Jan. 3, 1928.

1,654,625

W. E. WILSON

ARCHED RIB

Filed Aug. 13, 1926

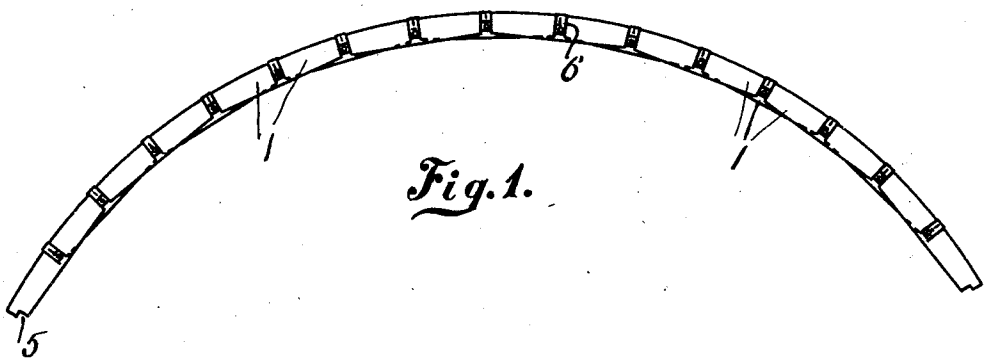


Fig. 1.

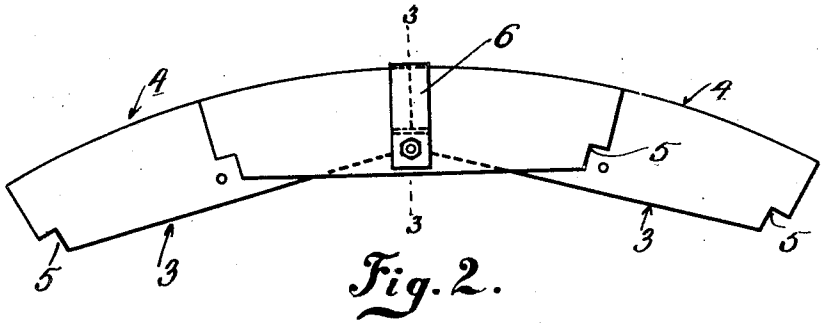


Fig. 2.

Fig. 3.

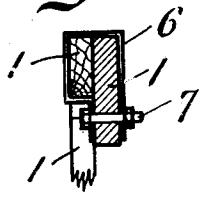
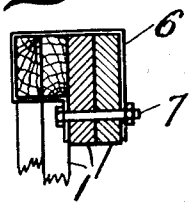


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ARCHED RIB.

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My invention relates to a structural supporting unit and it has particular reference to an arched rib for general use in building. The objects of the invention are to provide a simple, economical, light and strong arched structure which is of maximum strength, which is adaptable to varying spaces without alteration or change, which may be quickly assembled and set up, and which is adaptable to various methods of support.

Another object of the invention is to provide an arch structure with substantially a constant cross-section.

Another object of the invention is to provide a structural arcuate rib which may be constructed of thin material and in which the strength of a portion of the rib may be increased to meet certain requirements without affecting the other part of the rib.

A further object of the invention is to provide a composite arched structural unit in which the details of same may be standardized.

My invention consists of an arch structure composed of a plurality of preformed members or units conjoined in end to end relation to form an arched rib, the units being interchangeable each with the other in any one rib.

It consists also of the individual unit, section or member which enters into the composition of the arch.

In the accompanying drawing I have illustrated a form of embodiment of the invention, which it will be apparent is susceptible of many modifications and changes, without departing from the spirit of the invention.

Fig. 1 is a front elevation of an arched rib made according to my invention.

Fig. 2 is an enlarged view of a portion of an arched rib made according to my invention.

Fig. 3 is a sectional view of line 3—3, Fig. 2, showing a means of connection for the units, and

Fig. 4 is a sectional view showing a plurality of arch units in conjoined co-operation to form an arch or a portion thereof.

