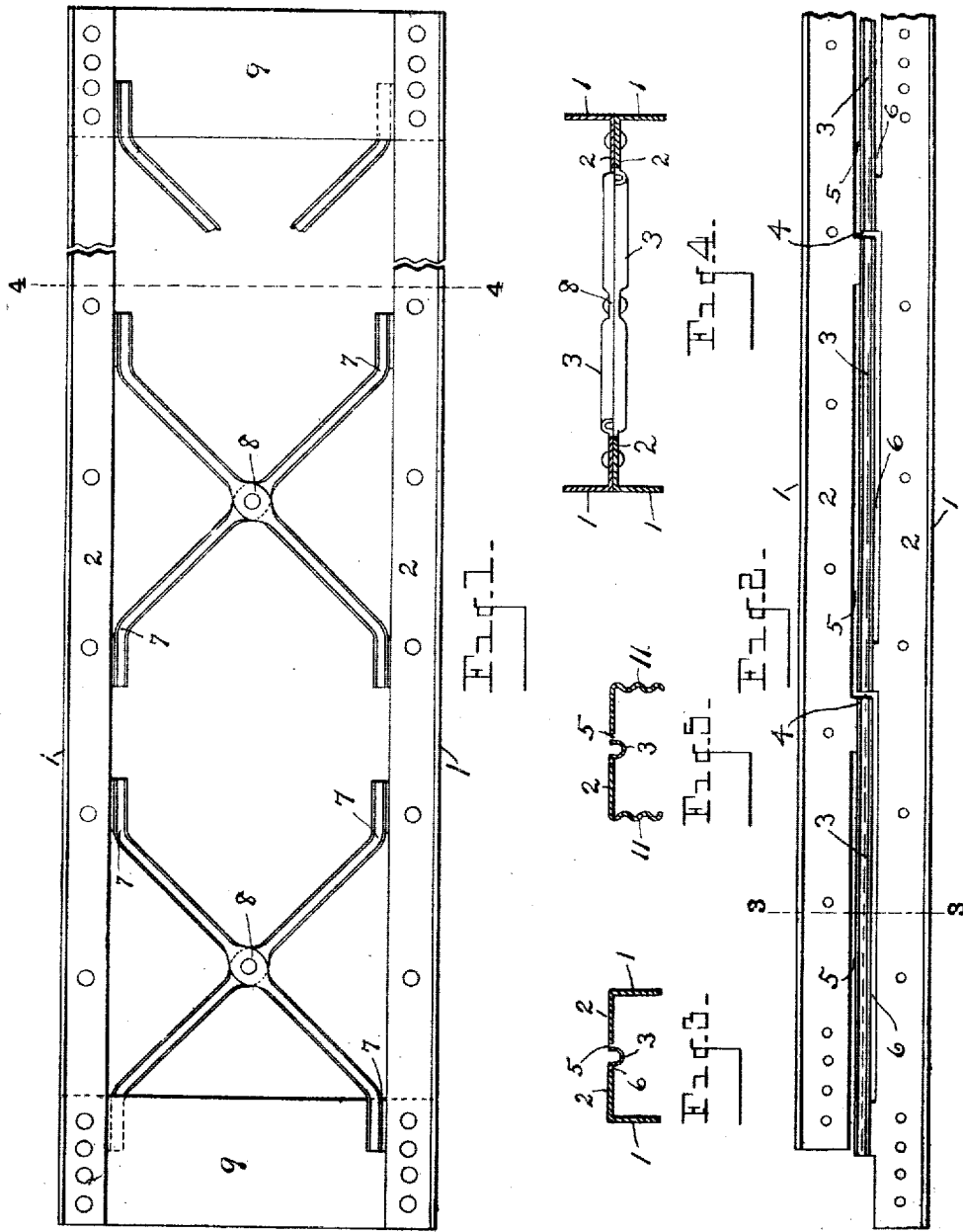


No. 866,140.

PATENTED SEPT. 17, 1907.

