No. 672,738. Patented Apr. 23, 1901.

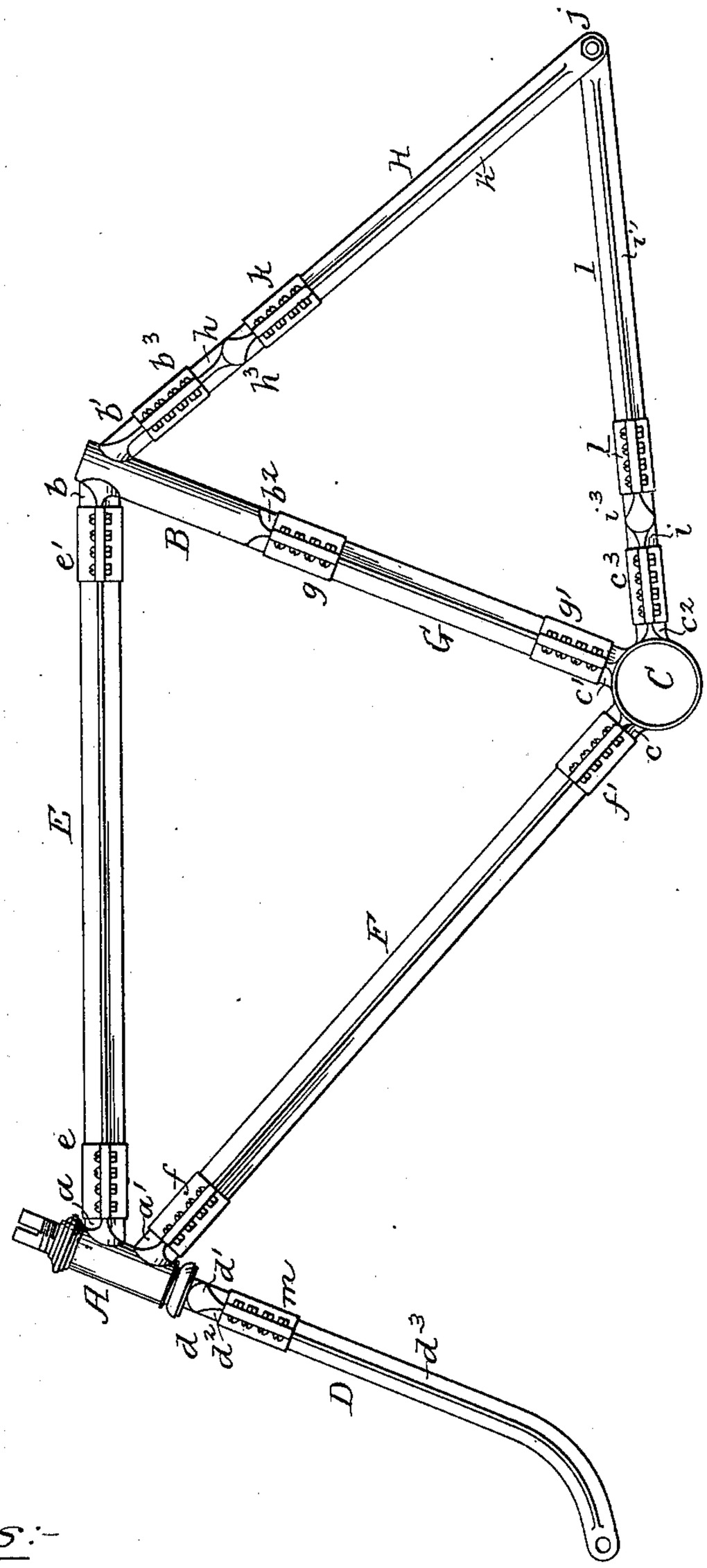
A. MAYERSON.

BICYCLE FRAME.

(Application filed Jan. 29, 1900. Renewed Oct. 29. 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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by His Attorneys
Howson & Howson

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

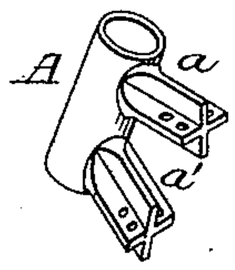


Fig. 3.

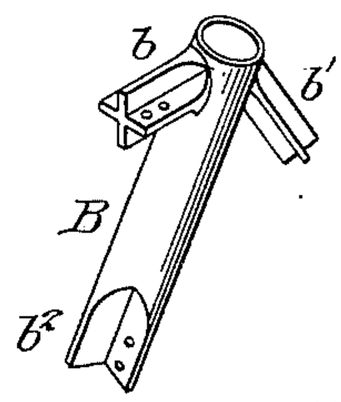


Fig. 4.

