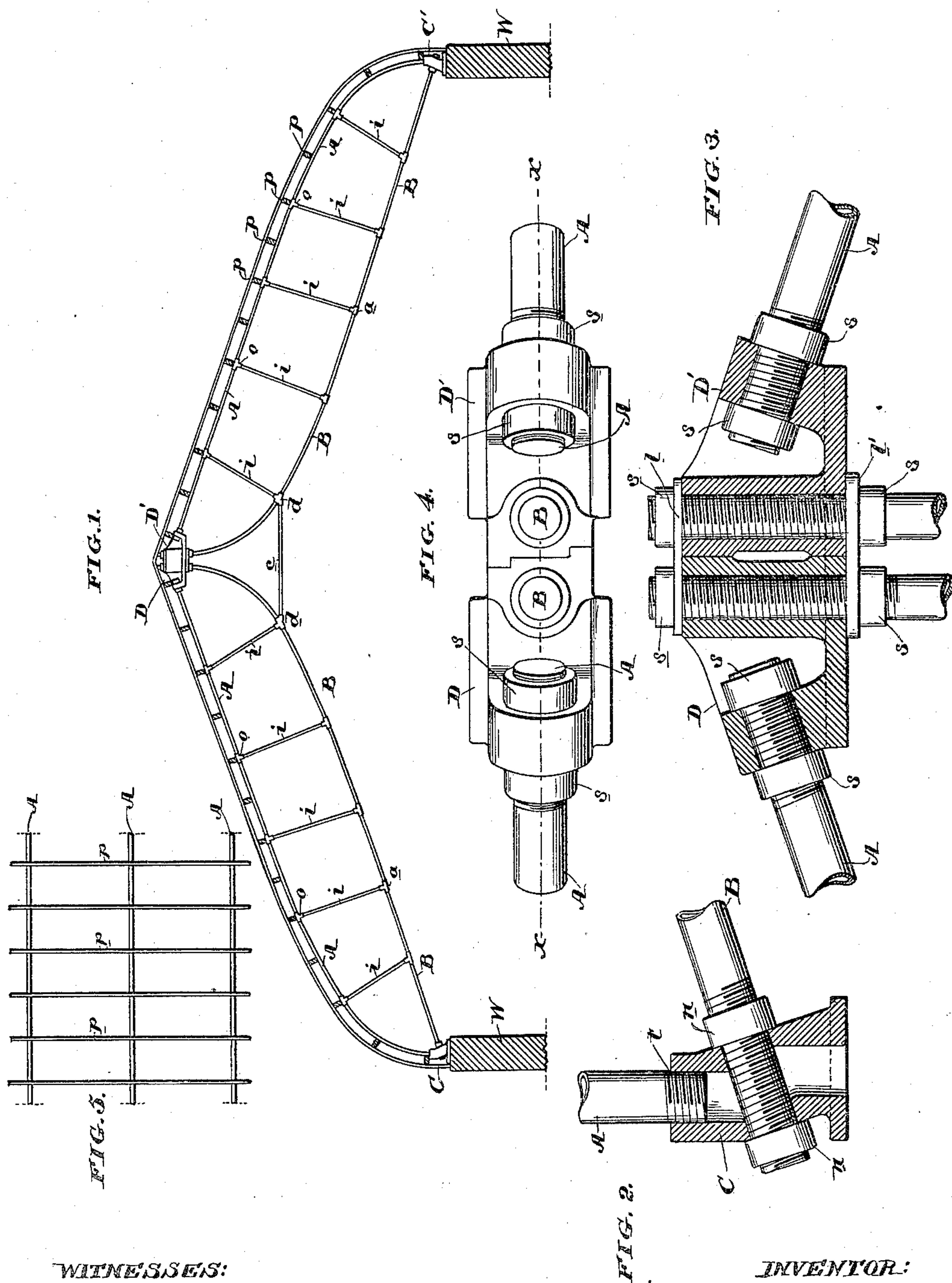


(No Model.)

F. SCHMEMANN.
TUBULAR PARABOLIC ROOF STRUCTURE.

No. 432,771.

Patented July 22, 1890.



WITNESSES:

David S. Williams

Becky J. Schumann

INVENTOR:

Friedrich Schumann,
By his attorney,
Hornee Pettit.

UNITED STATES PATENT OFFICE.

FRIEDRICH SCHMEMANN, OF PHILADELPHIA, PENNSYLVANIA.

TUBULAR PARABOLIC ROOF STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 432,771, dated July 22, 1890.

Application filed December 14, 1889. Serial No. 333,815. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH SCHMEMANN, of the city of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Tubular Parabolic Roof Structures; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

My invention has relation to roof structures; and it consists in reversed parabolic tubular trusses, as hereinafter particularly set forth and described.

The object of my invention is to produce a light and strong roof structure, doing away with the necessity of a horizontal lower chord, and thus giving a clearance of roof-space, and being especially adapted to long spans.

In the accompanying drawings similar letters of reference refer to similar parts throughout.

Figure 1 is an end or cross-sectional view of my improved reversed parabolic roof-truss, showing its bearing on the side walls or posts and the shoe-fittings connecting the various parts. Fig. 2 is the lower or abutment shoe-casting, into which the lower ends of the upper and lower chords are fitted and connected. Fig. 3 is a cross-sectional view of the upper or apex casting on the line $x x$ of Fig. 4, into which the upper ends of the upper and lower chords are fitted and connected, and which casting connects together the trusses of each side of the roof structure. Fig. 4 is a plan view of the casting shown in Fig. 3. Fig. 5 is a plan view of the roof structure, showing the purlins in connection with the upper chords.

