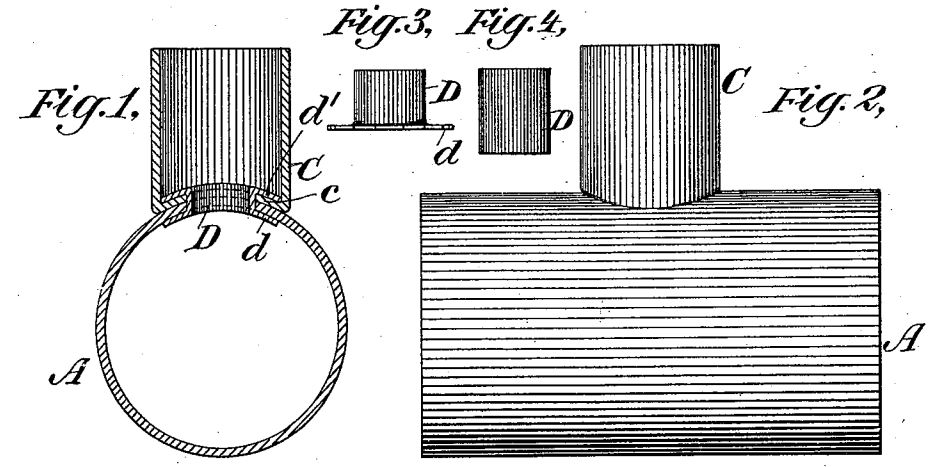
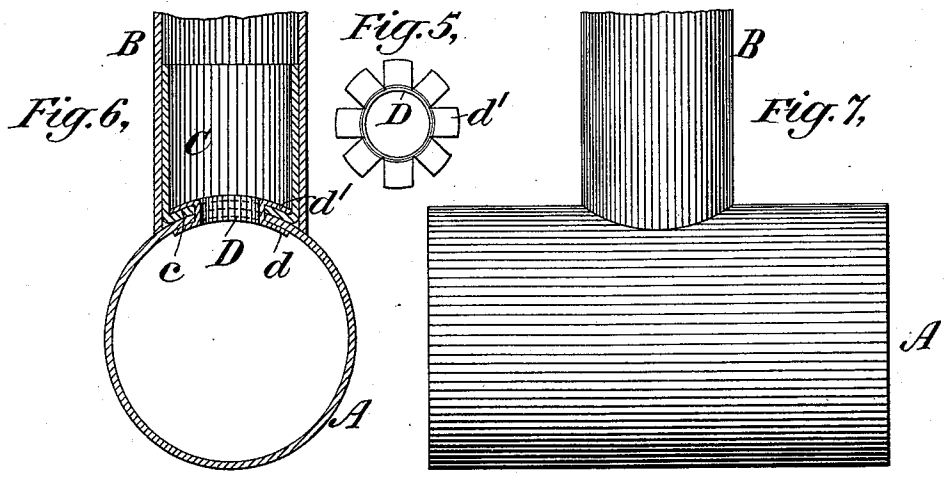
(No Model.) 2 Sheets—Sheet 1.

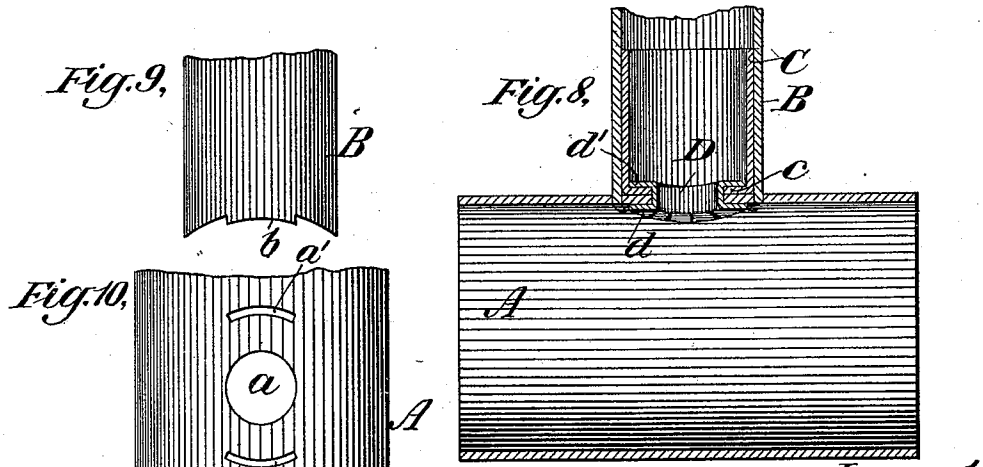
J. S. COPELAND.

