

E. J. FREDERICK.
TRUSS BRACE.
APPLICATION FILED FEB. 16, 1911.

1,050,057.

Patented Jan. 7, 1913.

Fig. 1.

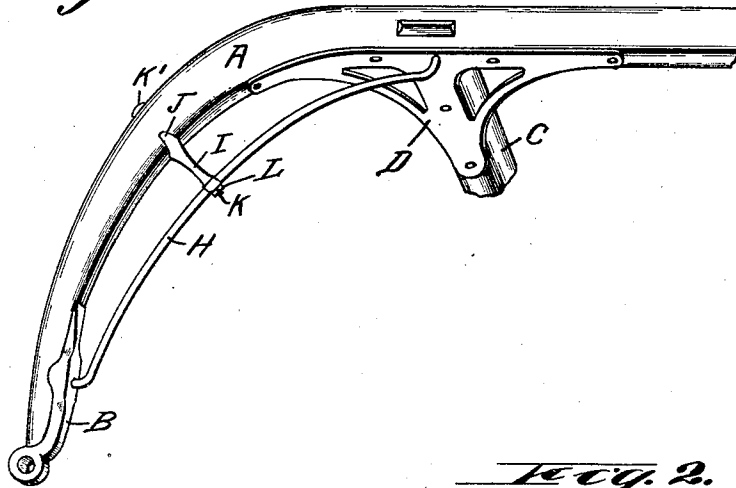


Fig. 2.

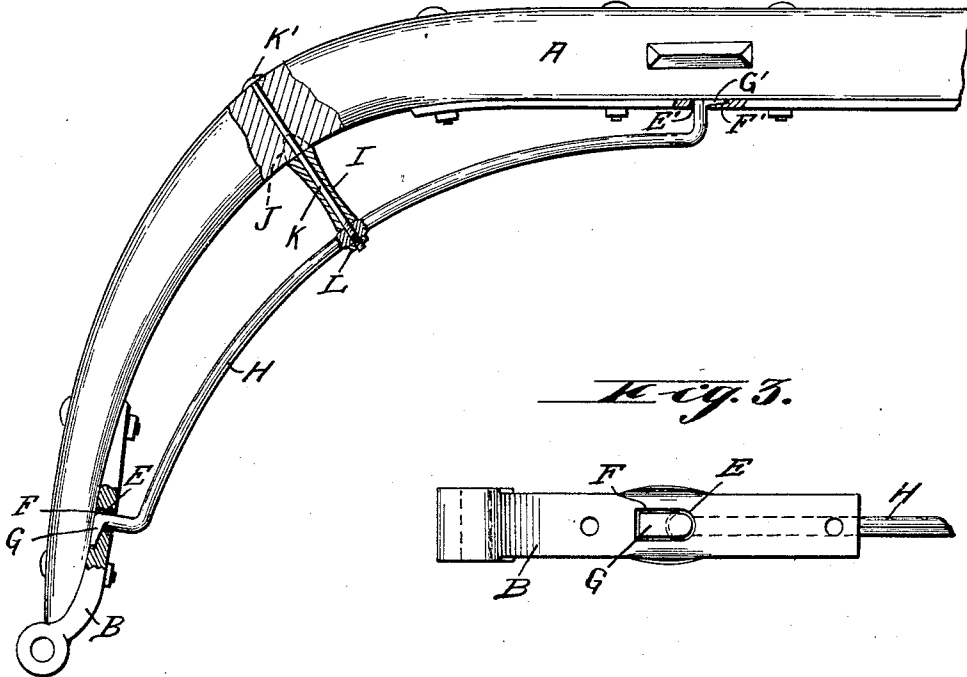
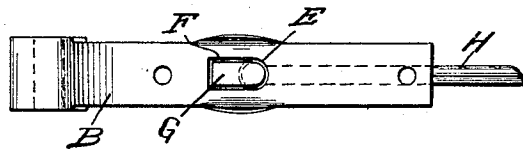


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD J. FREDERICK, OF LUDINGTON, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO A. E. CARTIER SONS CO., OF LUDINGTON, MICHIGAN, A CORPORATION OF MICHIGAN.

TRUSS-BRACE.

1,050,057.

Specification of Letters Patent.

Patented Jan. 7, 1913.

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To all whom it may concern:

Be it known that I, EDWARD J. FREDERICK, a citizen of the United States, residing at Ludington, county of Mason, and State of Michigan, have invented new and useful Improvements in Truss-Braces, of which the following is a specification.

My invention relates to improvements in truss braces for elbowed structures.

10 The object of my invention is to provide a form of construction in which the brace may be locked at its respective ends to other members without requiring bolts, screws, nuts or any other auxiliary fastening devices, and which may be employed in combination with an elbowed member in such a manner as to form a truss.

20 In the following description, reference is had to the accompanying drawings, in which—

Figure 1 is a perspective view of my invention as it appears when applied to a thill shaft. Fig. 2 is a side elevation of the same. Fig. 3 is a detail view of the coupling iron, 25 showing the inner face and also showing a portion of the brace rod with its foot piece interlocked therewith.

