(No Model.)

E. M. BUTZ.

METAL BEAM OR GIRDER.

No. 304,794. Patented Sept. 9, 1884.

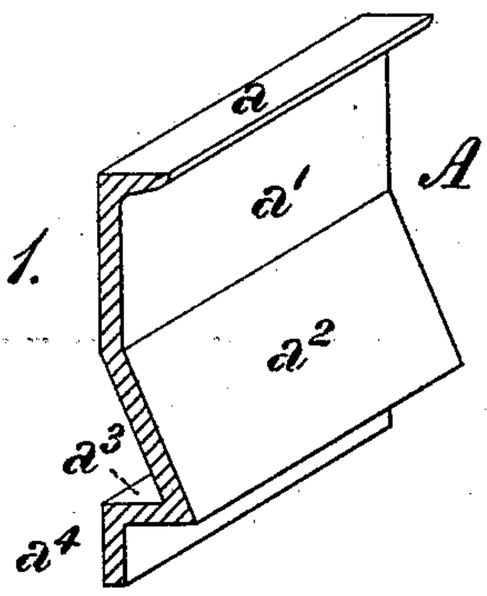

Fig: 1.

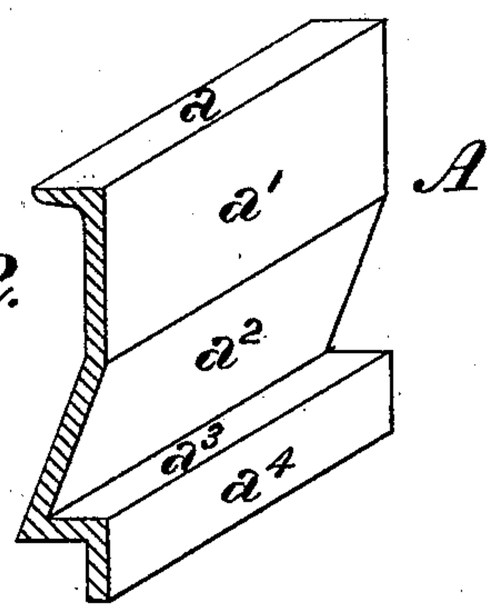

Fig: 2.

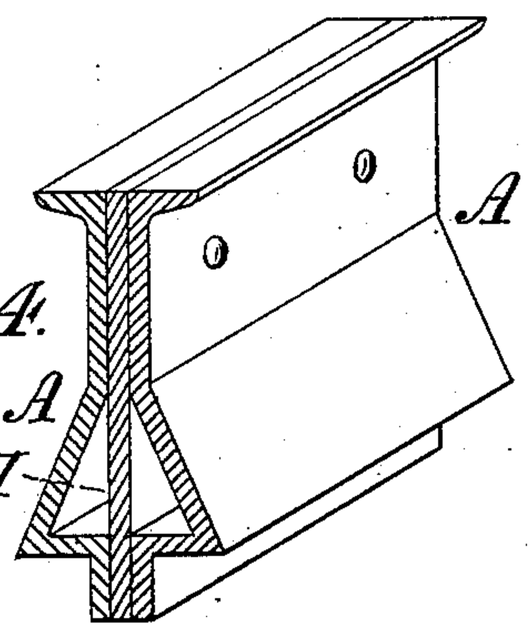

Fig: 4.

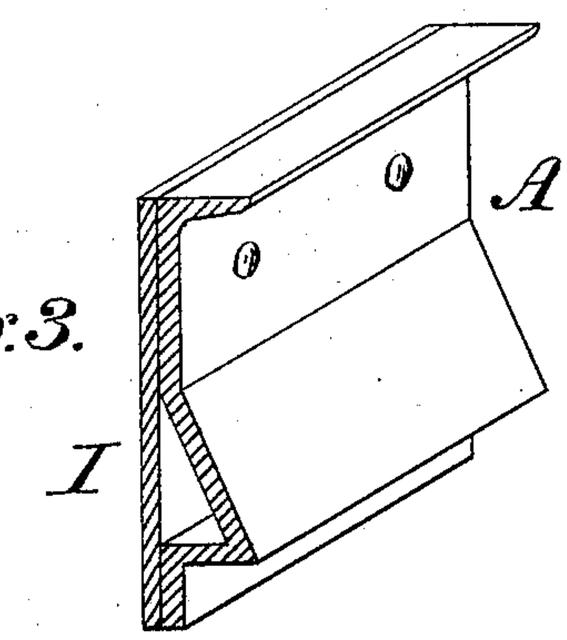

Fig: 3.