FRAME FOR VELOCIPEDES.

No. 562,067. Patented June 16, 1896.







Witnesses:-
Chas. Sprouse
M. Gibson.

Inventor:-
James S. Copeland
by Redding & Riddell
Attys

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 2 Sheets—Sheet 2.

J. S. COPELAND.

FRAME FOR VELOCIPEDES.

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Fig. 11,

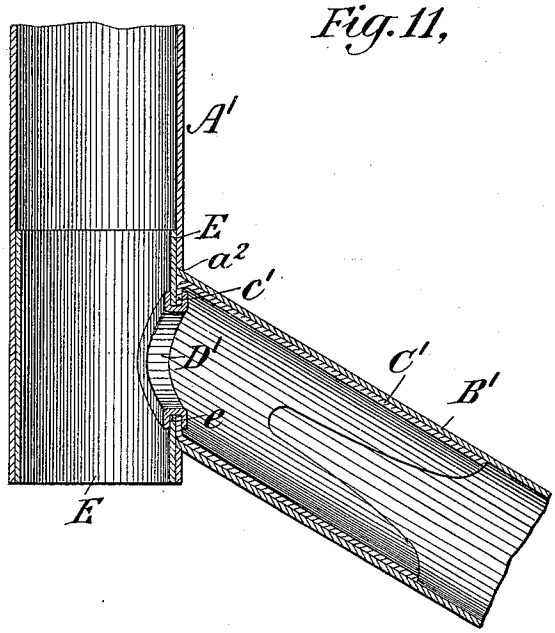
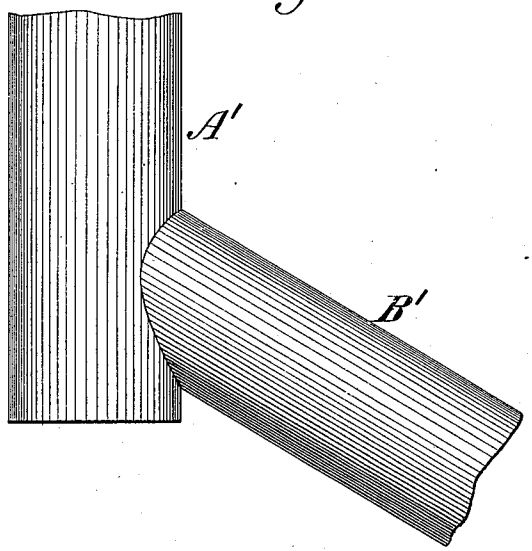


Fig. 12,



Witnesses:-
Chas. Prioulette
M. Gibson.

Inventor:-
James S. Copeland
by Redding & Kiddle
Attys

ANDREW B. GRAHAM, PHOTO-LITHO WASHINGTON, D.C.

UNITED STATES PATENT OFFICE.

JAMES S. COPELAND, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE POPE MANUFACTURING COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

FRAME FOR VELOCIPEDES.

SPECIFICATION forming part of Letters Patent No. 562,067, dated June 16, 1896.

Application filed November 7, 1895. Serial No. 568,165. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. COPELAND, a citizen of the United States, and a resident of the city and county of Hartford, in the State of Connecticut, have invented certain new and useful Improvements in Frames for Velocipedes, &c., of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates in general to the construction of frames for velocipedes and the like, which are composed of tubes or other members and tubular bodies, and more especially to the means for securing one tube or member to the frame or structure at its end to the side of another tube or tubular body which is disposed transversely to the first tube or frame-brace—such, for example, as the main standard and the crank-shaft bracket of a bicycle-frame. Owing to the severe strains to which bicycle and other like frames are subjected it is necessary that such joints be very strong and that weakening of the parts to be connected be avoided as far as possible. It is also desirable that the use of superfluous material be avoided and that the joint be compact and present a neat appearance.

It is the object of this invention to provide for the construction of a joint which shall answer these requirements, and the means by which this result is secured will be fully described hereinafter with reference to the accompanying drawings, forming a part hereof.