J. KAHN.
TRUSSED GIRDER.
APPLICATION FILED APR. 22, 1907.

3 SHEETS-SHEET 1.



Witnesses
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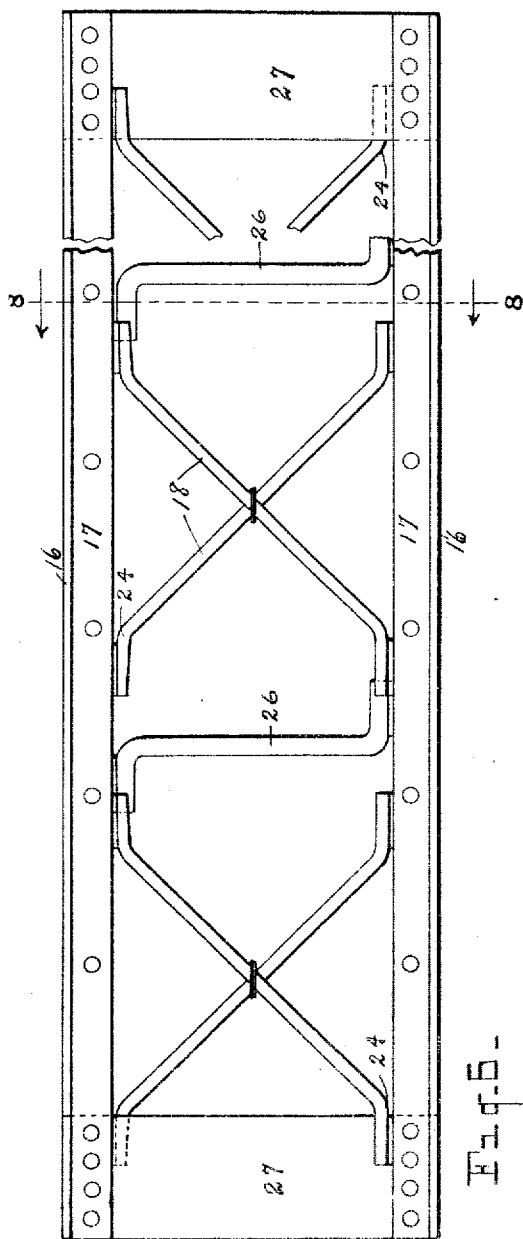
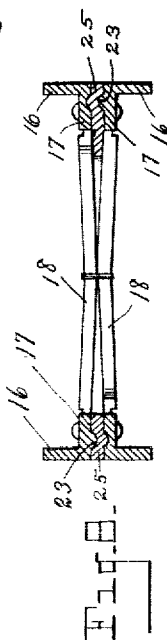
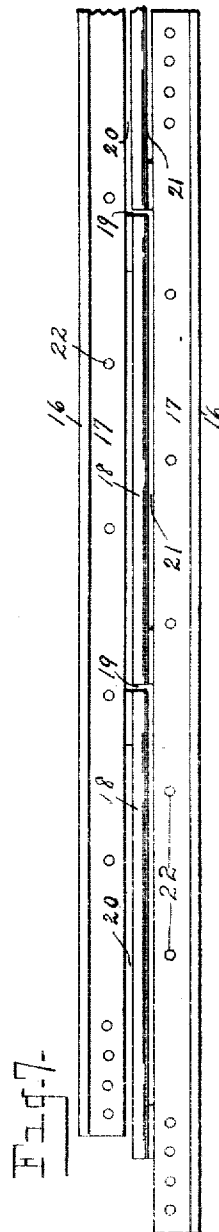
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3 SHEETS-SHEET 2.



