

UNITED STATES PATENT OFFICE.

EDWIN HANCOX, OF STOCKTON-ON-TEES, ENGLAND.

GIRDER.

No. 804,598.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWIN HANCOX, a subject of the King of Great Britain, residing at Stockton-on-Tees, England, have invented certain new and useful Improvements in Girders, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

10 This invention relates to girders for use in the construction of buildings and other structures; and the object thereof is to provide an improved girder for this purpose which is composed of separate parts connected with
15 or without the use of metal rivets, a further object being to provide a girder of the class specified which is simple in construction and comparatively inexpensive and which possesses a maximum of strength while involving
20 a minimum of weight; and with these and other objects in view the invention consists of a device of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

30 Figure 1 is a side view of a girder made according to my invention and having a double web; Fig. 2, a longitudinal section on the line $x x$ of Fig. 1; Fig. 3, a transverse section on the line $y y$ of Fig. 1; Fig. 4, a side view of a stiffening bar or brace which I employ; Fig.
35 5, an end view of the bar or brace shown in Fig. 4; Fig. 6, a section on the line $z z$ of Fig. 4, and Figs. 7 and 8 different side views of a lock-block which I may employ.

40 In the practice of my invention as shown in the drawings I provide a girder which comprises top and bottom plates A, which are similar in form and the adjacent surfaces of which are provided with longitudinal raised
45 portions or ribs A^2 , in which are formed longitudinal grooves A^3 , and the opposite edges of the plates A are thickened, as shown at A^4 , this construction being clearly shown in Fig. 3.

50 In the accompanying drawings I have shown a girder provided with two webs, and these webs are made of separate plates or sections B, connected at regular intervals by vertically or transversely arranged stiffening
55 bars or braces C, which are T-shaped in cross-section, and the cross-head portions of which

are provided with grooves C^2 , adapted to receive the ends of the plates or sections B, and the ends of said plates or sections B and the top and bottom edges thereof are thickened, 60 as shown at B^2 , and the thickened end portions of said plates or sections are inserted into the grooves C^2 , while the thickened top and bottom edges thereof are inserted into the grooves A^3 in the longitudinally-thick- 65 ened members or ribs A^2 on the adjacent surface of the top and bottom plates A.

When the parts A, B, and C are connected in the manner shown and described, the side walls of the grooves A^2 are compressed on the 70 top and bottom edges of the plates or sections B and the side walls of the grooves C^2 in the cross-section portions of the bars or the braces C are compressed on the ends of the plates or sections B, and this securely locks the sepa- 75 rate parts of the girder together.

The separate plates or sections B of the webs and the transversely or vertically arranged braces or bars C may first be connected, if desired, and the said webs may then be 80 secured in position between the top and bottom plates A of the girder.

It will be observed that the end braces or bars C are L-shaped instead of T-shaped in cross-section, and in the drawings forming 85 part of this specification I have shown two different forms of locking devices which may be employed. One of these forms of locking devices consists of irregular blocks D, having grooves D^2 and D^3 in two of their faces, and 90 in practice these blocks are connected with the top and bottom plates A and with the web portions of the brace or bars C, the edges of the top and bottom plates A and the web portions of the braces or bars C being inserted into the grooves D^2 and D^3 , the 95 walls of which are compressed thereon, and when used in this manner the blocks C form additional locks for securing the separate parts of the girder together and for rendering 100 the same more strong and substantial. I have also shown in the accompanying drawings L-shaped brackets E, which are placed at the end corners of a girder and which may be used in connection with the locking blocks or 105 devices D or independently thereof and which are riveted to the top and bottom plates A and to the braces or bars C at the ends of the girder.

The locking devices D and E may both be 110 employed or either may be employed independent of the other, and in this way I pro-

vide a strong and substantial girder which may be used in any kind or class of structures where girders of this shape are usually employed.

5 Although I have shown and described a girder provided with two webs, it will be apparent that my improvements may be employed in the construction of girders having a single web, and other changes in and modifications
10 of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. A girder composed of top and bottom plates connected by a vertically-arranged web, said plates being provided on their adjacent surfaces with longitudinally-arranged
20 portions or ribs having grooves, and said web being composed of separate sections or members inserted into the said grooves and secured therein, and the separate members or sections of said web being connected by
25 transversely-arranged braces having grooves in their opposite sides and in which the ends of the members or sections of the web are secured, substantially as shown and described.

2. A girder composed of top and bottom
30 plates connected by a vertically-arranged web, said plates being provided on their adjacent surfaces with longitudinally-arranged portions or ribs having grooves, and said web being composed of separate sections or members
35 inserted into the said grooves and se-

cured therein, and the separate members or sections of said web being connected by transversely-arranged braces having grooves in their opposite sides and in which the ends of the members or sections of the web are secured, the braces or bars at the ends thereof
40 being also connected with the edges of the top and bottom plates by means of locking-blocks having grooves in two sides thereof into which said edges are inserted and secured, substantially as shown and described.
45

3. A girder composed of top and bottom plates connected by a vertically-arranged web, said plates being provided on their adjacent surfaces with longitudinally-arranged
50 portions or ribs having grooves, and said web being composed of separate sections or members inserted into the said grooves and secured therein, and the separate members or sections of said web being connected by
55 transversely-arranged braces having grooves in their opposite sides and in which the ends of the members or sections of the web are secured, and locking devices for securing the braces or bars and the top and bottom plates
60 together, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 25th
65 day of January, 1905.

EDWIN HANCOX.

Witnesses:

JOHN STORROW SHORT,
THOMAS HENRY CARR.