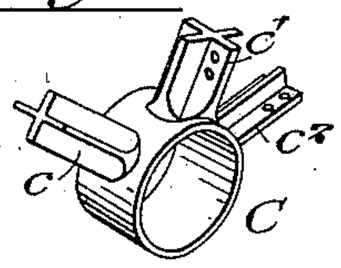


Fig. 5.

Fig. 6.

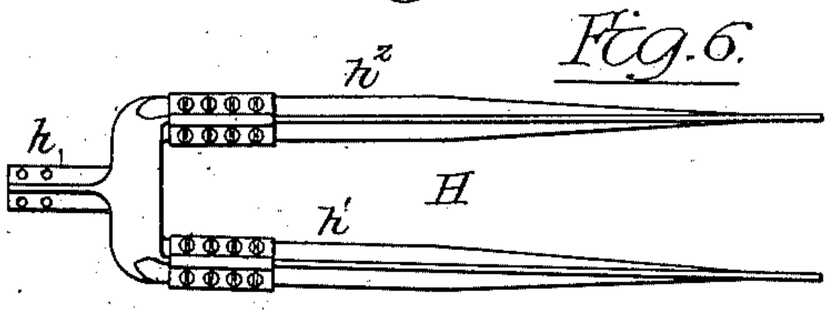


Fig. 7.

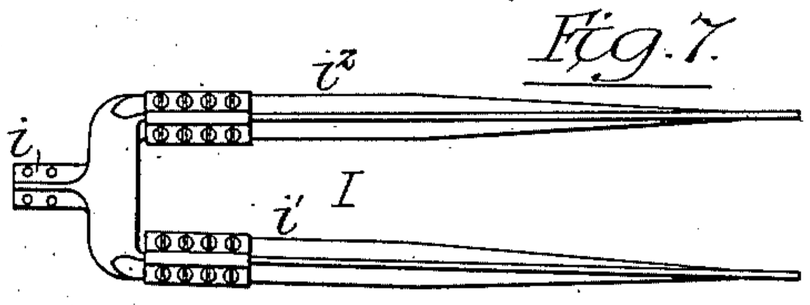


Fig. 8.

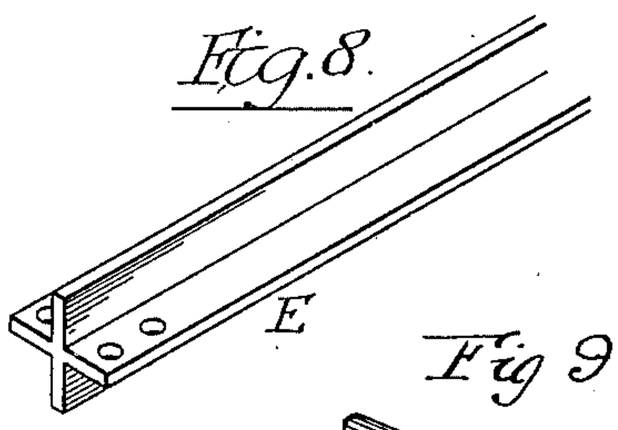


Fig. 9.

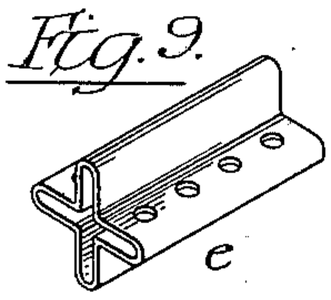


Fig. 9a.

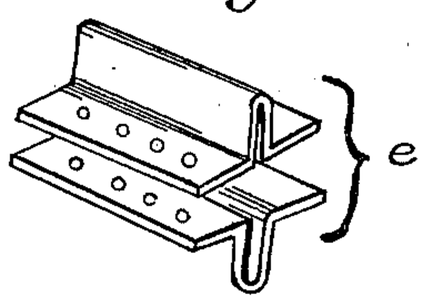


Fig. 11.