The upper chord A forms in its lower part a common parabola and in its upper part a tangent thereto. The lower chord B forms in its upper part a common parabola and in its lower part a tangent thereto. These upper and lower chords A B are connected at their lower ends by the shoe-castings C C', which is provided on the top with a screw-tap t to receive the pipe of the upper chord and in its lower part with a cylindrical hole, into which the lower end of the lower chord B is loosely fitted. This lower end of the chord B

is provided with a long screw-thread, and is secured into the shoe-casting C by means of the lock-nuts $n n$.

D D' represent the upper or apex casting, into which the upper ends of the upper and lower chords A and B are respectively secured. The upper ends of the two chords fit loosely into cylindrical holes provided therefor in the castings D D' and are secured thereto by lock-nuts s , which are screwed upon a long screw-thread provided on the upper ends of the said chords A B. The upper ends of the two chords of the parabolic trusses being thus connected and secured by the castings D D', respectively, the two trusses are connected and secured together by means of two metal plates $l l'$, the one on the top and the other on the bottom of the castings D D', through which the upper ends of the lower chords B pass, respectively, and upon which the lock-nuts s turn. The two castings D D' thus practically form one, and the double parabolic trusses of the respective sides of the structure are thus securely and firmly united.

The upper and lower chords A B of the trusses are connected together in their intermediate parts by means of the pipe-posts i and the screw-threaded sleeve-fittings o , which are of ordinary construction. A short horizontal pipe-connection c is preferably employed, as shown in Fig. 1, connecting the parabolas of the lower chords B by means of the castings d , in order to give additional strength and steadiness to the structure.

The upper chords of the trusses are connected by the purlins p laid across and on top of the said upper chords A and at right angles thereto. These are of ordinary construction, either of wood or of iron, and are secured to the upper chords by vertical bolts running through the purlin p and the chord A. When wooden purlins are employed, the wooden sheeting or covering is nailed on top directly thereto. When metal purlins are used, cross-braces run from the top of one metal purlin to the other at right angles to the purlin and parallel with the upper chord A. Upon this superstructure the sheeting or slating is secured by hooks or by other suitable means.

The number of double parabolic trusses employed, stretching from wall to wall, is regulated according to the strength desired, at, however, usual intervals. The strains produced on the lower parabolic chord have an inclined inward direction which will be transmitted in a vertical direction to the central top casting $D D'$ and in an inclined inward direction to the shoe-casting $C C'$. The upper chord transmits the load or strain directly vertically through the shoe-casting $C C'$ to the wall W and to the top castings in an inclined direction.

This truss is preferably constructed of wrought tubular iron or steel pipe, welded or riveted, and joined together by ordinary screw-threaded sleeve-sockets.

This double reversed parabolic truss is also especially adapted for cupolas, giving to the same a graceful appearance, combined with rigidity and lightness of construction.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a roof structure, a truss having a tubular upper chord provided with a parabola at its lower end and a tangent thereto, in combination with a lower chord and pipe-posts connecting the same, substantially as hereinbefore set forth and described.

2. In a roof structure, a truss having an upper parabolic chord, in combination with a lower chord having a parabola tending inward and upward at its upper end and a tangent thereto at its lower end and posts connecting the said upper and lower chords, substantially as hereinbefore set forth and described.

3. A truss containing a tubular parabolic upper chord, in combination with a reversed tubular parabolic lower chord, pipe-posts connecting said upper and lower chords and fittings connected thereto by means of screw-threads and slipped loosely over the chords, substantially as hereinbefore set forth and described.

4. A truss containing an upper parabolic tubular chord and a lower reversed parabolic tubular chord, in combination with the pipe posts and fittings connecting the same, lower shoe-castings into which the upper and lower chords are secured, an upper or apex casting connecting the upper ends of the upper and

lower chords and connected together by plates or otherwise, substantially as hereinbefore set forth and described.

5. A truss containing upper and lower tubular parabolic chords, in combination with pipe posts and fittings and upper or apex castings connecting the chords, substantially as hereinbefore set forth and described.

6. A truss having an upper tubular parabolic chord and a lower reversed tubular parabolic chord, in combination with pipe-posts connecting the same by means of fittings, lower shoe-castings and upper or apex castings into which the upper and lower chords are respectively fitted and plates connecting the upper castings of the two trusses, substantially as hereinbefore set forth and described.

7. A truss having an upper tubular parabolic chord A and a lower reversed tubular parabolic chord B , in combination with pipe-posts i , connecting the upper and lower chords $A B$, the shoe-fittings $C C'$, the upper castings $D D'$, plates $l l'$, connecting the upper castings $D D'$, the short horizontal pipe-connection c , connecting the parabolas of the lower chords B , and the superstructure and purlins p , substantially as hereinbefore set forth and described.

8. A truss having an upper tubular parabolic chord A and a reversed tubular parabolic chord B , in combination with pipe-posts connecting the upper and lower chords by suitable fittings, shoe-castings $C C'$, provided with a tap t , into which the lower end of the upper chord is fitted, and a cylindrical hole into which the lower end of the lower chord is loosely fitted and secured thereto by means of the lock-nuts $n n$, upper or apex castings $D D'$, provided with two cylindrical holes, respectively, into which the upper ends of the upper and lower chords are loosely fitted and secured therein by means of lock-nuts $s s$, connecting-plates connecting together the two castings $D D'$, substantially as hereinbefore set forth and described.

In witness whereof I have hereunto set my hand this 3d day of December A. D. 1889.

FRIEDRICH SCHMEMANN.

Witnesses:

WILLIAM M. STEWART, Jr.,
HORACE PETTIT.