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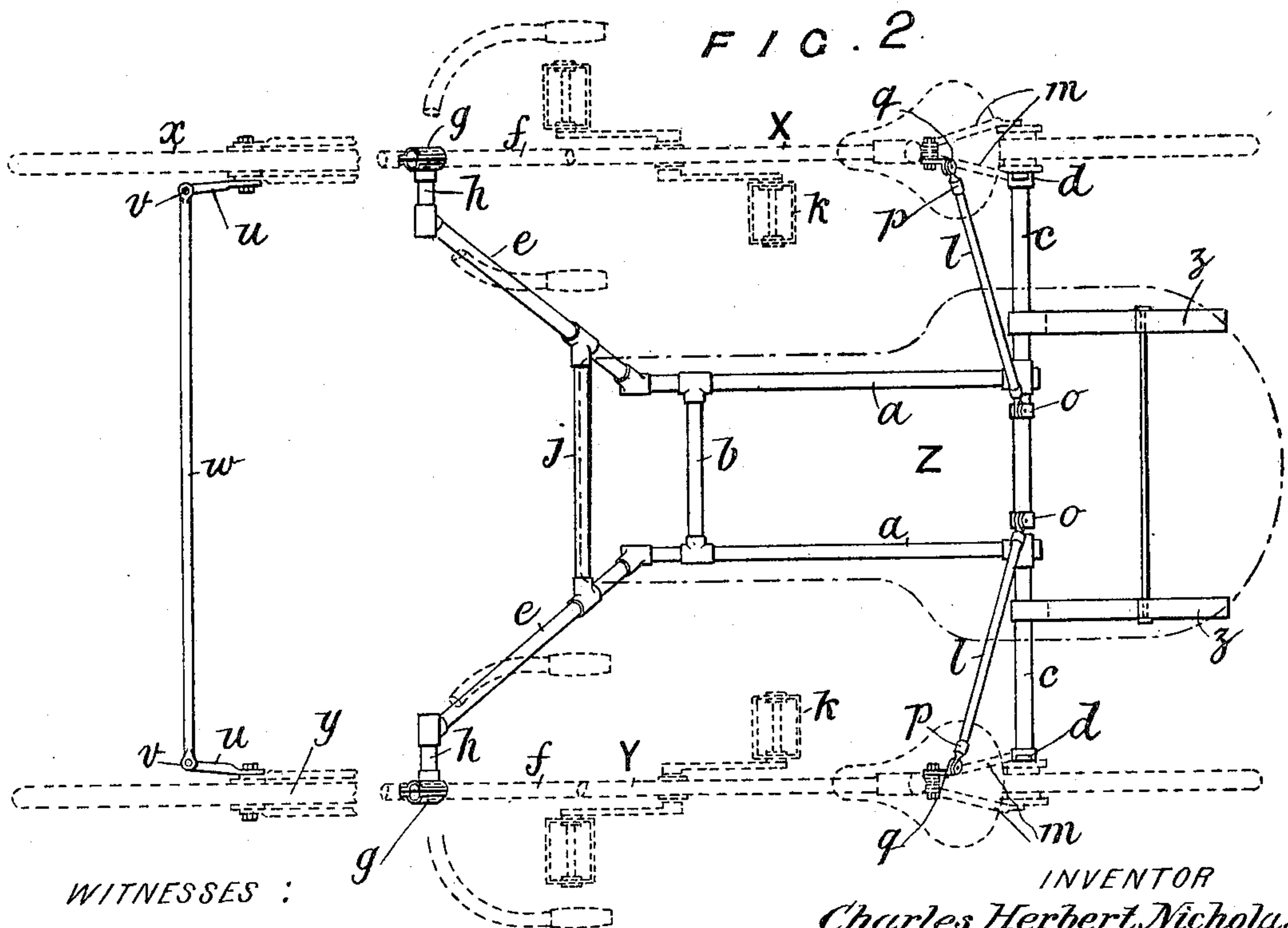
