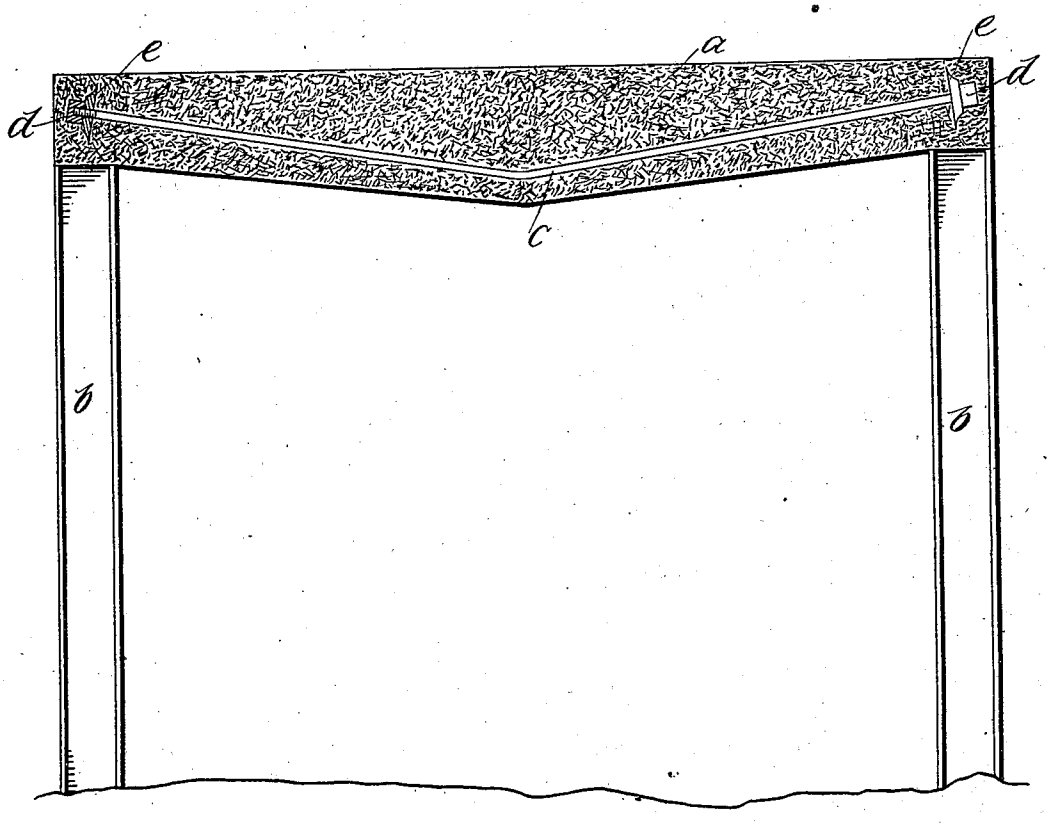
No. 724,500. PATENTED APR. 7, 1903.

A. A. RAYMOND.

TRUSS.

APPLICATION FILED AUG. 1, 1901. RENEWED AUG. 22, 1902.

NO MODEL.



Witnesses:
Mary W. Label.
Harvey L. Hanson.

Inventor:
Alfred A. Raymond,
By Charles A. Brown Cragg & Belfield
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALFRED A. RAYMOND, OF CHICAGO, ILLINOIS.

TRUSS.

SPECIFICATION forming part of Letters Patent No. 724,500, dated April 7, 1903.

Application filed August 1, 1901. Renewed August 22, 1902. Serial No. 120,681. (No model.)

To all whom it may concern:

Be it known that I, ALFRED A. RAYMOND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Trusses, (Case No. 3,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to building, sidewalk, and similar construction, and has for its object the provision of a concrete truss possessing the advantages of concrete construction and the strength and mechanical properties possessed by metal structure-work.

The device of my invention consists of a girder which to all appearances is completely composed of concrete or similar cemented substance, but which contains and incloses a tension-rod, causing this entire body of concrete to possess the attributes of a compression member, thereby completing the structure of the truss.

The device of the invention is completely constructed before being placed in position, being distinguished in this respect from structures formed partly of concrete or other cemented material and metal. The composite girders, of metal and concrete, may readily be assembled and located without any adjustment between the tension and compression members thereof, this previously having been effected in the manufacture of the device.

I will explain my invention more fully by reference to the accompanying drawing, illustrating a girder in longitudinal section supported upon two uprights.

The girder *a* is supported at its ends upon the uprights *b b*. This girder contains a tension-rod *c*, enlarged at its ends. This enlargement is preferably effected by having the ends of the tension-rod threaded to receive threaded caps *d d*. Inside of these caps are placed washers *e e*, that serve as abutments for the cement to prevent a longitudinal displacement of the same with respect to the tension-rod. The cement or concrete is molded completely about the tension-rod to entirely inclose the same. This tension-rod is bent at its middle portion somewhat in the shape of a bow, the girder being thickened at its middle portion to correspond to this bend in the tension-rod. One face of the girder is thus practically parallel with the tension-rod, having a corresponding projection at its central portion. The other face of the girder opposite the tension-rod is preferably flat.

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

As an article of manufacture, a composite girder formed of concrete or similar material in which is embodied a tension member of iron or steel provided with enlarged ends, said girder being plane upon the upper side and convex on the lower side, substantially as described.

In witness whereof I hereunto subscribe my name this 30th day of July, A. D. 1901.

ALFRED A. RAYMOND.

Witnesses:
GEORGE L. CRAGG,
HARVEY L. HANSON.