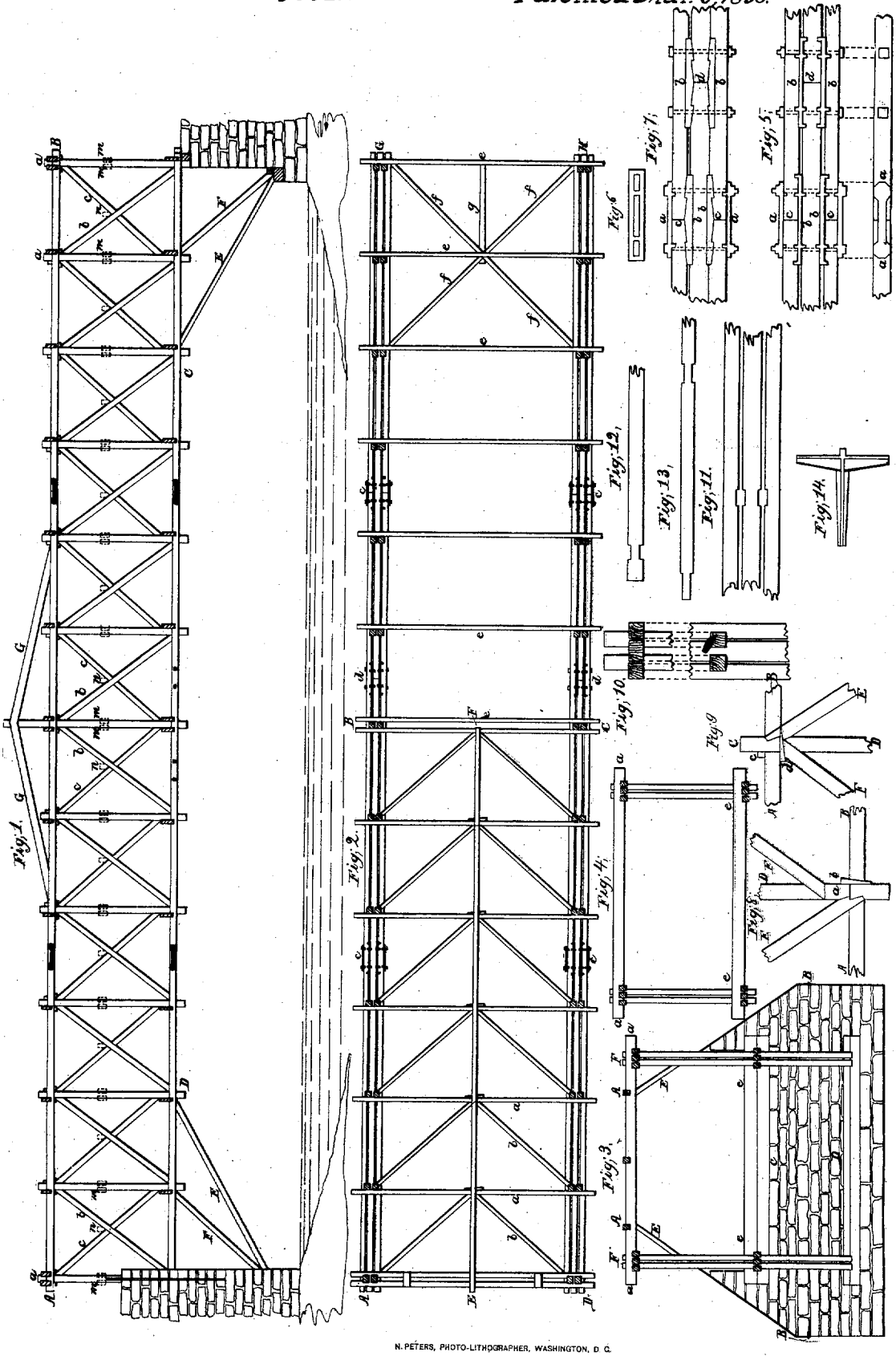
No Printed Specification Available

S. H. Long.

Truss Bridge.

No. 5862X

Patented Mar. 6, 1830.



N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

J. F. G. Long.
Letters Patent.

March 6, 1830
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The Schedule referred to in these Letters Patent and marked A. sets forth the same containing a description in the words of the said J. F. G. Long himself of his improvement in the construction of wooden or frame Bridges.

The objects aimed at in this invention are greater simplicity & economy in the construction of Bridges together with greater strength & efficiency than has hitherto been attained from any combination of principles or arrangement of parts heretofore adopted in Structures of this description.