30 Like parts are identified by the same reference characters throughout the several views.

The thill shaft A, coupling iron B, and cross bar C may be of any ordinary construction. I employ a metallic coupling member or bracket D at the junction of the cross bar C with the thill shaft A, said bracket having arms extending from the junction point in both directions longitudinally of the thill shaft and transversely of the bar C, the bracket being applied to the under surface of the shaft and bar. The coupling iron B is of ordinary construction, except that it is provided with an aperture E (Fig. 2), and a countersunk socket F in its inner face, into which a foot piece G, connected with a brace bar H, may be manipulated by tilting the brace in the plane of its vertical longitudinal axis, preparatory to applying the coupling iron B to the end of the thill shaft A. The bracket D is provided with a similar aperture E' and socket F', into which a foot piece G' at the other end of the bar H may be manipulated, preparatory to attaching the bracket D to the thill shaft A and cross bar C. When the 55 bracket D and coupling iron B are attached

in position of use, as shown in the drawings, it is obvious that the brace bar H will be retained in position to serve as a brace, extending across underneath the elbow in the shaft A.

60 The bar H is enlarged in its middle portion, and a yoke post I is interposed at this point between the bar H and the central portion of the elbow in shaft A. This yoke post is forked to partially receive the shaft A between the forked arms J and a tie bolt K extends downwardly through the shaft A and through a longitudinal aperture in the post I and also through a hole in the brace bar H, to receive a nut L at its lower end. 70 The head K' of the bolt bears upon the outer surface of the shaft A.

75 With the above described construction, I provide a truss, which rigidly supports and reinforces the elbow portion of the shaft A, and I am thus enabled to provide thills of great strength and rigidity. By providing the bar H with the foot pieces G and by providing the metallic connecting members B and D with countersunk sockets into which said foot pieces may be manipulated, I am enabled to attach my brace without using any bolts other than those necessary to secure the coupling members B and D in position. This is a very important consideration in wooden structures, since each additional bolt hole tends to materially weaken the wooden portion of the structure, and if bolts are passed through the foot pieces of a brace bar, such as the bar H, additional injury is apt to result from twisting strains, since the foot pieces are necessarily comparatively small. By socketing the foot pieces in the metallic connecting members, I avoid the effect of twisting strains upon the wooden portion of the structure, and also provide a structure, which can be constructed and assembled at less expense than would otherwise be incurred. The foot pieces can be readily manipulated into position by passing them through the apertures and rocking them into the sockets with a tilting movement before the coupling members are attached to the thill shaft and cross bar. After they are so attached, the thill shaft coöperates with the coupling members in securely retaining the foot pieces in their respective sockets.

110 I am aware that attempts have been made to provide truss braces, which interlock with

the coupling members or shaft irons in such a manner as to be partially retained thereby and partially retained by end bolts, which pass through the thill shaft. But with such constructions, the strain is necessarily borne by the bolts and transmitted by the bolts to the thill shaft, thus tending to split the latter. By my invention, I avoid the use of bolts entirely, except at the center of the brace, and at this point twisting strains have no tendency to split the shaft, the tendency being merely to cause rotation on the bolt as upon a pivot.

I believe I am the first to provide foot pieces without bolts, and also that I am the first to provide foot pieces which extend longitudinally beyond the ends of the brace proper and beyond the point where the brace passes into or through the coupling member, so that the brace may fit snugly against the outer walls of the apertures. With this construction, the brace can perform its functions as a brace and exert longitudinal pressure at both ends against the metal and not upon the wooden thill shaft. The foot pieces and the apertures in the coupling irons are of such relative size that the brace bar may snugly fit said apertures, whereby a slight springing movement of the thill shaft elbow will cause the brace bar to bear either against the inner or outer walls of the apertures in the coupling members. The slight movement allowed adds to the strength of the structure, since it permits a slight yielding under twisting strains, while preventing any excessive yielding in either direction.

The outwardly extending foot pieces which permit longitudinal manipulation of the brace bars into coupling relation to the coupling members is an important feature of my construction, for the reason that such a foot piece substantially fills the socket in which it is mounted and secures a broad bearing therein, which bearing is upon the metal of the coupling member so far as strains are concerned and upon the wooden

portion of the thill only for the purpose of retaining the foot piece in the socket.

It will be observed that the ends of the brace are formed with a double elbow, the first or inner elbow providing for an extension of the bar through the aperture in the coupling member and the other elbow providing the foot piece. The latter constitutes a continuation of the brace bar, the extremity beyond the outer elbow being merely flattened on the upper side to form the foot piece leaving the same rounded on the lower side to fit the socket. A brace having such a foot piece can be very easily and cheaply made as the work of bending and flattening the end of the brace bar can be performed in one operation in a simple form of die.

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

The combination with an elbowed shaft and cross bar, of a metallic coupling member at the inner end of the thill shaft, a metallic coupling member at the junction of the cross bar with the shaft, secured to both, each of said members having sockets in their inner faces and apertures leading to the inner ends of the respective sockets, and a brace bar spanning the angle of the elbow, and provided with a double elbow at each end, the portion of said bar between the elbows at each end being formed to extend through the apertures in the coupling members and the extremities beyond the outer elbow being flattened to form foot pieces adapted to pass through said apertures and to be manipulated into the sockets by swinging the bars relatively to the coupling members in a vertical plane coinciding with the axis of the bar.

In testimony whereof I affix my signature in the presence of two witnesses.

EDWARD J. FREDERICK.

Witnesses:

A. M. PETERSON,
L. M. LINDENAU.