April 20, 1937. E. G. P. MOPIN 2,077,950

BUILDING CONSTRUCTION

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Fig.1

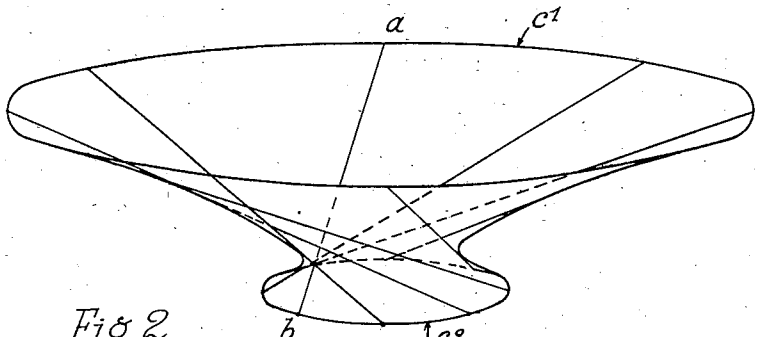


Fig.2

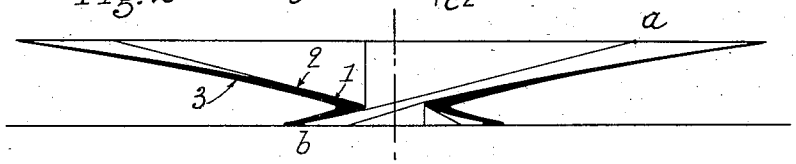
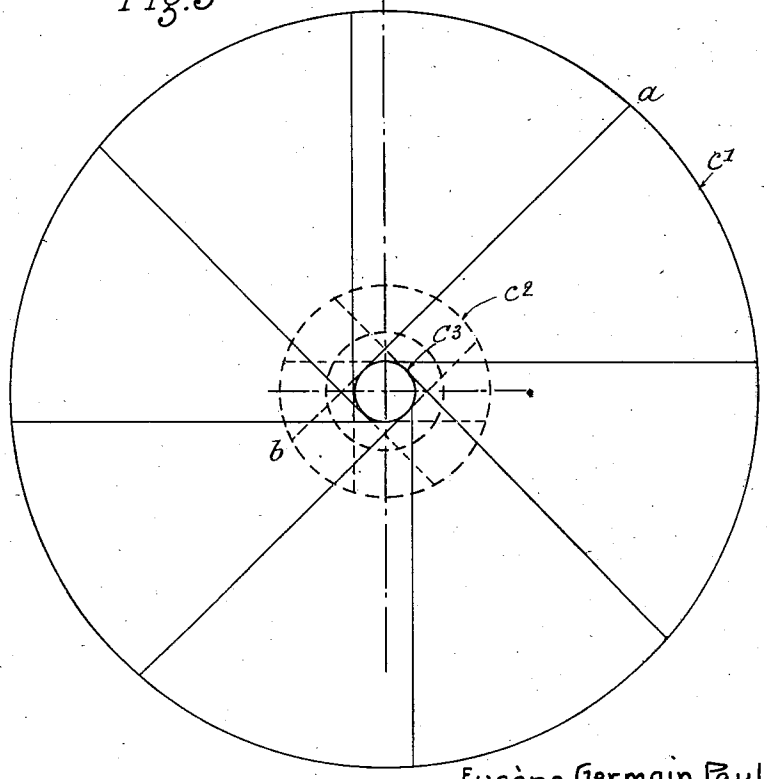


Fig.3



Eugène Germain Paul Mopin
INVENTOR

By Oldham & Oldham
his ATTY.

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Fig. 4

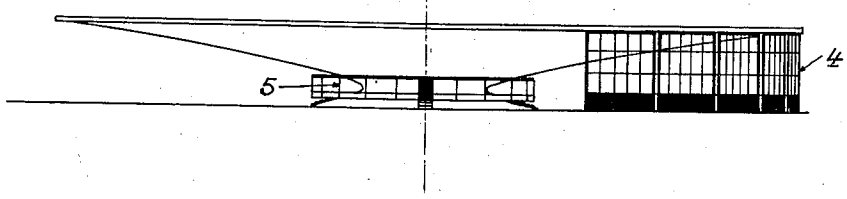


Fig. 5

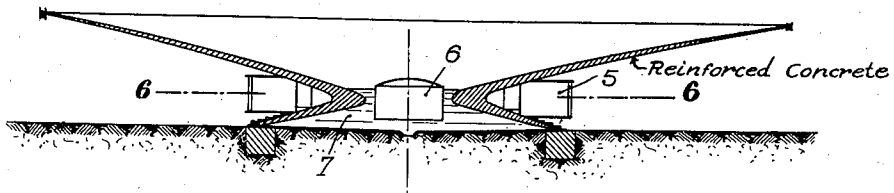
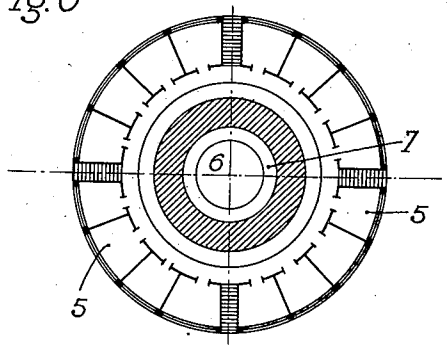


