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BUILDING CONSTRUCTION

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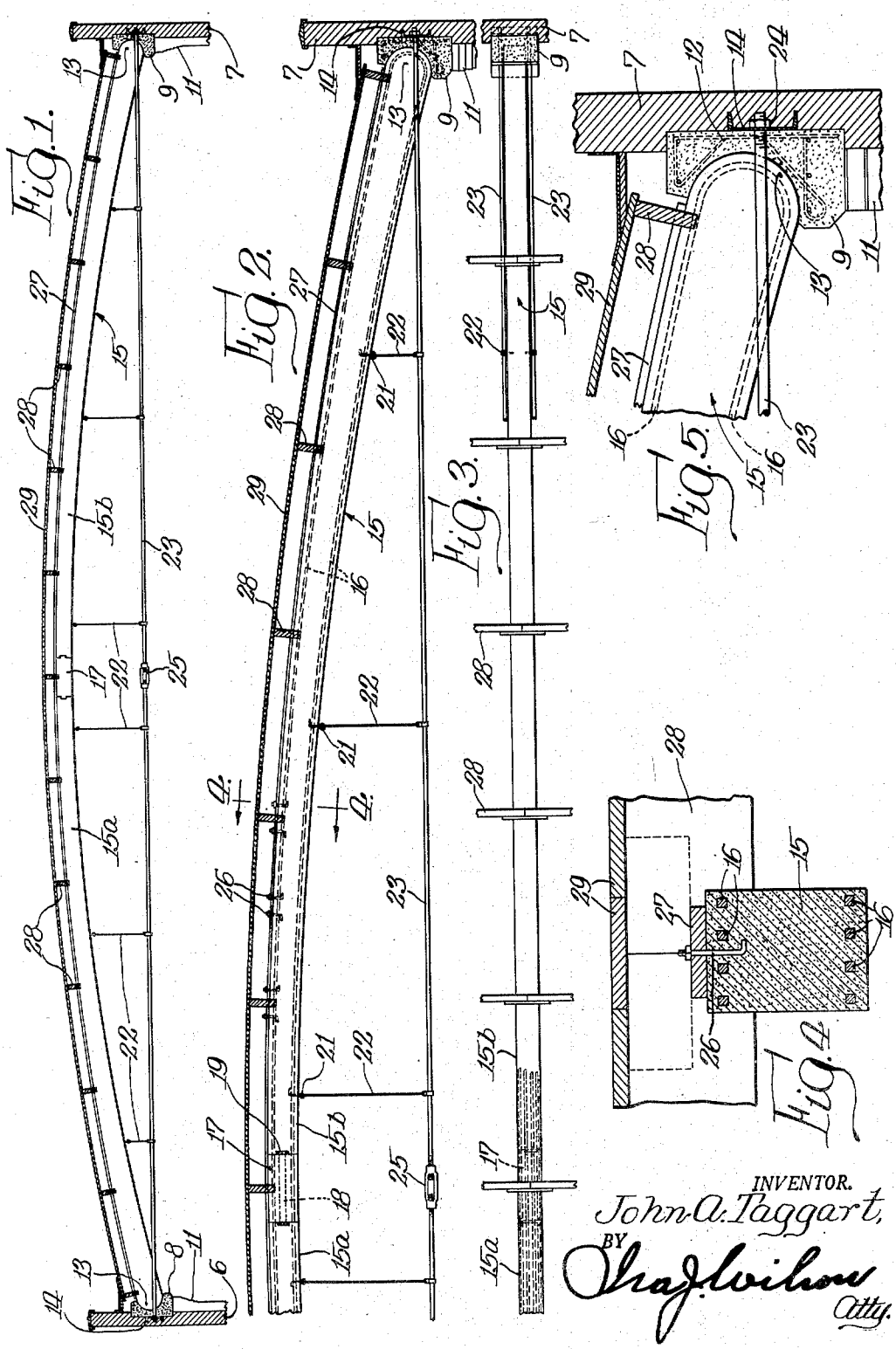

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 5.

Fig. 4

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BUILDING CONSTRUCTION

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2 Claims. (Cl. 108—1)

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This invention pertains to building constructions and more particularly to structures in which a low roof and a large unobstructed area underneath is desired, such, for instance, as a hangar for large aeroplanes in which pillars, posts or other roof supporting means intermediate the walls would be objectionable.

One of the purposes of my invention is to provide a construction which will afford an entirely unobstructed floor area of large dimensions extending from wall to wall of the building and which will provide for such area a low covering or roof, thus minimizing the cubical contents of the building and thereby minimizing the cost of heating the enclosed space.

Another purpose of my invention is to provide a construction which will not only be strong and durable, but one which can be erected with a minimum of labor and which will be constructed principally of reinforced concrete so as to reduce the amount of wood required, thereby effecting a saving in lumber.

Another purpose is to provide an arched structure which will possess a maximum of strength and carry when required heavy loads, such as the weight of snow or sleet. Furthermore, my invention contemplates tying the arch abutments or supports together so as to prevent possible spreading with resultant collapse when subjected to heavy loads.

Another feature of my invention is the provision of means incorporated in the construction of the arch members whereby the effective length of said members, and thereby the amount of curvature of the height of the arch, may be regulated during construction to adjust the height of the arch members to a common horizontal plane.

Other purposes and advantages of my invention should be readily appreciated as the same becomes better understood by reference to the following description when considered in connection with the accompanying drawing.

