

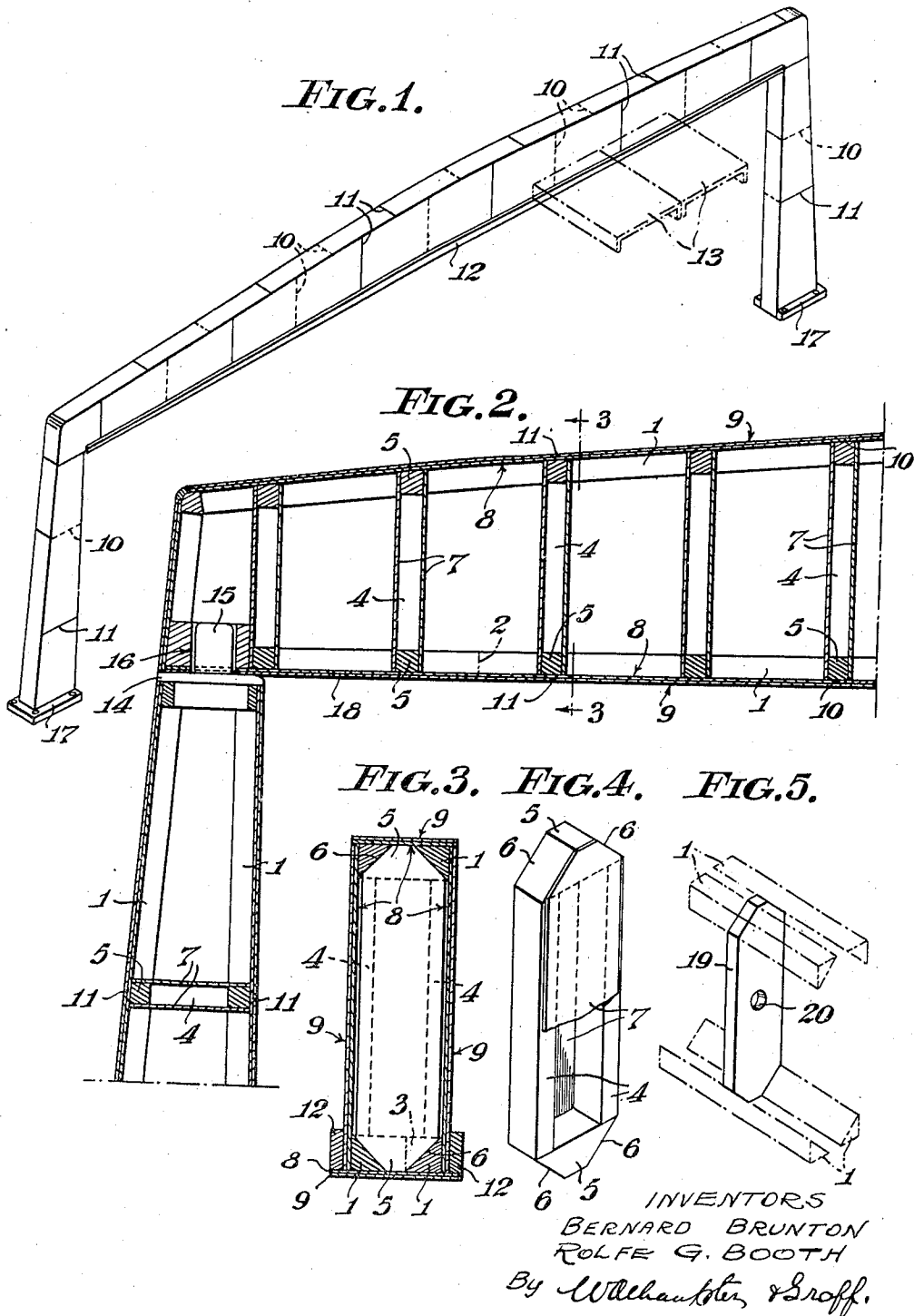
May 2, 1944.

B. BRUNTON ET AL

2,347,879

HOLLOW BEAMS AND COLUMNS FOR USE IN BUILDING

Filed April 1, 1942



UNITED STATES PATENT OFFICE

2,347,879

HOLLOW BEAM AND COLUMN FOR USE IN BUILDINGS

Bernard Brunton and Rolfe Gilbert Booth,
London, England, assignors to Selection
Engineering Co. Limited, London, England

Application April 1, 1942, Serial No. 437,296
In Great Britain April 30, 1941

3 Claims. (Cl. 20—0.5)

This invention relates to improvements in hollow beams and columns for use in buildings and to buildings constructed therefrom and has for its primary object to provide constructions of wood or other sheet material which can be used in the construction of single storey buildings of panelling, the beams and columns being of adequate strength to support the dead weight of the roof and the usual stresses and strains imposed. A further object is to provide beams and columns or pillars of light weight which are constructed of wood and which can be utilised as the skeleton of buildings without any cross strutting.