Witnesses

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Inventor

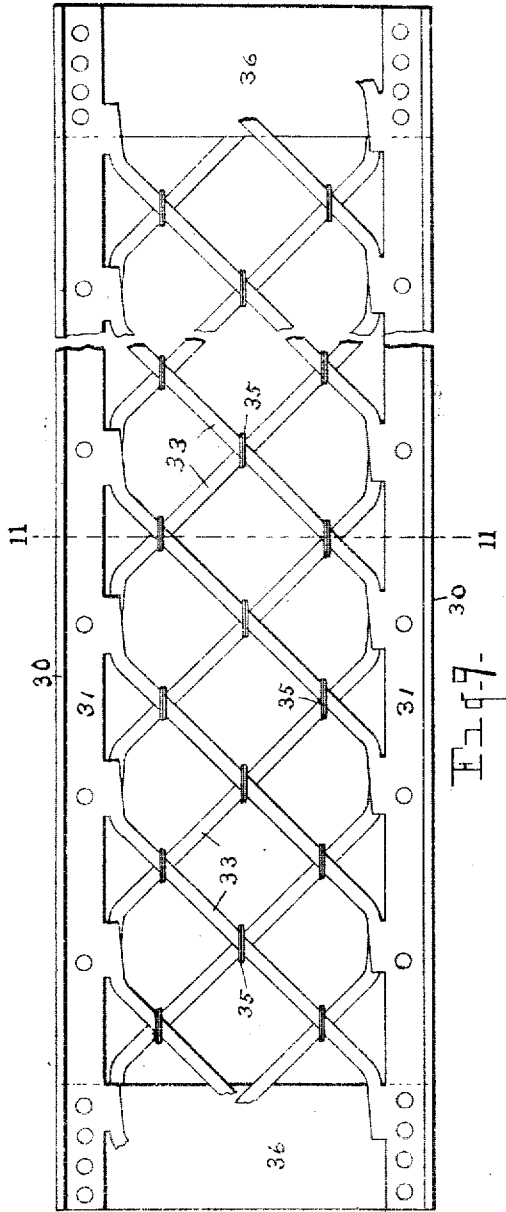
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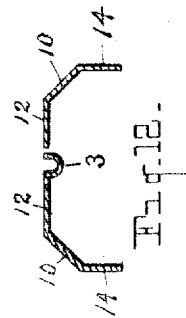
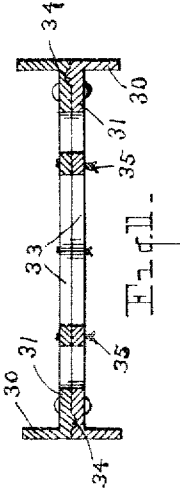
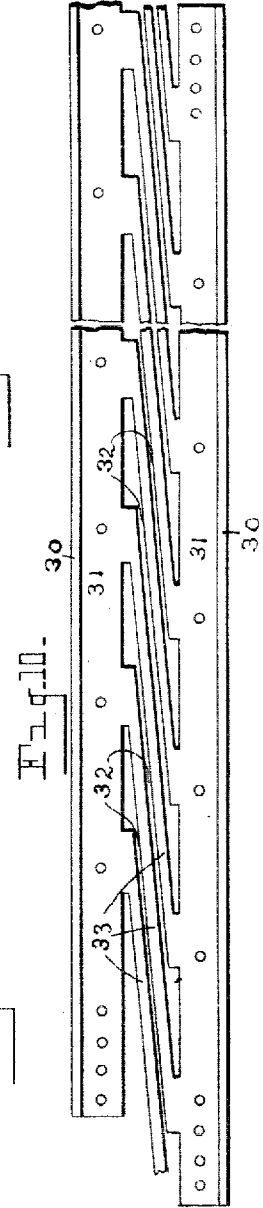
3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JULIUS KAHN, OF DETROIT, MICHIGAN.

TRUSSED GIRDER.

No. 866,140.

Specification of Letters Patent.

Patented Sept. 17, 1907.

Application filed April 22, 1907. Serial No. 369,478.

To all whom it may concern:

Be it known that I, JULIUS KAHN, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Trussed Girder, of which the following is a specification.

While plate girders and I beams are usually cheaper for moderate spans than trussed structures, they are cheaper only because of the cost of labor necessary to the production of the usual types of trusses. Much of the material employed in the common plate girders and I beams, particularly in the webs, is practically useless, and might be removed, not only with safety, but also with gain in carrying capacity, were the expense of removing the unnecessary metal not prohibitive. For spans of considerable length, much of the strength of plate girders and I beams is required to carry their own weight, and a much lighter structural member is as desirable, providing its carrying power is the same.

My present invention consists in a trussed girder of maximum carrying power for its weight, being built up of two part trusses, similar in construction, which, when secured together, form a light truss.

It consists further in the novel details of construction described in the accompanying drawings and particularly set forth in the claims.

In the accompanying drawings, Figure 1 is a side view of one form of truss embodying my present invention. Fig. 2 is a view of a channel beam properly machined, ready for expanding into a part-truss. Fig. 3 is a cross section on the line 3—3 of Fig. 2. Fig. 4 is a cross section on the line 4—4 of Fig. 1. Figs. 5 and 12 are cross sections of other forms of channel beams ready to be expanded. Fig. 6 is a view of another trussed girder embodying my invention. Fig. 7 is a view of the beam therefor machined ready for expanding. Fig. 8 is a cross section on the line 8—8 of Fig. 6. Fig. 9 is a view of another trussed girder embodying my invention. Fig. 10 is a view of the channel from which the part trusses of this girder are formed. Fig. 11 is a cross section on the line 11—11 of Fig. 9.

Similar reference characters refer to like parts throughout the several views.

In the construction of trusses for long spans and light loads, I have found that satisfactory girders can be made by using thin sheet steel, and that, owing to the small weight of the truss, considerable loading is permissible even on long spans. The sheet metal is first rolled in the form of a channel beam, as shown in Figs. 2 and 3, the flanges 1 being connected by a web 2. In the middle of the web a ridge or bead 3 is formed. The beam is then slotted transversely at 4, and slots

5 and 6 extend longitudinally from opposite ends of the slots 6. This machining of the beam forms upper and lower angles connected by semi-cylindrical members. The angles 1—2 are then separated, the members 3 bending at the points 7. The middle portions 8 of the diagonals 3 are flattened and punched, the angles, now the upper and lower members, are punched, thus completing the part-trusses. Two duplicate part-trusses are then secured together by rivets, plates 9 being secured between their outer ends, to take up the upward thrust of the supports, and the trussed girder is complete. When loaded, each member acts in the same manner as do the corresponding members of the well known Pratt truss.