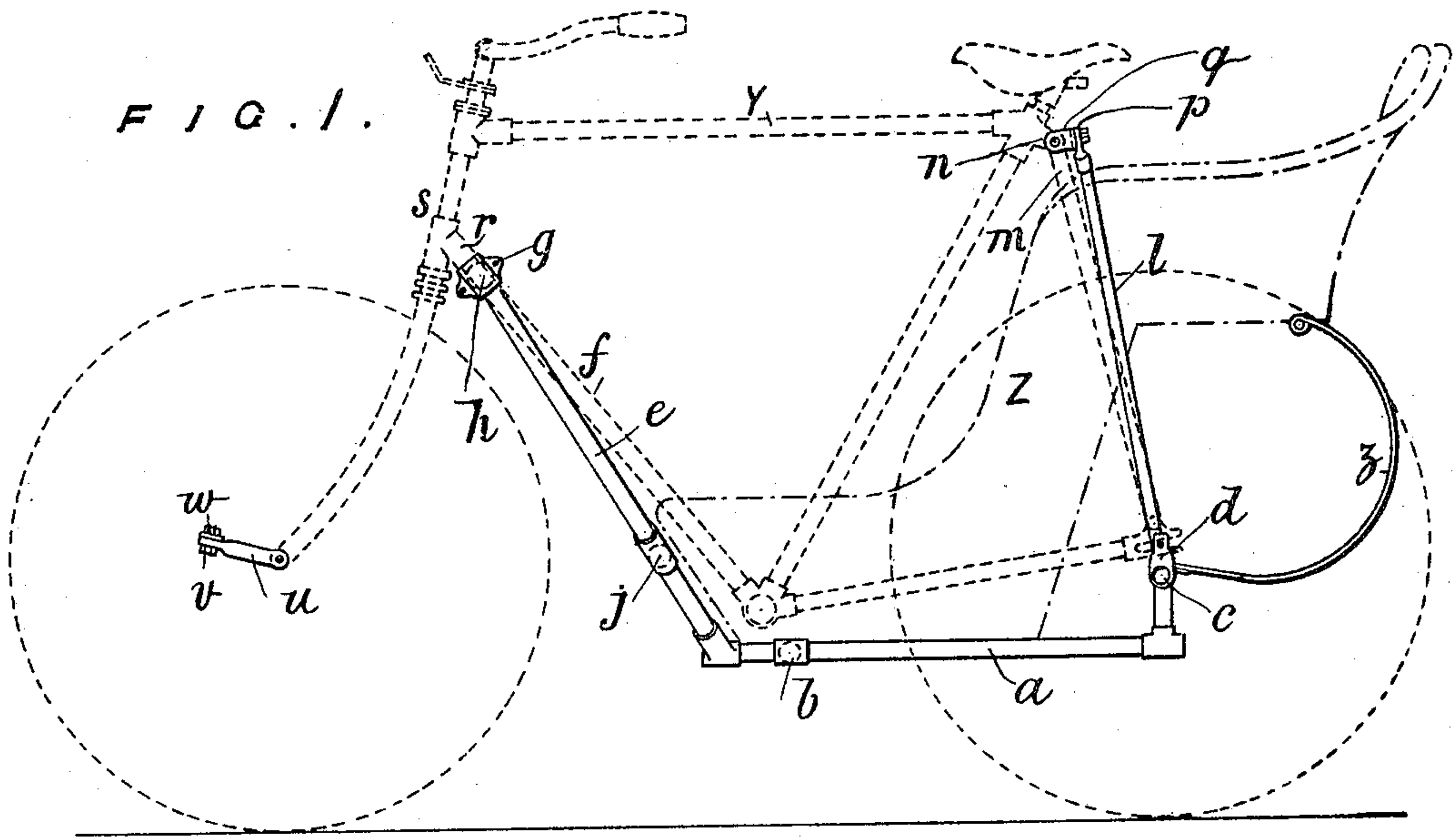
PATENTED JUNE 5, 1906.

