No. 665,718. Patented Jan. 8, 1901.

H. J. ARMSTRONG.

BEAM.

(Application filed Mar. 16, 1900.)

(No Model.)

Fig. 1

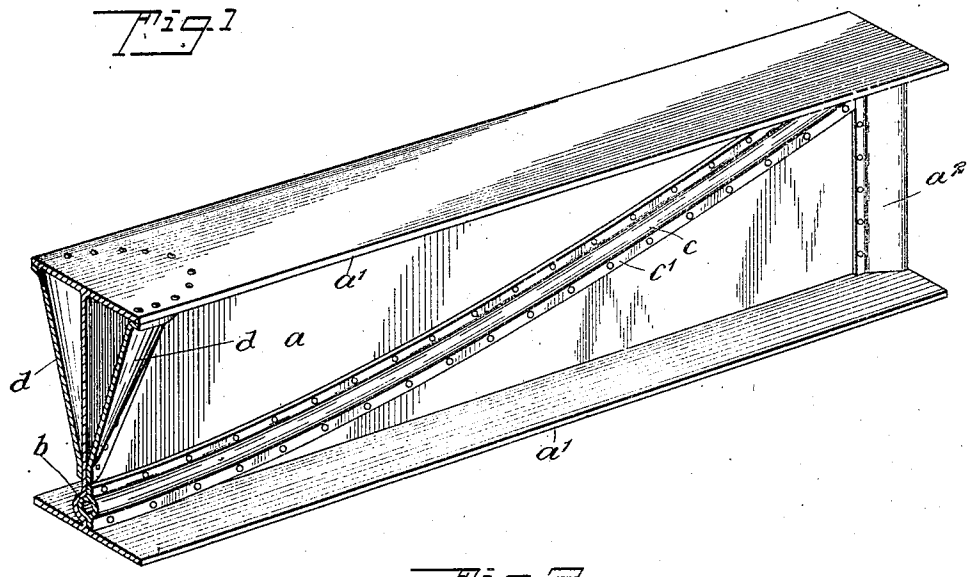


Fig. 2

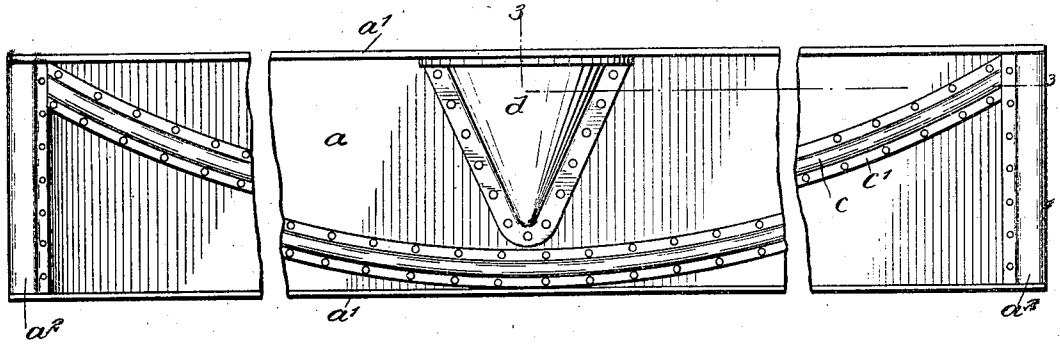
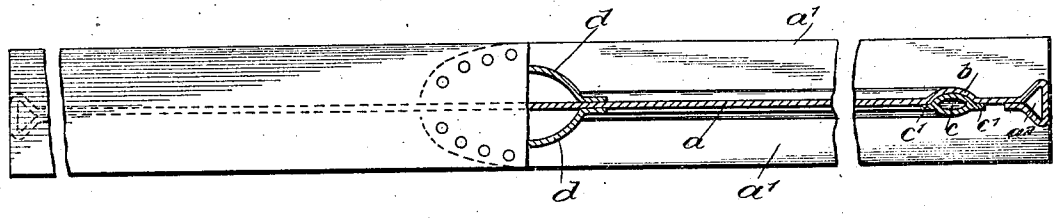


Fig. 3



WITNESSES:

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BEAM.