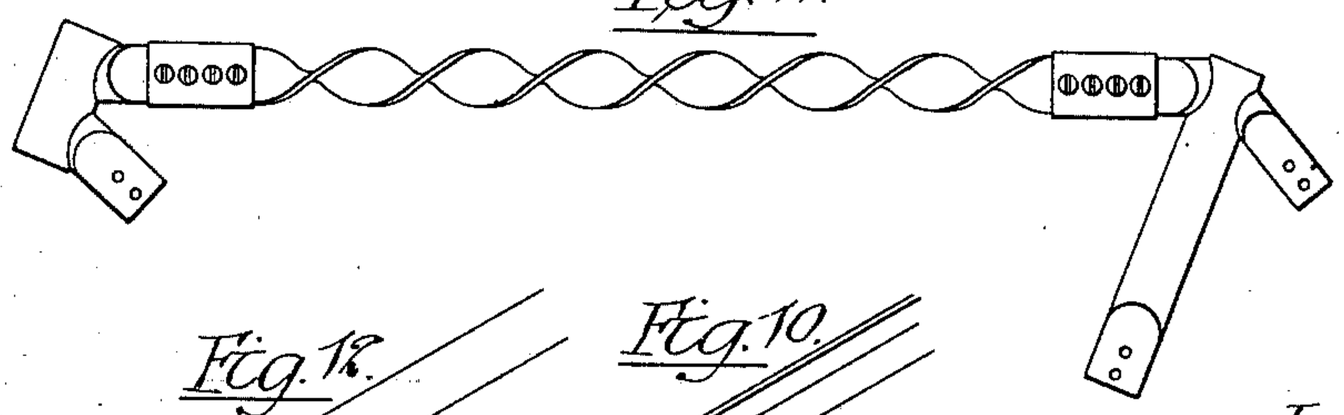


Fig. 12.

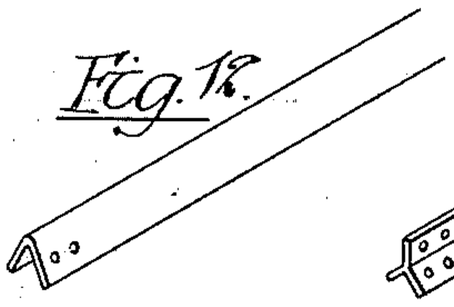
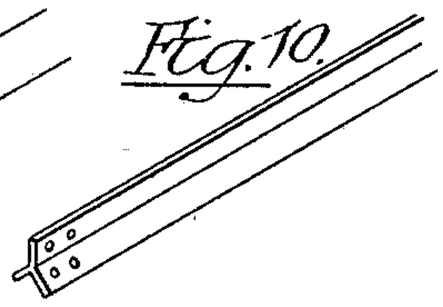


Fig. 10.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ABI MAYERSON, OF PHILADELPHIA, PENNSYLVANIA.

BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 672,738, dated April 23, 1901.

Application filed January 29, 1900. Renewed October 29, 1900. Serial No. 34,802. (No model.)

To all whom it may concern:

Be it known that I, ABI MAYERSON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Bicycle-Frames, of which the following is a specification.

The object of my invention is to dispense with the ordinary tubular frame heretofore used in the manufacture of bicycles and to make the frame of angle or flange bars, uniting these bars to the head, saddle-post, and crank-hanger by couplings, as fully described hereinafter, so that the bicycle-frame can be readily repaired, if necessary, by simply substituting a new section for the injured part.

In the accompanying drawings, Figure 1 is a side view of my improved bicycle-frame. Fig. 2 is a detached perspective view of the head. Fig. 3 is a detached perspective view of the saddle-post. Fig. 4 is a detached perspective view of the crank-hanger. Fig. 5 is a detached perspective view of the front fork. Figs. 6 and 7 are views of the rear stay and lower fork. Figs. 8, 9, and 9ª are perspective views showing the angle-bar and coupling; and Figs. 10, 11, and 12 are views of modifications of my invention.

The frame of the bicycle may be of any of the ordinary shapes, Fig. 1 of the drawings showing a diamond-shaped bicycle.

A is the head.

B is the saddle-post.

C is the crank-hanger.

D is the front fork, having a journal *d*, adapted to the head A. To the upper end of this journal is attached any suitable handle-bar.

E is the top bar.

F is the bottom bar.

G is the seat-mast.

H is the rear stay, and I is the lower fork.

The bars E and F and the mast G are cruciform in shape, as shown in Fig. 8, thus making the bars rigid against vertical and lateral pressure.

The head A has two rearward projections *a* and *a'*, both cruciform in shape, adapted to be coupled to the bars E and F by couplings *e* and *f*, which extend over the ends of the bars E and F and over the projections *a* and *a'*, respectively, and are secured thereto either by bolts or rivets. The coupling *e* is shown in Fig. 9 as in one piece; but it is obvious that it may be made in two pieces, as shown in Fig. 9ª.

The saddle-post has a forward projection *b*, a rearward projection *b'*, and a projection b^2 at the base. Each one of these projections is cruciform in cross-section, and the projection *b* is connected to the bar E by a coupling *e'*. The projection *b'* is connected to a cruciform projection *h* of the rear stay H by a coupling b^3, and the projection b^2 is coupled to the seat-mast G by a coupling *g*.