Referring to the drawing,

Fig. 1 is a fragmentary transverse sectional view through a building structure built in accordance with my invention;

Fig. 2 is an enlarged fragmentary view of the construction shown in Fig. 1;

Fig. 3 is a plan view of the structure shown in Fig. 2;

Fig. 4 is a fragmental sectional view on the line 4—4 of Fig. 2; and

Fig. 5 is an enlarged view of the end portion of the structure shown in Fig. 2.

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Referring to the drawings more in detail, reference characters 6 and 7 indicate fragments of the upper portions of the side walls of a building construction. Upon each of these walls there is mounted somewhat above ceiling height a series of saddles arranged on opposite walls in pairs, the saddles of one pair being illustrated in Fig. 1 and designated by reference characters 8 and 9, respectively. The pairs of saddles are arranged in spaced apart relation along each wall and each saddle is supported in position by a pilaster 11 or other preferred means of support.

The saddles are preferably of concrete construction embodying reinforcing bars or wires indicated generally by 12, and are shaped to provide arcuate bearing surfaces providing seats for the arch members to be later described, the seats of the saddles of each pair being disposed in opposed relation to receive the correspondingly shaped knuckles 13 of the arch members. A back plate 14 of channel shape or other preferred form extends along each wall back of the saddles. The plate may be continuous, extending back of a series of saddles, or such plate may be of a length approximating the saddle so that each saddle is provided in effect with an individual plate.

The arch member designated generally by reference character 15 is formed of reinforced concrete providing an elongated curved body in which the reinforcing members 16 are embedded. When the span to be traversed is not too great, the arch member may be in one piece extending from saddle to saddle, but in most instances, particularly where the span is of considerable length, the member will be composed of two sections or elements indicated in Fig. 1 by reference characters 15*a* and 15*b*, respectively. The outer or knuckled ends of these elements are seated in their respective saddles and between their inner opposed ends is interposed a key or spacer 17 which completes the member and by spacing the ends of the elements apart determines the height of the center of the arch.

Referring to Fig. 2, it will be observed that the spacer 17 comprises a spacing element 18 which is in the form of a compression bar of steel or the like interposed between the elements 15*a* and 15*b*. The spacing effect of this bar or element can be regulated by the insertion between one or both of its ends and the opposed end of the arch element of one or more metal shims or wedges 19, so that by the employment of such shims the spacing of the elements 15*a*

and 15b apart, and consequently the height of the arch center, may be regulated.

As will be apparent from Figs. 2 and 3, the reinforcing bars 16 project beyond the inner ends of the arch elements 15a and 15b into the space around the spacer element 18. After the height of the arch has been fixed by the employment of the requisite shims as above explained, the space between the elements 15a and 15b is filled with concrete to complete the spacer by forming in effect a continuation of the arch elements in which the spacer element 18 and the projecting ends of the reinforcing member 16 are embedded.

The arch elements are preformed in suitable molds, and after being hardened or set are lifted into position by a crane or other suitable means for raising and positioning the elements. The molds in which the arch elements are formed are provided with eyes 21 which become anchored in the body of the arch members, from which are suspended hangers 22 by which the tie rods 23 are supported intermediate their ends.

These tie rods are disposed between the arch members and preferably, as shown, closely adjacent to each side face of each arch member. The threaded ends of the tie rods extend through the back plates 14 where they are anchored by nuts 24, preferably equipped with means to prevent accidental loosening. The tie rods serve to prevent spreading apart of the saddles under the influence of the arch members and the distance between the saddles may be regulated to some degree by employment of a turnbuckle 25, which may be utilized in addition to the nuts 24 for imposing tension upon the tie rods. The variation in the length of tie rods provided for by these adjustments, together with the spacing element adjustment afforded by the shims 19, enables the crowns of the arches of any construction to be adjusted so that they all lie in a common horizontal plane.

Each arch member when it is formed has also anchored therein at spaced intervals a series of bolts 26 by which a wooden top plate 27 is secured to the upper face of the member. Stringers 28, notched to fit over the top plate and the upper portion of each arch member, extend transversely of the arch members and provide a support for a cover 29, which may constitute a base for suitable sheet roofing or it may constitute the supporting structure of a floor, if the building construction comprises more than one story.

My invention in one of its preferred forms and many of the advantages in construction, strength and durability will be apparent from the foregoing. It should be understood, however, that the structural details shown and described are illustrative only, and may be varied within considerable limits without departing from the essence of my invention as defined in the following claims.

I claim:

1. A building construction, comprising a pair of opposed saddles, an arch member fitted at its ends in said saddles, said arch member consisting of a plurality of reinforced concrete elements and a key member interposed between the opposed ends of said elements, said key member consisting of a spacing element and shims interposed between the arch member elements and the spacing element, a concrete filler surrounding said spacing element and filling the space between the opposed ends of said arch elements, a series of bolts anchored in and projecting upwardly from each arch element, a plate secured to the upper face of said arch elements by said bolts, stringers extending transversely across said arch elements and a covering supported on said stringers.

2. A building construction, comprising a pair of opposed saddles, an arch member fitted at its ends in said saddles, said arch member consisting of a plurality of reinforced concrete elements and a key member interposed between the opposed ends of said elements, said key member consisting of a spacing element and shims interposed between the arch member elements and the spacing element, a concrete filler surrounding said spacing element and filling the space between the opposed ends of said arch elements, a series of bolts anchored in and projecting upwardly from each arch element, and a plate secured to the upper face of said arch elements by said bolts.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,761,306	McKeown	June 3, 1930
2,339,095	Miller	Jan. 11, 1944

FOREIGN PATENTS

Number	Country	Date
758,808	France	1933
105,824	Australia	1938
550,439	Great Britain	1943

OTHER REFERENCES

Architectural Record, pages 43–45 of January 1936 issue.