With these and other objects which will be apparent from the specification, reference will now be made to the accompanying drawing which illustrates a preferred embodiment of the invention wherein:

Figure 1 is a perspective view of a beam and column structure constructed in accordance with the invention,

Figure 2 is an enlarged cross-section of the end of the beam and the end of one column,

Figure 3 is a cross section of the beam on the line 3—3 of Figure 2,

Figure 4 is a perspective view of one of the supporting structures, and

Figure 5 is a perspective view of an alternative form of supporting structure.

In the drawing, the structures consist of essentially of four longitudinal chord forming members 1 which are of triangular cross section. These members are built up from convenient lengths or battens butted together as at 2, Figure 2 and the joint is strengthened by securing these over a short length of batten, which extends between adjacent strut units. Such strengthening piece is shown at 3, Figure 3.

The said strut units each consist, according to Figs. 3 and 4, of a pair of upright struts or frame members 4 forming side walls, and a pair of top and bottom horizontal struts 5, the upright struts extending between the horizontal struts. The said horizontal struts 5 have their outer ends cut on the bias to provide oblique corner walls 6 which form chord securing seats to which the bases of the triangular cross-sectional chords or longerons are secured. The strut units thus formed are vertically disposed transversely of the casing about to be described, and as illustrated in Fig. 2 are longitudinally spaced apart throughout the beam.

In the example illustrated the box-like strut units are faced with plywood 7, as shown in

Figures 3 and 4, to increase their strength. With regard to the columns, these are strutted in substantially the same manner, and they taper so as to be slightly narrower from inside to outside at the top than those at the bottom.

The skeleton so built up is covered with a plywood skin or casing which consists of an inner layer 8 and an outer layer 9. The joints in the layers are staggered; the butt joint between adjacent sheets of the inner layer 8 (cf. the joint 10) is staggered with relation to the joint between the adjacent sheets of the outer layer 9 (cf. the joint 11). Joints between adjacent faces of the outer layers are also staggered as shown in Figure 1, all joints being made on a strut unit. The beam is given the required fall by suitably dimensioning the strut units, and on the outer faces fillets 12 are secured, these also having a fall as shown. The fillets 12 serve to support roof units such as inverted box units 13 shown in broken lines in Figure 1.

The union between beams and columns is made by dowel and socket connection. A block 14 is secured on the top of each column, said block carrying the dowel pin 15. A recess 16 is formed in the bottom of the end of the beam and the dowel pin 15 fits therein. Screw or like means are used to fix the dowel.

The base of each column has a wood plate 17 secured thereto (Figure 1), said plate projecting beyond the column. This allows the column to be secured to concrete or other flooring by rag bolts or like means. Suitable holes such as the hole 18 are provided for ventilation purposes.

In the example shown in Figure 5, the strutting consists of wood blocks 19, which are cut away or chamfered to support the longerons 1. This example is for use in light weight beams where the load is not great. The blocks have vent holes 20 therein.

When used in building, the sets of beams and columns are mounted at spaced apart intervals and the construction completed by walls and a roof. Preferably the walls are built from light weight insulated panels which span the spaces between the columns and the roof is built from units as shown. Suitable fascia and weather-proof boarding will be utilised at the eaves and weatherproofing compounds will be employed to fill joints. Where the roof vent is level with the top of the beams normal weatherproofing (e. g. felt) may be laid over the whole roof.

We claim:

1. A fabricated hollow structural building element, including, a series of substantially rec-

tangular inner vertical strut units disposed transversely of the structural element and spaced longitudinally thereof, each of said strut units including a body member having side, top and bottom surfaces connected by oblique corner surfaces, longitudinally disposed chord forming members of substantially triangular cross section having the bases thereof secured to the said oblique corner surfaces of each body member, and an outer casing for the series of strut units comprising, top, bottom and side sheets abutting and secured to the side, top and bottom surfaces of said body members and also covering said chord forming members.

2. A fabricated hollow structural building element, including, a series of substantially rectangular vertical strut units disposed transversely of the structural element and arranged in longitudinally spaced relation, each of said units consisting of a hollow frame having upright side members connected by horizontal top and bottom members, said top and bottom members having oblique chord securing seats at the outer ends thereof, a plurality of chord members of tri-

angular cross section having the base sides thereof attached to the said chord securing seats, and a casing for said series of strut units, said casing comprising sheet members engaging the outer faces of said side members and said top and bottom members of the strut units and also covering said chord members.

3. A fabricated hollow structural building element, including, an outer elongated casing of substantially rectangular cross section including top, bottom and side sheets, vertically disposed strut units arranged transversely of the casing and in longitudinally spaced relation therein, and longitudinally disposed chord forming members connecting the upper and lower corners of said strut units, said bottom sheets of the casing projecting beyond the plane of the said side sheets, and fillet members running longitudinally of the structural element and disposed in the included angles formed by the side sheets and the extensions of the said projecting bottom sheets.

BERNARD BRUNTON.
ROLFE GILBERT BOOTH.