Referring particularly to the form of embodiment of the invention shown in the accompanying drawing, the arched rib is shown as composed of a plurality of units, sections or members 1, of any suitable material and formed for interfitting relation in a composite rib. For this purpose, and specifically referring to the adaptation of the invention as illustrated, the respective ends of each unit, section or member 1 are so formed as to constitute radii of any curve of a rib in which the member, unit or section forms a component part, that is to say, the respective ends of each member, unit or section is cut at such an angle to the longitudinal axis thereof as to be in a radial line of any curve of the rib which the unit or member is a component part, and hence the resultant product of a plurality of these units or members placed end to end and interlocked in manner set out later is a composite arched or curved rib, the curve of the arch representing the aggregate curvature of the individual units, or sections. I have shown each unit or section provided with a bottom plane surface 3, and a top curved surface 4. This form of unit is especially desirable and adaptable for roof constructions, concrete forms and other structures requiring smooth or substantially smooth surfaces.

Both the units may be constructed and made with top and bottom edges parallel. Where wood is used in making up the units 1, I prefer to notch or indent the bottom edges of each unit, as shown at 5, at each end of each unit, though this is not necessary for insuring the required rigidity and stability.

Each unit is provided with a band, strap, sleeve or stirrup 6, which is secured thereto in any desirable manner, as by bolt 7, and which extends partly around and laterally of each unit. The notched or indented ends of two or more units, members, or sections 1 are arranged to be fitted in and supported in end to end relation by the stirrups provided on other units which are also arranged in end to end relation. Since each unit is provided with a laterally extending stirrup or band 6 for receiving the abutting ends of two or more other units, sections, or members 1, it will be obvious that the structural arch is composed of at least two arches arranged side by side and conjoined by the means stated, and that in each arch composed of a plurality of units, members or sections arranged end to end, the engagement of the respective ends of certain of the units occurs at points removed from the ends of certain other of said members, sections or units, thereby breaking the joints in the units of the associated arches. It will be obvious that any desired number of units, sections or members may be conjoined in side by side relation to meet needed requirements in point

of strength of the complete arch. A structure of this type is illustrated in Fig. 4. This figure also shows how an arch composed according to Fig. 3, that is where but two series of units are arranged side by side, may be strengthened in part without interfering with the rest of the arch. Since all the units 1 are interchangeable, the addition of one or more of them in side by side position requires the addition only of a larger stirrup to accommodate the increased thickness. In this wise an arch of varying strength may be readily and quickly constructed without any alteration of the units, other than in the respect stated regarding larger stirrups, or conjoining means. Since the units constituting the components of an arch are preformed and are uniform in shape, and dimensions, they are interchangeable each with the other in any particular rib and hence a standardization of the arch details is possible.

The series of arches, each of which is composed of a plurality of sections or units having butt joints and the sections mutually interlocked, may be multipled as desired and required for particular needs. By this butt joint arrangement I obtain an end to end grain bearing, which permits of higher stresses.

It will be understood that the units described herein constituting components of an arched rib may be made of any material suitable for the purpose, and need not be segments of a curve, or notched or indented.

What I claim is:

1. A structural rib comprising a series of arches composed of arch members arranged in end to end relation, and means carried by each of said members to support adjacent members in end to end relation.

2. A structural rib comprising a series of arches composed of arch members, and means on each of said members and inward from the ends thereof to support and mutually conjoin the members of said arches in end to end relation.

3. A structural rib comprising a series of arches composed of arch members disposed in end to end relation, and means intermediate each of said members to receive and support the ends of other members.

4. A structural rib comprising a series of arches composed of arch members arranged along the longitudinal axis of an arch and in end to end arrangement and means carried by each of said arch members to receive and support the abutting ends of adjacent members.

5. A structural rib comprising a series of arches composed of arch members arranged along the longitudinal axis of an arch and in end to end engagement, and a sleeve on each of said members and extending to one side thereof to receive and support the abutting ends of adjacent members.

6. A structural rib comprising a series of arches composed of arch members the respective ends being at an angle coincident with the radius of the curve of the arch and in mutual engagement, and means on each of said members for supporting the abutting ends of adjacent members.

7. A member for forming a component part of an arch, the ends of said member being in a plane coincident with the radius of an arch and provided with a metal sleeve at one side thereof to receive, support and conjoin other members and form a composite arch.

8. A member for forming a component part of an arch, said member having its respective ends indented and in a plane coincident with the radius of an arch, and a laterally extending means on and inward from the ends thereof to receive the abutting indented ends of adjacent members.

In testimony whereof I have set my hand.

WINFRED E. WILSON.