Fig. 6



Eugène Germain Paul Mopin
INVENTOR

By Otto Munk
his ATT'Y.

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UNITED STATES PATENT OFFICE

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BUILDING CONSTRUCTION

Eugène Germain Paul Mopin, Paris, France

Application October 12, 1934, Serial No. 748,029
In France October 26, 1933

1 Claim. (Cl. 72—15)

The present invention has for its object a new construction which may be used as an aviation or other shed, market hall or similar building, having a large roofed surface, chiefly characterized in that it has the form of a hyperboloid of revolution.

In the accompanying drawings given solely by way of example:

Fig. 1 is a perspective view of a surface making part of the framing of the construction;

Fig. 2 is a vertical diametrical section of such a framing;

Fig. 3 is a corresponding plan view;

Fig. 4 is an elevational view of a construction in conformity with the invention;

Fig. 5 is a vertical diametrical section thereof;

Fig. 6 is a horizontal section on the line **6—6** of Figure 5.

According to the example of construction represented in Figures 1 to 3, the framing **1** of the construction is limited by two surfaces of revolution **2** and **3** (Figure 2).

These surfaces are hyperboloids and it is well known in geometry that on the one hand, they may be generated by the rotation of a hyperbola about its vertical axis, whereas on the other hand, they must be regarded as if they were formed by two sets of rectilinear generatrices, or in other words, by a generatrix resting upon two circles.

The surface **2** is formed by a straight generatrix *ab* (Figures 2 and 3), which bears at the top upon an upper circle C^1 and at the bottom upon a lower circle C^2.

The straight generatrix *ab* (Figures 2 and 3), resting upon the upper circle C^1 and the lower C^2, is also tangent to a middle circle C^3. The surface thus obtained gives the upper and inner surface **2** of the shed and this part is a hyperboloid.

The lower surface **3** is generated by another straight generatrix resting upon other circles, not shown, the dimensions and positions of which are determined by the calculation of the strength of the materials to be employed, and generally by the calculation of the reinforced concrete.

The lower part of the hyperboloid construction may rest upon foundations secured to the assembly at the level of the ground. This lower part can also be prolonged in the same curve, to the degree necessary for the building of foundations the form and principle of which will be determined according to the strength of the soil which is met.

Obviously, in the construction, the main reinforcement will be placed in one or more sheets between the surfaces **2** and **3**, in the form of a hyperboloid each reinforcement being situated according to a generatrix of the corresponding hyperboloid.

The other advantages afforded by a construction of such a kind are also very important. Owing to the regular transmission, towards the base of the building, of the traction and the compression stresses, (exclusive of all bending stresses), under symmetrical loads, a better and a much more economical use of the materials is obtained. It also results in the possibility of covering large surfaces with relatively small thickness and a very small useless weight, in spite of the bending moments produced by unsymmetrical stresses due to wind or to any other cause; these latter stresses have but little importance with respect to the main mass of the construction.

Figures 4, 5, 6 show by way of example an aviation shed of the type according to the invention.

In the construction of Figure 4, doors for closing the shed are provided at **4**. These doors are for instance rolling on two, three, four thicknesses, thus permitting of opening the shed on 180°, 240°, or 270°, according to the number of guides and doors which are provided in the shed. The central part **5** may be used for service rooms, store-rooms, or for the office.

At **6** may be provided a stationary fuel tank, or a tank floating in another water tank **7**, formed by the inner central part of the shed having in this case a suitable shape.

Obviously, the invention is by no means limited to the form of construction described and represented which has been chosen only by way of example.

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

A roofed construction which is intended for the covering of large surfaces and for being used as an aviation or other shed, market, hall or like building comprising a main body having an upper expanding part, and walls formed by the surface of a hyperboloid of revolution, the axis of revolution of said hyperboloid being vertical and the lower portion cut away, all the reinforcing and main constructive elements of said body being located and concealed in the walls themselves of said hyperboloid, the said body resting upon the ground on a central relatively small surface by means of its central portion without the help of any other auxiliary supporting and reinforcing means and elements, the large expanding part of said hyperboloid which is self-carrying forming the roof.

EUGÈNE GERMAIN PAUL MOPIN.