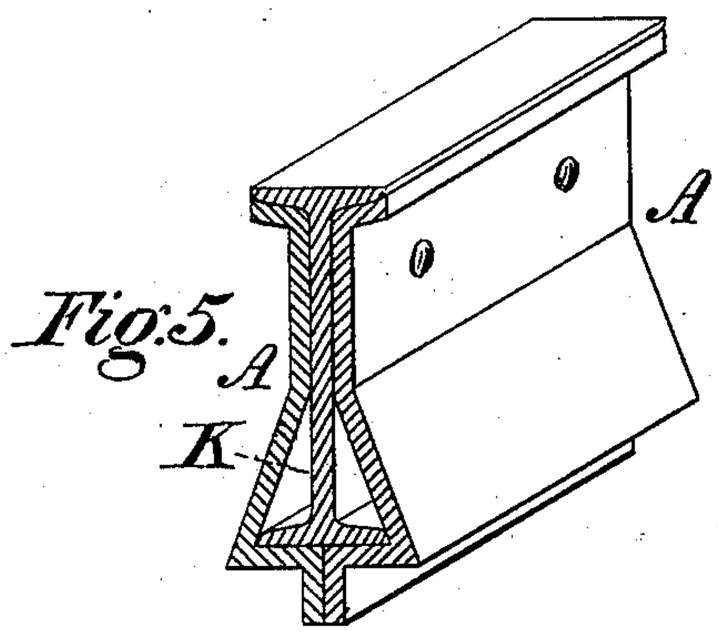

Fig: 5.

WITNESSES:

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EDWARD M. BUTZ, OF ALLEGHENY, PENNSYLVANIA.

METAL BEAM OR GIRDER.

SPECIFICATION forming part of Letters Patent No. 304,794, dated September 9, 1884.

Application filed March 28, 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; Fig. 2, a similar section of a plate having its inclined portion bent in opposite direction to that of the plate shown in Fig. 1; and Figs. 3 to 5, inclusive, similar sections of beams, illustrating, respectively, different structural applications of said plates.

My invention relates to beams or girders for buildings and other structures; and its object is to provide a light and strong beam having inclined sides or faces on its web, and suitable strengthening members above and below said inclined sides.

The improvements claimed are hereinafter fully set forth.

To carry out my invention, I form of rolled metal a plate, A, which is fully set forth in another application for Letters Patent by me filed December 13, 1883, Serial No. 114,431, (Case D,) and is therefore not claimed, *per se*, as of my present invention. Said plate is shaped as follows, to wit: having a continuous body bent into five different planes, arranged relatively as follows: The upper outer portion, a, of the plate is bent at or about at a right angle to the adjacent upper vertical portion, a', which is substantially in line with the lower outer vertical portion, a^4, or in a plane parallel, or nearly so, therewith. The next adjacent portion, a^2, is inclined at an obtuse angle to the upper vertical portion, a', and the next adjacent portion, a^3, is bent so as to connect the lower side of the inclined portion a^2 with the upper side of the lower vertical portion, a^4. There is thus provided in the plate an upper transverse member or flange, a, an upper vertical web, a', an inclined web, a^2, a transverse web, a^3, and a lower vertical web, a^4. Under my present invention I employ a plate so shaped as a lateral member in a built or composite beam or girder, instances of different forms of which are illustrated in Figs. 3 to 5, inclusive.

Fig. 3 shows a beam formed of a plain vertical rib, web, or plate, I, and a plate, A, of the shape described, connected to one side thereof; Fig. 4, a beam formed of two plates A, having their webs oppositely inclined, and a plain interposed plate or web, I; and Fig. 5, a beam formed of two plates A, having oppositely-inclined webs, and an interposed **I** beam or web, K.

It will be obvious that the form and section of the members, combined with one or more of the plates described, in the construction of a composite beam, may be varied in the judgment of the constructer, and I do not, therefore, limit myself to any specific form of connected web in said combinations.

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 abutting against a vertical web of said plate, substantially as set forth.

In testimony whereof I have hereunto set my hand.

EDWARD M. BUTZ.

Witnesses:

J. SNOWDEN BELL,

R. H. WHITTLESEY.