Nov. 26, 1929. G. L. KELLY 1,737,049

TRUSSLESS SUPPORT FOR ROOFS AND THE LIKE

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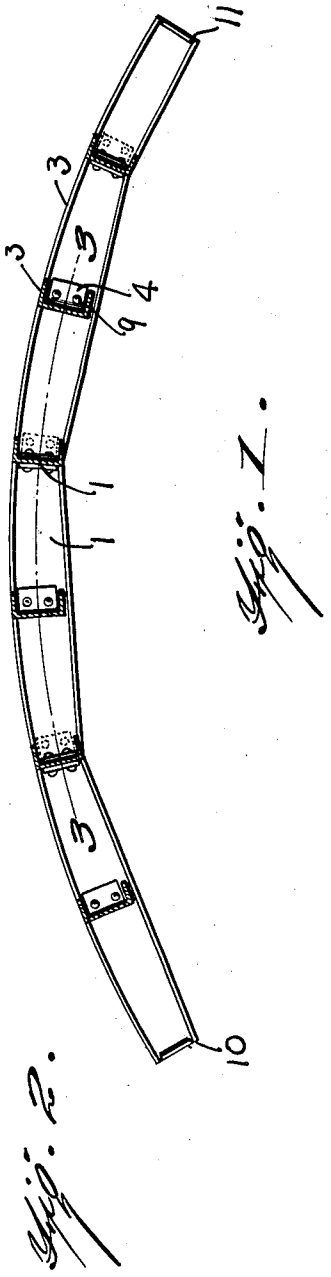


Fig. 1.

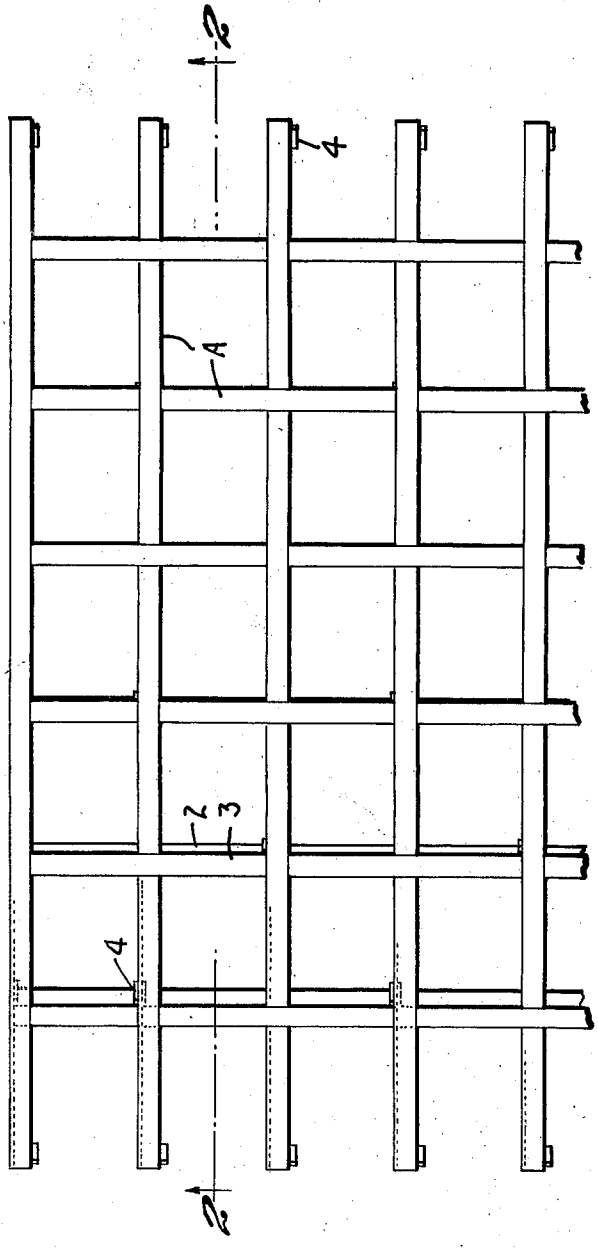


Fig. 2.

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Fig. 3.

