said roof section 1 also embraces a web 4 filling the space between the chord 2 and the rafter 3 to assist said roof section in resisting both lateral and longitudinal stresses. The roof section 1 is further reinforced with transverse tie-rods 5 and rods 6, which latter are cast in the chord 2 and the rafter 3. The tie-rods 5 extend through the roof proper, or slab 7, and have threaded terminals projecting from the opposite sides of the slab 7 to pass through openings 8 in the upturned flanges of channel bars 9, interposed between the adjacent roof sections as disclosed by Figs. 3 and 7. Nuts 10 are applied to the threaded ends of the tie-rods 5 and coöperate therewith in firmly uniting the channel bars 9 and the abutting roof sections 1. The channel bars 9 and the nuts 10 are protected from the weather by concrete fillings 11, which overlap the adjacent edges of the roof slabs 1 and exclude rain from the channel bars 9. The ends of the chord 2 terminate short of the roof slab 7 to leave overhanging eaves 12, which conduct rain water beyond the side walls of the building. The chords 2 have off-sets 13 at their ends to fit the tops and inner sides of plates 14, supported by columns 15 placed directly beneath the chords 2 and resting at their lower ends upon a suitable foundation A. The roof sections 1, the plates 14, and the columns 15 are firmly secured together by vertical tie-rods 16, extending through tubular reinforcements 17 and 18 cast in the roof sections 1 and the plates 14, respectively. The upper ends of the tie-rods 16 terminate in recesses 19 in the roof sections 1 and are provided with nuts 20 and washers 21 to firmly hold the several parts together. The recesses 19 are filled with plastic cement or other suitable material to exclude moisture from the nuts 20 and the washers 21. The spaces between the columns 15 are closed with wall panels 22, which rest upon sills 23 laid upon the foundation A. The vertical edges of said panels 22 fit in grooves 24 in the sides of the columns 15 and the upper edges of said panels fit in grooves 25 in the undersides of the plates 14, Fig. 4.

From the foregoing description it will be understood that I have produced a concrete building in which the roof and walls can be easily cast in molds and then assembled to form a practically nondestructible structure, and while I have shown and described the preferred form of my invention, I reserve the right to make such changes in the construction, arrangement and proportion of parts as properly fall within the spirit and scope of the claim.

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

In a concrete building, a roof including a series of spaced channel bars which extend the width of the roof, said channel bars having their channels facing upwardly, roof slabs abutting the opposite sides of the bars,

tie-rods extending transversely through the slabs and through the sides of said bars, nuts on the ends of the tie-rods disposed in said channels, and a cementitious filling for said channels in which filling the nuts are embedded so as to be held against turning, said filling being extended above the tops of the slabs and extending over the top edges of the bar sides onto the slabs to thereby completely conceal the bars.

In testimony whereof I affix my signature, in the presence of two witnesses.

WALTER C. BROUGHTON.

Witnesses:
F. G. FISCHER,
L. J. FISCHER.