The improvements under consideration by means of which the objects above mentioned are to be accomplished consist of the following modifications or arrangements in the construction of the main longitudinal truss frames necessary to the formation and support of a bridge viz. 1st Two modes of splicing the string pieces one of which is effected by means of wooden keys the other by means of iron splicing pieces, of a construction different from any heretofore adopted in bridge making. 2nd A system of bracing by means of which the truss frames are protected from leakage in part liable to be effected by such an action. & the steps or kerfs communicated by the braces are united by shoulders or steps as nearly as may be at right angles with the grain or fibres of the timber. X 3 A system of counter bracing by means of which the truss frames are rendered stiff & unyielding & the bridge kept in uniform action. 4thly the counter braces are constructed of iron made of flattening the main braces and forming them with metallic bearings by the introduction of thin plates of iron, steel or other suitable metal between the ends of each main brace & the steps in the sills

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against which they thrust. 5th A mode of keying or wedging by means of which the central parts of the truss frames & consequently of the bridge may be elevated and sustained in case of a subsidence or sinking of those parts, which is liable to happen from a shrinkage and extraordinary compression of the timber. These several improvements which are claimed as new, useful and original together with a variety of other arrangements many of which are believed to be unprecedented in Bridge architecture will be more clearly illustrated by the drawings and explanatory references hereto annexed & exhibited under the designation of the Paterson Bridge

Explanations & References to the Drawings.

Plate I Fig 1 A side view of the truss frame exhibiting the systems of bracing adverted to in articles 1 & 3 of the preceding specification: A.B. the upper string showing the position of its splices, & the insertions of the posts &c C.D. The lower string with its splices &c. Note in as much as the upper string acts by thrust & the lower by tension, the splices of the latter only require particular care & precision in their adjustment E.F. Inferior check Braces suspended on the lower side of the abutments & inserted in the lower string immediately behind the 2.d 3. posts from each extremity of the truss frame. G. Superior arch braces connected with the centre post, prolonged above the frame & inserted in the upper string at the head of the 2.d post from the centre H. the Pitts I. the main braces K. the counter braces. Note. This figure is also intended to indicate the manner of constructing the Excelsior from the bridge road-bed which differs only in its adaptation of the principles of a rail road, in which application the floor timbers must be more frequent in order to afford an unyielding support to the rails, & the arrangements in other respects must be such

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to admit the free & safe passage of a locomotive steam Engine.
Nº. The positions of clamps bearers or floor timbers, attached to the
Field by means of screw bolts. Nº. The positions of intermediate floor
timbers resting upon the main & counter braces at their junction
& intersection. Note The relative distances between the
upper & lower strings & any two adjacent posts longitudinally
& the King Braces should be about in the proportion of 11 to 1.
Plate 1 Fig. 2. A longitudinal view of a bridge with single road
way & double King-Braces. Note The right half of this figure
by B.C. G. H. presents a view of the lower strings, Floor timbers
& Braces &c. & the left hg. A. B. C. D. a view of the upper strings
Beams Lateral Braces &c. E.F. a Transverse view or way of the
Bridge affording the means of connecting the lateral braces with
the beams. a. the Beams. b. the lateral braces c. the splices
of the upper (and lower strings. d. the splices of the intermediate
string pieces of the lower strings e. the floor timbers f. lateral
braces connected with the floor timbers g. a short transverse
offsetting the means of connecting the braces e. with the floor
timbers. Plate 2 Fig. 3. An end view of the timbers &c. of the Bridge
AB King braces of iron for maintaining the vertical position of the
King Beams. C. the upper & D the lower sill of the abutment B.
the transverse Braces. F the posts. a. the beams & b the floor timbers
Fig. 4. a. E &c the same as in Fig. 3. Fig. 5 Representing a portion
of the lower string with its iron splicing pieces &c a. the outside
or exterior splicing pieces, b. the inside splicing pieces. c. the splic-
ed ends of the exterior string pieces. d. the spliced ends of the
interior string pieces. Fig. 6. a side view of one of the
interior splicing pieces showing the position of the transverse
bolts Fig. 7 Representing a portion of the lower string with in-
terior splicing pieces of wood a. the same as in Fig. 5. b. the
interior splicing pieces which may be furnished with two tenons
to be shouldered as in the figure, with four or with big shoulders
according to the strength to be given upon it c. d. the same as

Fig 2. Note. The string pieces are confined together by means of screw bolts, stopping entirely thro' the string at the shank, & such other screws as may be deemed necessary— The boring and screwing should always be done as closely to the strings. Fig. 3 Shewing the manner in which the Pall the Main & counter braces & the lower string are connected— A.B. a portion of the lower string. C.D. a D. of the pall. E. a D. of the main Brace. F a D. of the counter brace. a. a block supporting the lower extremity of the counter brace. b. c. the key by which the pall is kept in close contact with the Main Brace. & by which the Jaws frame may be adjusted to its appropriate vertical direction. Note The toe of the Main Brace should against the lower shoulder of the Pall & the heel against the the shoulder behind the block a. in fig. 1 shewing the manner in which the main & counter braces are connected by friendly rolled bands— A.B. a portion of the upper string. C.D. a D. of the Pall E a D. of the Main Brace. F a D. of the counter brace. c. the key at the head of the Pall same as b.c. of fig. 3. d. a key passing between the head of the counter Brace & the centre string piece, & serving to communicate a thrust or action to the counter Brace Fig 10. End views of the Palls and string pieces projected into each other— Fig 11 a view of a portion of one of the strings shewing the notches for the reception of the Palls. Fig 12. A view of a portion of the Pall shewing the neck or the notches for the reception of the string pieces Fig 13. A view of a portion of the counter brace, shewing the tongue and shoulder of one end & the notches for the reception of the Main Braces. Fig 14 a view of the Bracket pieces in the chatsworth Al. B. Fig 3 to which the iron stays are attached—

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