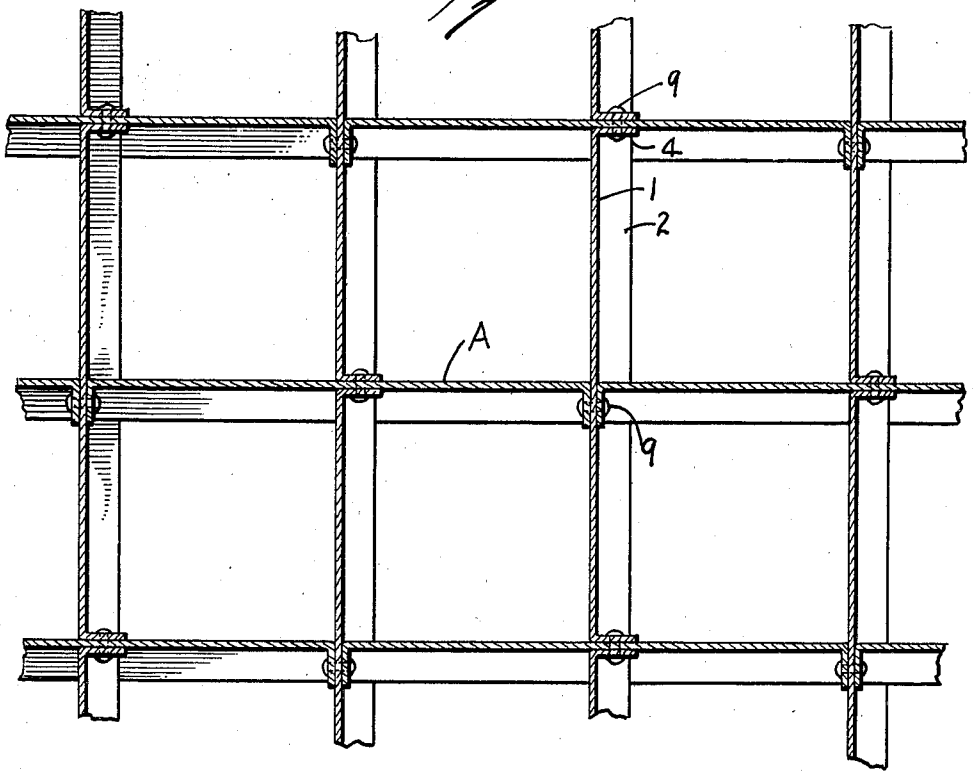


Fig. 4.

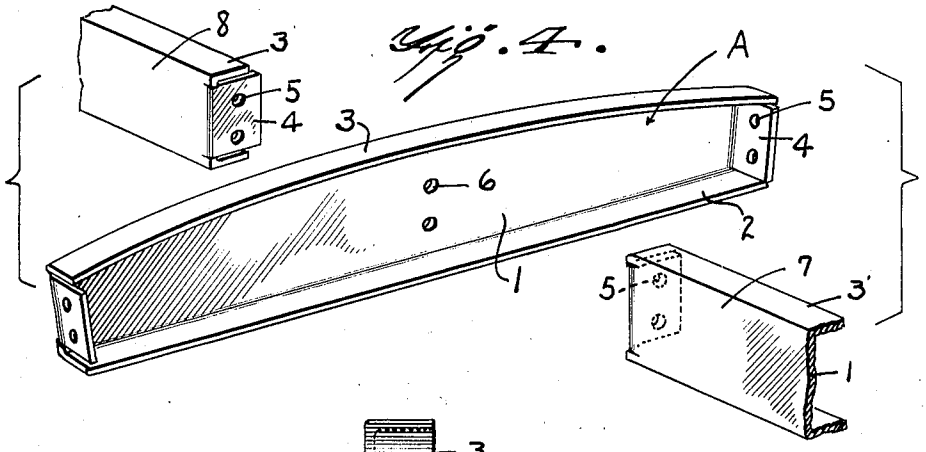
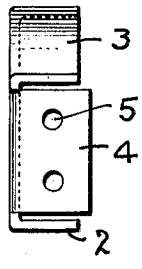


Fig. 5.



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UNITED STATES PATENT OFFICE

GEORGE L. KELLY, OF HOUSTON, TEXAS

TRUSSLESS SUPPORT FOR ROOFS AND THE LIKE

Application filed December 24, 1927. Serial No. 242,303.

My invention relates to the construction of supporting frameworks for roofs, ceilings and the like.

It is an object of the invention to provide an arched supporting framework made up of units adapted to be readily secured together in the said framework.

It is desired that the units be capable of interfitting and be capable of bolting together without the necessity of special tools or of accurate workmanship in the manufacture of the parts.

Referring to the drawing herewith wherein a preferred form of the invention is disclosed, Fig. 1 is a plan view of a section of framework embodying my invention. Fig. 2 is a transverse section on the plane 2—2 of Fig. 1. Fig. 3 is a broken sectional detail taken approximately on the plane 3—3 of Fig. 2. Fig. 4 shows a perspective view of one of the transverse units with the broken ends of the two adjacent longitudinal units. Fig. 5 is an end elevation of one of the transverse units.