The crank-hanger C has three projections *c c' c²*. The forward projection *c* is connected to the bottom bar F by a coupling *f'*. The projection *c'* is coupled to the seat-mast by a coupling *g'*, and the rear projection c^2 is coupled to a projection *i* of the lower fork I by a coupling c^3. The rear stay is made as clearly shown in Fig. 6, having two members *h' h²*, also cruciform in shape, and the side wings are tapered to the bearing *j* for the rear axle. These two members are coupled to a head h^3 by couplings *k*, and on the head h^3 is the projection *h*, mentioned above. The lower fork is made similar to the rear stay, having two members *i' i²* tapered to the bearing *j* for the rear axle and coupled to a head i^3 by couplings *l*. The head i^3 has the cruciform projections *i*, mentioned above. The front fork is made as clearly shown in the perspective view, Fig. 5, having a head *d'*, from which the journal *d* extends. This head *d'* has cruciform projections d^2, to which are connected the forks d^3 d^4, which are also cruciform in shape and curved, as shown. The side wings are preferably tapered to the bearing of the axle of the front wheel. These side members are connected to the head by couplings *m*. Thus it will be seen that I make a very light and substantial bicycle-frame from bars that can be readily rolled to any weight desired. The bars can be attached to the head, saddle-post, and crank-hanger by the use of the couplings.

By securing the coupling-sleeves to the parts by bolts, the parts can be readily detached and the frame packed for shipment in a small compass, or if by accident one or more of the sections should be injured and it is found necessary to replace the sections this

can be readily done by simply obtaining a duplicate of the injured parts from a supply-house, and by loosening the couplings the injured parts can be readily removed and new sections inserted.

In place of making the bars cruciform in shape and having four ribs, as shown in Fig. 8, they may have three ribs, as shown in Fig. 10, or may be V-shaped in cross-section, as shown in Fig. 12, and in some instances a flat bar twisted throughout its length may be used, as shown in Fig. 11, without departing from the main feature of my invention, which is to dispense with the usual tubes heretofore used.

It will be understood that the projections on the head, saddle-post, and crank-hanger will be shaped similar to the bars shown in Figs. 10, 11, and 12, and the couplings will conform to the shape of the bars and projections.

In some of the claims I have used the term "flat bar presenting flanges" to indicate all of the forms of bar which I have shown, the threads or convolutions of the twisted bar shown in Fig. 11 being functionally the same as the flanges of the other bars, and hence included under that term.

I claim as my invention—

1. The combination in a bicycle, of the head, saddle-post and crank-hanger, projections thereon, flat solid connecting-bars presenting flanges, with couplings securing the said bars to the projections of the head, saddle-post and crank-hanger, substantially as described.

2. The combination in a bicycle, of the top bar, bottom bar and seat-mast made of flanged solid bars, head, saddle-post and crank-hanger, projections on the head, saddle-post and crank-hanger, said projections conforming to the shape of the said bars, with couplings extending over the projections and over the ends of the bars and secured thereto, substantially as described.

3. The combination, in a frame of a bicycle composed of solid bars presenting flanges, of a saddle-post having a rear projection, a rear stay made up of a head having a forward projection and two rear projections, with two angle-forks, couplings securing the said forks to the head, and a coupling securing the forward projections of the head to the rear projection of the saddle-post, substantially as described.

4. The combination, in a bicycle-frame composed of solid bars presenting flanges, of a crank-hanger having a rearward projection, a lower fork having a head, with an angle-shaped forward projection, a coupling securing the forward projection of the head to the rearward projection of the crank-hanger, angle-shaped rearward projections of the head, two angle-shaped forks, with couplings securing the forks to the rearward projections of the head, substantially as described.

5. The combination, in a bicycle-frame composed of solid bars presenting flanges, of a front fork, a cross-head, cruciform projections on the cross-head, curved forks also cruciform in cross-section, and couplings uniting the said projections to the forks, substantially as described.

6. The combination, in a bicycle-frame composed of solid bars presenting flanges, of a head, a saddle-post and crank-hanger, each having cruciform projections, with solid connecting-bars cruciform in cross-section, and coupling-sleeves shaped to pass over the projections and the ends of the bars, with means for securing said couplings to the bars, substantially as described.

7. The herein-described bicycle-frame composed of solid bars and comprising a head having two cruciform projections, a saddle-post having three cruciform projections, a crank-hanger having three cruciform projections, bars cruciform in cross-section connecting the head to the saddle-post and the head to the crank-hanger, a mast cruciform in cross-section connecting the crank-hanger to the saddle-post, a rear stay coupled to the saddle-post, and a lower fork coupled to the crank-hanger, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ABI MAYERSON.

Witnesses:
WILL. A. BARR,
JOS. H. KLEIN.