No. 620,832. Patented Mar. 7, 1899.

H. BELCHER & F. EASOM.

FRAME JOINT.

(Application filed May 10, 1897.)

(No Model.)

Fig. 1.

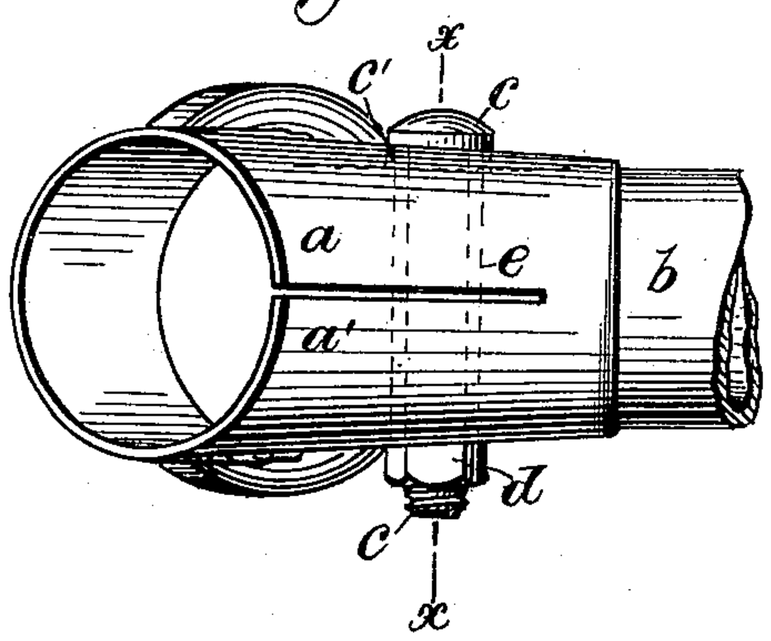
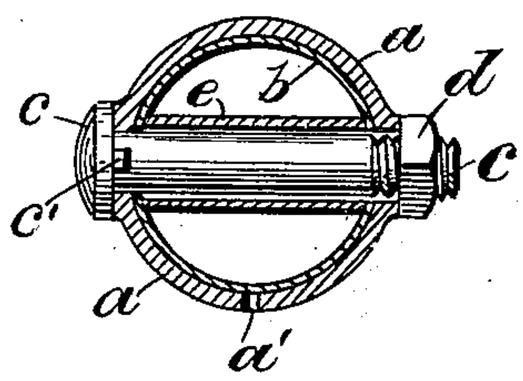


Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY BELCHER AND FREDERICK EASOM, OF BEESTON, ENGLAND.

FRAME-JOINT.

SPECIFICATION forming part of Letters Patent No. 620,832, dated March 7, 1899.

Application filed May 10, 1897. Serial No. 635,893. (No model.)

To all whom it may concern:

Be it known that we, HENRY BELCHER and FREDERICK EASOM, subjects of the Queen of Great Britain, residing at Beeston, England, have invented certain useful new or improved means for detachably fixing the ends of the frame-tubes and other tubular parts in bicycles, tricycles, and other velocipedes and motor-vehicles in their lugs and sockets; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates principally to means for fixing the ends of the tubes of cycle-frames in their lugs and sockets without brazing; but our invention may also be applied to the fixing together of the tubular parts of handle-bars, seat-pillars, forks, and other tubular parts of velocipedes.

Our invention consists of the constructions and arrangements or combinations of parts hereinafter described, and illustrated in the accompanying drawings, for detachably fixing the ends of the frame-tubes and other tubular parts of velocipedes in their lugs and sockets, whereby a very secure attachment of the said tubes and parts can be readily and quickly effected, and when required for transit, storage, or repair the said tubes and parts may be readily detached and packed into a small compass. Further, by the arrangements constituting our invention the manufacture of cycle-frames and the like is simplified and the temper of the metal of the tubes is not interfered with. The said arrangements also provide a more efficient connection of the frame-tubes and other tubular parts of velocipedes than is obtained in detachable joints of the ordinary construction, the accidental detachment of joints constructed according to our invention being practically impossible.

Our invention is especially useful where the frame-tubes and other tubular parts of velocipedes and like vehicles are made of aluminium or aluminium alloys in consequence of the difficulty which exists in obtaining a secure attachment of the parts of articles made of aluminium or aluminium alloys by brazing.

We will describe our invention in connection with the attachment of the top horizontal tube of the frame of a safety-bicycle to the top lug of the said frame.

Figure 1 of the accompanying drawings is a bottom plan view of the top lug and portion of the top horizontal tube of a safety-bicycle frame, the said tube being fixed in the said lug by one of the improvements constituting our invention; and Fig. 2 is a cross-section of the same, taken on the dotted line $x\,x$, Fig. 1.

According to our invention we make a slit a' in the lug a, and we make circular holes in the opposite sides of the lug and in the opposite sides of the ends of the tube b, which holes when the tube b is in its proper position in the lug coincide. Through the said holes in the lug and tube we pass a screw-bolt c, the slit lug a being tightened on the end of the tube b, so as to fix the said tube in place by the screwing up of a screw-nut d on the threaded end of the screw-bolt c. In order to prevent the turning of the screw-bolt c on the screwing home of the screw-nut d, we make on the under side of the head of the bolt c a teat or projection c', and we make in one side of the circular hole in the lug a, against which the head of the screw-bolt bears, a notch for receiving the teat or projection c'.

We support the tube b internally by fixing a crossing tube or stay e therein or by providing the said tube b with a solid supporting-block, preferably of aluminium, with a cross-hole for the bolt c to pass through, so as to prevent any change in the circular configuration of the end of the tube b on the screwing home of the nut d for the purpose of binding the sides of the lug a on the sides of the tube b.

The application of our invention to the fixing of other parts of cycle and like frames in their lugs and to the fixing together of the tubular parts of handle-bars, seat-pillars, and other tubular parts of velocipedes and like vehicles differs in no essential respect from its application to the fixing of the top horizontal tube of a safety-bicycle in the top lug, as hereinbefore described and illustrated.

Further, we wish it to be understood that our improvements are applicable to the fix-

ing of tubes and other parts in their lugs and sockets, which tubes and other parts have a figure in cross-section other than circular.

Having now particularly described and ascertained the nature of our invention and in what manner the same is to be performed, we declare that we claim as our invention—

The combination with the split lug or socket, of the tube arranged longitudinally therein, said lug or socket and tube being provided with coincident bolt-holes in their sides, a threaded and headed bolt passed transversely through said bolt-holes, a nut arranged on the threaded end of the bolt and operating when screwed up to clamp or bind the split lug or socket about said tube, and a cross tube or stay arranged within the tube and about the bolt and operating to support the tube internally and prevent change of configuration in the tube when the lug or socket is clamped thereover, substantially as described.

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