(No Model.)

E. M. BUTZ.

METAL BEAM OR GIRDER.

No. 304,798. Patented Sept. 9, 1884.

Fig. 1.

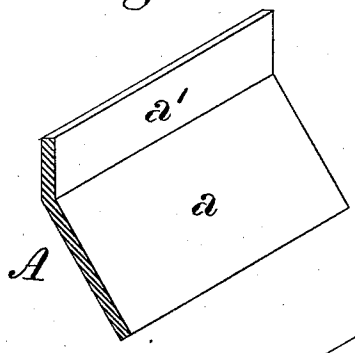


Fig. 2.

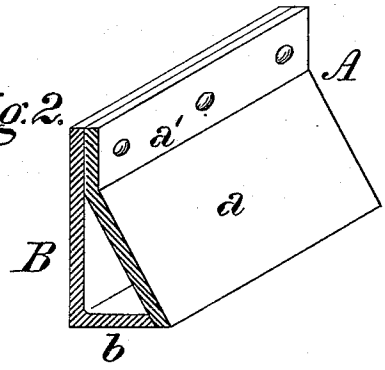


Fig. 3.

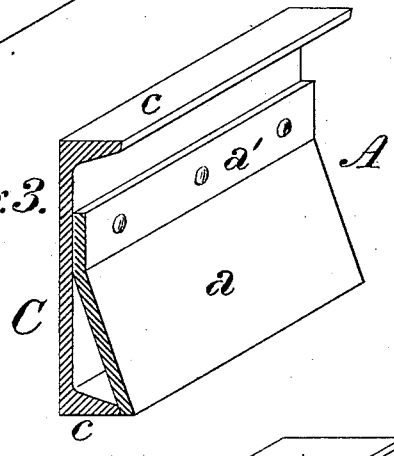


Fig. 5.

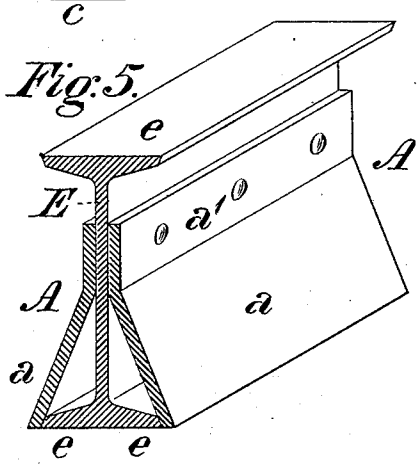
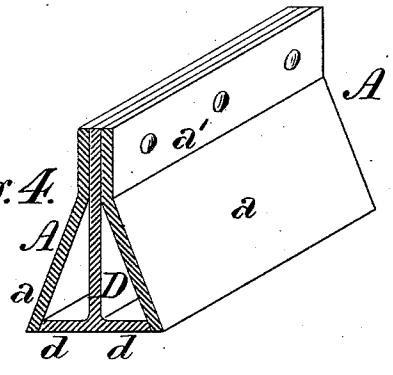


Fig. 4.



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METAL BEAM OR GIRDER.

SPECIFICATION forming part of Letters Patent No. 304,798, dated September 9, 1884.

Application filed June 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BUTZ, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Metal Beams or Girders, of which improvement the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a section in perspective of a metal shape plate or bar adapted for use in beams or girders embodying my invention; and Figs. 2 to 5, similar sections, illustrating the application thereof in beams or girders.

The object of my invention is to provide a beam or girder which will possess the qualities of strength, lightness, and capacity to act as a skewback or abutment for arches in buildings or other structures.

The improvement claimed is hereinafter fully set forth.

To carry out my invention I form of rolled metal a plate, A, of the shape in section shown in the several figures—to wit, that of a flattened V—having a longer side or inclined portion, *a*, inclined at an obtuse angle to its shorter side, *a'*, which in use is designed to stand vertically, and will be therefore termed its "vertical" portion. Said plate, so shaped, Fig. 1, may, under certain conditions, constitute singly the web of a beam or girder, but is not singly herein claimed, and is employed under my present invention as a lateral member in a built or composite beam or girder proper for buildings, bridges, or other structural purposes, instances of different forms of which are illustrated in Figs. 2 to 5, inclusive.

In the beam shown in Fig. 2 a shape, A, as above described, is connected, by bolts or rivets passing through its vertical portion *a'*, to a plate, rib, or web, B, of L-section, having a lower flange, *b*, which abuts against the inclined portion *a* of the plate A. Fig. 3 shows the plate A riveted to the rib or web of a channel-bar, C, having upper and lower flanges, *c c*, the lower flange of the bar C abutting against the inclined portion of the plate A; Fig. 4, a beam composed of two shapes A, of opposite inclination, respectively, secured to an interposed plate, rib, or web, D, of inverted-T section, and having lower flanges, *d*, which abut against the inclined portions of the plates A; and Fig. 5, a beam composed of two shapes A, of opposite inclination, respectively, secured to an interposed I-beam. E, having lower flanges, *e*, abutting against the inclined portions of the plates A.

In the several instances shown the distinctive functions of the shape A as a member of a composite beam, the same being (in addition to the accretion of strength due to its introduction) to provide an inclined lateral face and to act as a boundary of an internal air-chamber are similarly performed, and, as will be obvious, are independent of the specific form and construction of the rib or web with which said shape may be connected. For such reason I consider a rib or web of any suitable and approved section, when combined, as above set forth, with one or a pair of the shapes described, to be within the scope of my invention.

I claim herein as my invention—

The combination, in a composite beam or girder, of a metal plate of the shape or section described, and a rib or web connected directly to the vertical portion of said plate, and having an end flange abutting against the inclined portion thereof, substantially as set forth.

In testimony whereof I have hereunto set my hand.

EDWARD M. BUTZ.

Witnesses:
J. SNOWDEN BELL,
R. H. WHITTLESEY.