My invention is adapted particularly for trussless roofs for buildings although it will be obvious that it is not confined to such structures. In such a construction the roof is arched from one side wall of the building to the other so as to be supported on the side walls, the roof being straight longitudinally. This structure is adapted to large show rooms, shops, and industrial buildings when vertical supports for the roof are not desirable between the side supports.

In forming such a trussless roof structure, I employ structural units or sections, preferably of steel. The transverse unit is disclosed particularly at A in Fig. 1. It is of channel iron construction having a body plate or web 1 with a straight flange 2 on its lower side and an arched flange 3 on its upper side. The units are of a predetermined length to properly interfit with other similar units. The ends of the channel between the opposed flanges 2 and 3 are closed by end plates 4 which are formed by an extension upon the web 1 bent inwardly between the flanges and perforated at 5 to receive bolts 9. The end plates 4 may be slightly longer than the width of the flanges 2 and 3 to form a suitable seat for contact with adjacent units.

The longitudinal units are in all respects like the transverse units except that they are straight on both sides, the flange 3′ being parallel with the flange 2.

In constructing a roof frame of these units, the same are interfitted in what might be called a basket weave construction; that is, a section such as is shown at A in Fig. 4 is connected intermediate its ends with the ends of two of the longitudinal sections indicated at 7 and 8. Holes 6 in the plate 1 are spaced to correspond with the openings 5 in the ends of the plates 7 and 8, and bolts 9 are employed to secure the sections rigidly together.

The ends 4 of section A are then connected in a similar manner centrally of the longitudinal sections adjacent thereto; this plan being adopted repeatedly until a supporting framework of the desired dimensions has been completed. The arrangement by which the units are interfitted will be easily understood from Fig. 3 and it is to be noted that the weight of each unit is transmitted to the adjacent units both at its ends and at its center. From Fig. 2 it will be seen that the transverse arched members transmit the weight of the units secured thereto to the ends 10 and 11 which may rest upon any desired means of attachment to side walls or beams, not shown.

It will be clear that this type of structural unit lends itself to the construction of roofs and supporting frame works of various sizes and dimensions without modification in the construction of the unit. The parts are easily and quickly secured together, and a framework such as is illustrated may be assembled with a minimum of time and labor. The resulting structure is strong and durable and will support heavy loads without danger of breakage.

Having thus described my invention, what I claim as new is:

1. A supporting frame for roofs and the like, including structural units adapted to inter-engage with adjacent units, said units being of channel iron construction, with the central web bent inwardly at its ends, said ends being adapted to be secured centrally

of the units arranged transversely thereto in the manner described.

2. A supporting frame for roofs and the like, including structural units adapted to inter-engage with adjacent units, said units being of channel iron construction, with the central web bent inwardly at its ends, said ends being adapted to be secured centrally of the units arranged transversely thereto in the manner described, the units arranged transversely of the building being arched on their upper sides and straight on their lower sides.

3. A structural unit for roofs and the like comprising a section of steel of channel construction having a central web, upper and lower flanges thereon and end portions of said webs bent laterally between said flanges and provided with openings therein, said web having openings centrally thereof to register with openings on adjacent end plates, whereby adjacent sections may be secured together at right angles to each other.

4. A structural unit for roofs and the like comprising a section of steel of channel construction having a central web, upper and lower flanges thereon, the upper of said flanges being arched to conform to the curvature of said roof, and end portions of said webs bent transversely between said flanges and provided with openings therein, said web having openings centrally thereof to register with openings on adjacent end plates, whereby adjacent sections may be secured together at right angles to each other.

5. A frame structure for roofs and the like made up of units arranged in alignment both transversely and longitudinally of said roof, the said units comprising channel iron beam sections, the said transverse units being connected at their ends midway of the ends of the longitudinal sections and the ends of said longitudinal sections being similarly connected to transverse sections, said transverse sections being arched.

6. A frame structure for roofs comprising a plurality of rows of unit members attached at right angles, with each intermediate portion of each unit intersecting the row of units transverse thereto.

7. A frame structure for buildings comprising a plurality of unit members each having end flanges and a web, said unit members being attached at right angles to the intermediate portion of the units transverse thereto, and means passing thru the end flanges of contiguous units and the web of a transverse unit to retain said units in position.

In testimony whereof I hereunto affix my signature this 21st day of December, A. D. 1927.

GEORGE L. KELLY.