SPECIFICATION forming part of Letters Patent No. 665,718, dated January 8, 1901.

Application filed March 16, 1900. Serial No. 8,958. (No model.)

To all whom it may concern:

Be it known that I, HERBERT JAMES ARMSTRONG, a subject of the Queen of Great Britain, and a resident of Markdale, in the Province of Ontario and Dominion of Canada, have invented a new and Improved Beam, of which the following is a full, clear, and exact description.

This invention relates to a beam for use as a joist, girder, or the like and having a web provided with a truss which may be either formed integral therewith or fastened thereto and which lies wholly within the area of the web, so as to form a component part thereof, by which construction to give lateral strength to the beam and prevent the buckling thereof.

This specification is the disclosure of one form of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional perspective view of the invention, the section being taken at the center of the beam. Fig. 2 is a fragmentary side elevation thereof; and Fig. 3 is a plan view, with parts in section, on the line 3 3 of Fig. 2.

The beam here shown is an I-beam comprising a web or body a, with flanges a' at its top and bottom; but it is clear that the invention could be applied to beams of other form. According to the construction here shown the web of this beam is formed with an elliptical groove b therein, preferably struck up from the metal forming the beam and extending throughout the length of the beam, the middle of the groove being situate at the bottom edge of the beam and the ends being at the top edge thereof. In this groove is placed a tube c of metal, shaped in conformity with the groove and fastened to the beam through the medium of flanges c', which may be welded or riveted to the beam, as desired. By forming the groove b in the beam and placing the tube c therein the tube is situate with its longitudinal center coincident with that of the web a of the beam. This tube forms one chord of the truss, as will be understood. I preferably employ a metallic tube; but it is clear that the chord formed of the tube could be constructed solid in the form of a bar, plate, or the like.

Each end of the beam has the web turned back upon itself to form a hollow stanchion a^2, such stanchions being situate, respectively, at the ends of the chord formed by the tube c, so as to sustain the strain thereon. The middle of the beam is provided with two tapering metallic plates d, the bases or body portions of which are riveted or otherwise fastened to the upper flange a' of the beam and the apices of which extend downward into close proximity to the middle portion of the chord c. These plates d are essentially in the form of longitudinally-divided cones and have their edges secured to the web of the beam, so as to constitute a strut for communicating the strain on the beam to the chord c and also for stiffening the web of the beam.

It is pointed out that the truss forms a component, though not necessarily integral, part of the web of the beam, and the extent of the truss is therefore limited to the area of the beam. It is also pointed out that the beam thus constructed is so thoroughly braced as to enable it to stand a great deal more strain than the ordinary I-beam, since the truss formed in the beam communicates the strain to the ends thereof. By return-bending the ends of the web of the beam to form the stanchions a^2 the beam is capable of bearing great strain at these points, to which points the strain of the truss is communicated and weight bearing on top of the beam is communicated to the strut formed by the plates d, which in turn is borne by the chord c.

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

1. A beam, having a web, the ends of which are reinforced to form stanchions, a truss-chord formed on the web and having its ends anchored at the stanchions, and a strut formed at the middle of the web and communicating the strain to the chord.

2. A beam, having a metallic web with a groove formed therein, and a truss-chord laid and secured in said groove.

3. A beam having a metallic web, one end of which is formed with a return-bend extending throughout the width of the web to constitute a stanchion at said end of the beam.

4. An I-beam, having a truss-chord on the web thereof, and a strut formed of two plates situate at the middle of the beam one on each side of the web thereof, and fastened thereto to communicate the strain to the truss-chord.

5. A beam having a metallic web with a groove formed therein, and a tube laid in said groove and having flanges fastened to the web, the tube forming a truss-chord.

6. A beam, having a web, and a truss-chord sustained on the web and extending throughout the length of the beam, the truss-chord extending into the central plane of the web, and the longitudinal axis of the truss-chord coinciding with the middle of the thickness of the web.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT JAMES ARMSTRONG.

Witnesses:
W. H. THEAKER,
CHRISTINE RICHARDSON.