As the strength of a truss depends virtually upon the strength of the upper and lower members and the distance between them, the diagonals requiring merely strength enough to resist the crushing stress occasioned by the loads, a light truss of this kind is of ample strength for a great variety of uses, and will carry loads on spans where an I beam would sag of its own weight.

To stiffen the upper and lower members of this type of truss, it is often desirable to corrugate the flanges as at 11 in Fig. 5, and in certain cases to form a portion 10 of the upper and lower members at an angle to the web 12 and flanges 14, as shown in Fig. 12. Many other forms of longitudinal members may be employed in this type of light trussed girder.

In Figs. 6, 7 and 8, another form of truss is illustrated, a form adapted for heavier loads than can be carried by the truss illustrated in Figs. 1, 2, 3, and 4. A channel beam is rolled with lateral flanges 16, web 17, and a bead or ridge 18 in the center of the web. Transverse slots 19 and longitudinal slots 20 and 21 are then cut and the holes 22 punched. The beams are formed with ridges or tongues 23 near one edge and a corresponding groove near the other edge. The beams are then expanded, the central portions 18 bending at the points 24. Each beam thus forms a part-truss, consisting of longitudinal upper and lower members and diagonal members integral therewith. The bead or tongue 23 on one part-truss will be at the top, on the other at the bottom, otherwise the two parts are duplicates. At the points where the diagonal members 18 cross each other they may be secured together in any desirable manner, such as wrapping with a light rod as shown in the drawing. An expanded plate consisting of longitudinal upper and lower members 25 and transverse members 26 may be fastened between the two part-trusses in order to stiffen the trussed girder. The various parts of this construction act like the corresponding members of a Howe truss. The plates 27 at the ends of the trussed girder take the thrust of the supports.

In Figs. 9, 10 and 11 another form of my improved truss is shown. The channel beam from which the part trusses are formed has flanges 30 and web 31. Diagonal slots 32 separate the connecting members 33, 5 and the upper and lower members are provided with ridges 34 and are punched for connecting rivets. When expanded and put together, the two part-trusses together form a trussed girder, and their diagonals 33 may be secured together in any desirable manner, a double wrap 35 of heavy wire being suitable engaging means. End plates 36 may also be employed.

The ridges or tongues 23 in Fig. 8, and 34 in Fig. 11 provide a strong lock between the longitudinal members of the part-trusses, preventing any lateral movement between them and insuring the transmission of any load stress to the next adjacent diagonals. The rivets all combine to prevent longitudinal movement between these parts.

Having now explained my improvements, what I claim as my invention and desire to secure by Letters Patent is:—

1. In a truss, the combination of two pairs of angle bars forming the upper and lower longitudinal members of the truss, two series of diagonal members inclined in opposite directions, each series integral with one of the upper and one of the lower angle bars, means to secure the diagonals together at their points of intersection, and vertical plates secured between the ends of the upper and lower longitudinal members of the truss.
2. In a truss formed of two part-trusses, each comprising upper and lower longitudinal members and diagonal members integral therewith, the diagonals of the part-trusses being inclined in opposite directions.

3. A part-truss comprising longitudinal upper and lower members in the form of angle bars, and diagonal members integral therewith. 35

4. A truss formed of two sheet metal part-trusses each comprising flanged upper and lower members and semi-cylindrical diagonal members connecting the same and integral therewith, the diagonal member of the part-trusses being inclined in opposite directions, and flattened at their intersections and there secured together. 40

5. A part-truss comprising upper and lower members, in the form of angle bars and an open work intermediate portion integral therewith.

6. A structural member formed of a plurality of sheet metal parts, one of them comprising longitudinal members, and grooved web members connecting the same and integral therewith. 45

7. A truss formed of a plurality of sheet metal part trusses, one of which comprises longitudinal upper and lower member, and grooved web members connecting the same and integral therewith. 50

8. A structural member formed of a plurality of parts one of which is formed by expanding a rolled section, and comprises a longitudinal member and an expanded web integral therewith. 55

9. A truss formed of a plurality of part trusses, one of which is formed from a rolled sheet or plate of steel, and comprising a longitudinal member and an expanded web integral therewith. 60

10. A structural member formed of a plurality of parts, each comprising outside longitudinal members and an expanded intermediate portion integral therewith.

In testimony whereof I have signed this application in the presence of two subscribing witnesses. 65

JULIUS KAHN.

Witnesses:

MAY BURLINGAME,
EDWARD N. PAGESEN.