In the drawings, Figure 1 is a transverse section of a crank-shaft bracket with a socket for the attachment of the main standard secured thereto in accordance with this invention. Fig. 2 is an elevation of the same. Figs. 3, 4, and 5 are detail views of a thimble employed in making the joint. Figs. 6 and 7 are views similar to Figs. 1 and 2, but showing a portion of the main standard applied to the socket. Fig. 8 is a longitudinal section of a crank-shaft bracket with the socket and a portion of the main standard, showing also an additional feature of construction which may be employed, if desired. Figs. 9 and 10 are detail views illustrating more clearly the same feature. Figs. 11 and 12 are respectively a longitudinal section and a side elevation illustrating an application of the invention in a slightly-different form to the joining of a main tube and an obliquely-disposed tube.

As represented in Figs. 1, 6, 8, and 10 of the drawings, the crank-shaft bracket A or other tube or tubular body to the side of which the standard B or other member of the frame is to be secured has formed therein, at a point corresponding with the desired position of the tube B, a hole *a*, which is of less diameter than the tube B. A socket-piece C, being a relatively short length of tubing, has one end struck up or otherwise manipulated to form an inwardly-projecting flange *c* and to fit snugly against the tube A, the aperture left within the flange corresponding substantially with the hole *a*. A thimble D is formed from a short tube (shown in Fig. 4) of a diameter to fit in the hole *a* and the aperture of the flange *c* by striking up or spreading the end, as at *d*. The thimble is inserted in the hole *a* and the aperture of the flange *c* of the socket-piece C, preferably from within the tube A, and its other end is upset, as at *d'*, to secure the socket-piece C firmly to the tube A. The tube B, which has its end formed to fit against the tube A and is of a diameter to fit snugly within or upon the socket-piece C, is then slipped into place and all of the parts are thereafter more firmly united by brazing or other similar means.

It is obvious that if desired the tube B may be made to fit either upon or within the socket-piece C, and accordingly the term "socket-piece" is herein used whether the part referred to receives the part B upon or within itself. It will also be observed that the socket-piece affords a substantial support for the tube or other frame member B, and that by the described device it is held rigidly and strongly to the tube A, whereby the joint between the tube or other frame member B and the tube A is even less liable to be broken than when the socket-piece is integral with the tube A, although the amount of material is less and the cost of construction is much less.

If desired, the end of the tube B may be provided with tongues *b b* to enter holes *a' a'* in the tube A and to be upset, as clearly represented in Figs. 8, 9, and 10, to thereby

more firmly secure the tube B to the tube A. This, however, is an additional feature and is not essential to the proper carrying out of the invention, as hereinbefore described.

In the construction represented in Figs. 11 and 12 the main tube A′ has formed therein a hole a^2 of such size and shape as to admit the end of the tube or member B′ which is to be secured thereto. Within the tube A′ is placed a tubular bushing E, which has a hole e of less diameter than the tube B′. The socket-piece C′, as before, is formed with an inwardly-turned flange c', which fits snugly against the tubular body or bushing E, the aperture left within the flange corresponding substantially with the hole a'. The thimble D′, substantially as before, is crimped over both the edge of the hole in the bushing E and the flange of the socket-piece C′. All of the parts are firmly united by brazing or other similar means.

Although I have herein shown and described my invention as applied to the joining of the parts of a velocipede-frame, it will be understood that it is not limited to that or to any particular use, but may be employed wherever one member of a frame or structure is to be secured at its extremity to a tube or tubular body.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a tubular body and a frame member to be secured thereto, said tubular body being transversely disposed with respect to the frame member and having a hole in its side, of a socket-piece adapted to receive the tube or frame member upon or within it and having an inwardly-turned flange, and a thimble inserted through the hole in said tubular body, and having one end upset to engage the inside of said tubular body and the other end upset to engage the flange of said socket-piece, substantially as shown and described.

2. The combination with a tubular body and a frame member to be secured thereto having its end shaped to fit against said tubular body, said tubular body being transversely disposed with respect to the frame member and having a hole in its side, of a socket-piece adapted to receive the frame member upon or within it and having an inwardly-turned flange, and a thimble inserted through the hole in said tubular body, and having one end upset to engage the inside of said tubular body and the other end upset to engage the flange of said socket-piece, substantially as shown and described.

3. The combination with a tubular body and a frame member to be secured thereto, of a socket-piece adapted to receive the frame member upon or within it and having an inwardly-turned flange, and a thimble inserted through a hole in said tubular body, and having one end upset to engage the inside of said tubular body and the other end upset to engage the flange of said socket-piece, the said tube having tongues upon its end entering slots in the tubular body and upset to retain said tube in place, substantially as shown and described.

This specification signed and witnessed this 4th day of November, A. D. 1895.

JAMES S. COPELAND.

In presence of—
W. M. DYORKMAN,
HARRY P. FOWLER.