C. H. NICHOLAS.

MEANS FOR UNITING A PAIR OF BICYCLES TO FORM A QUADRICYCLE.

APPLICATION FILED SEPT. 20, 1904.

3 SHEETS—SHEET 1.



WITNESSES :

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A. H. Davis

*INVENTOR*

*Charles Herbert Nicholas*

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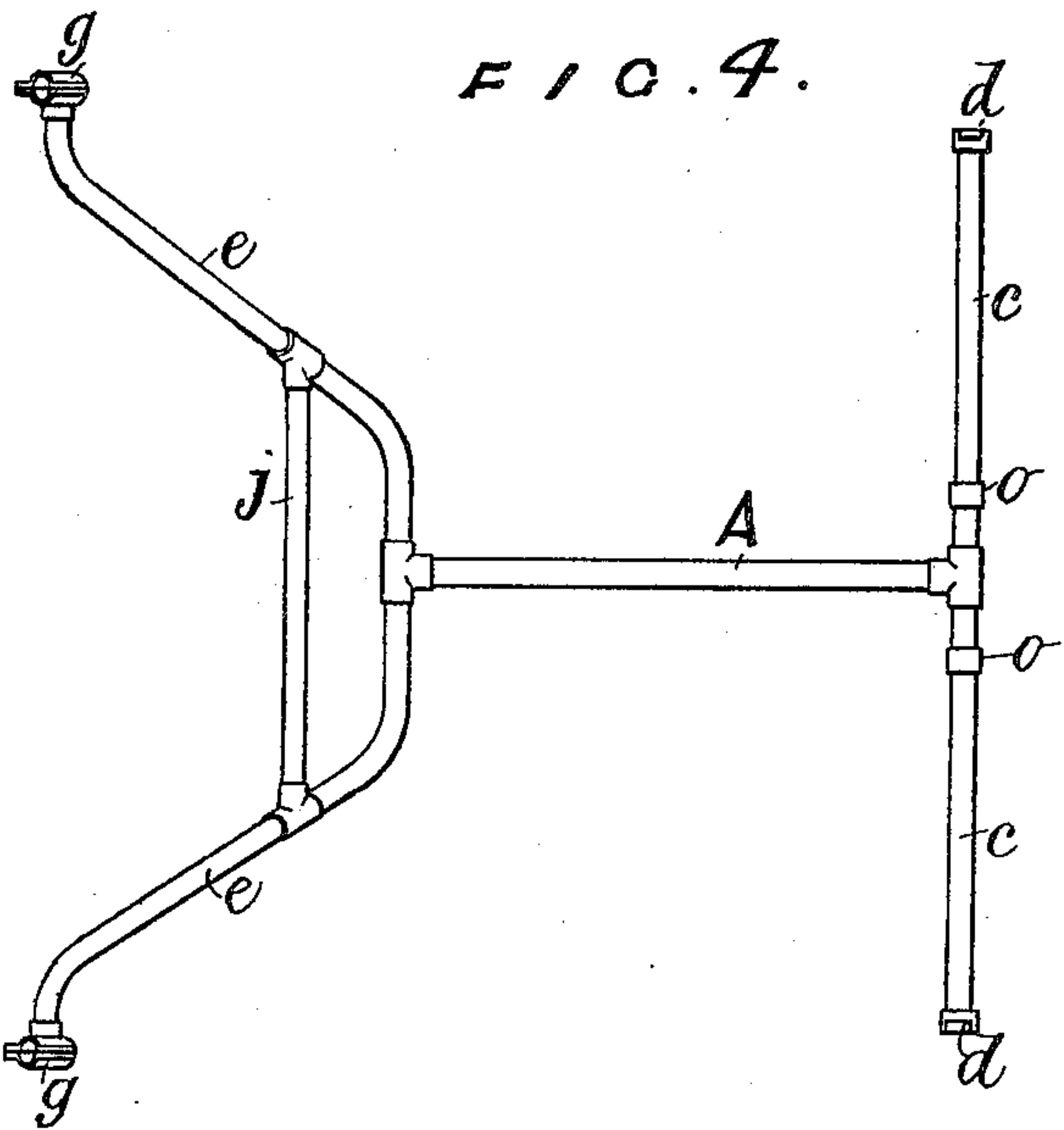
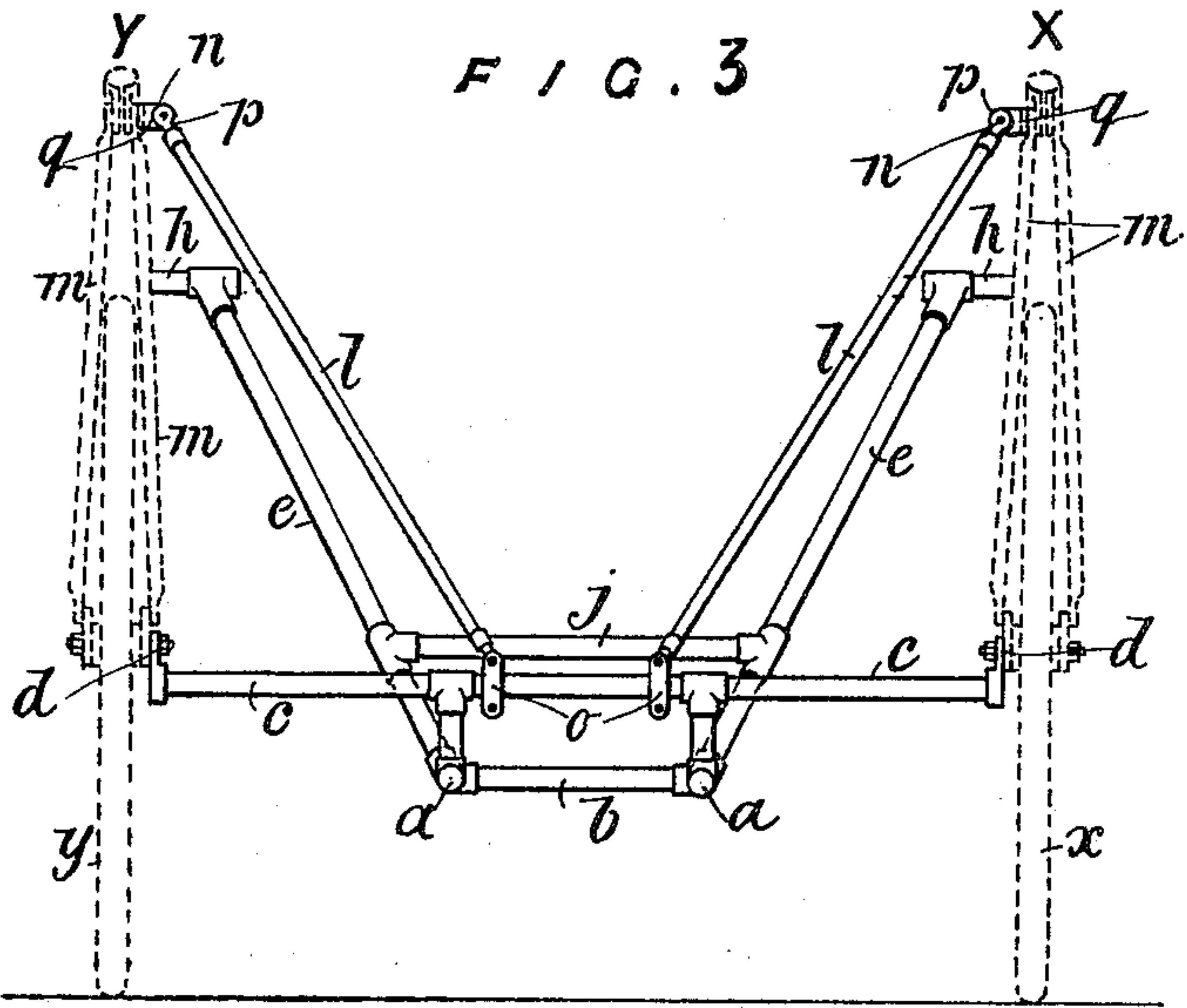
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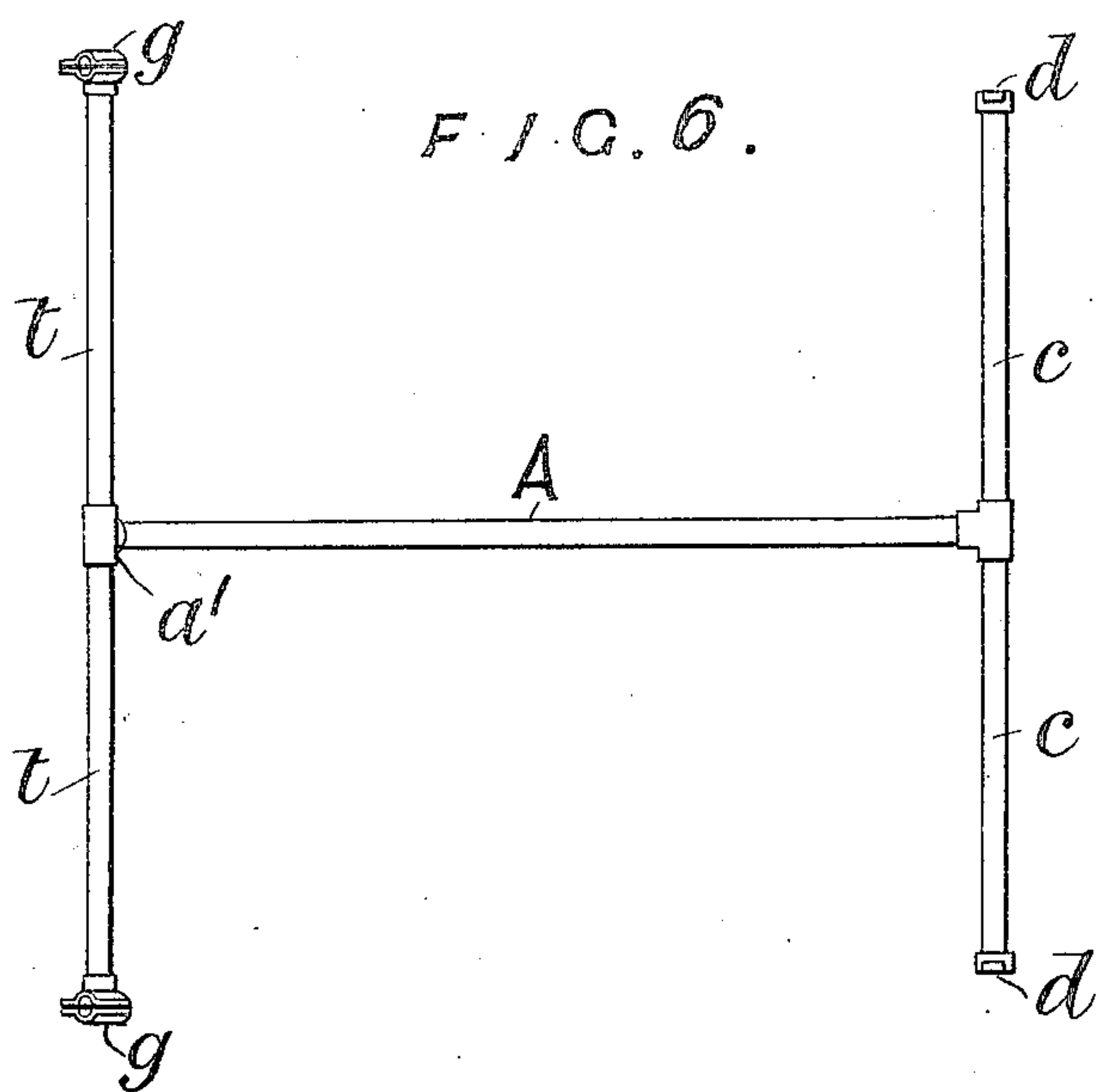
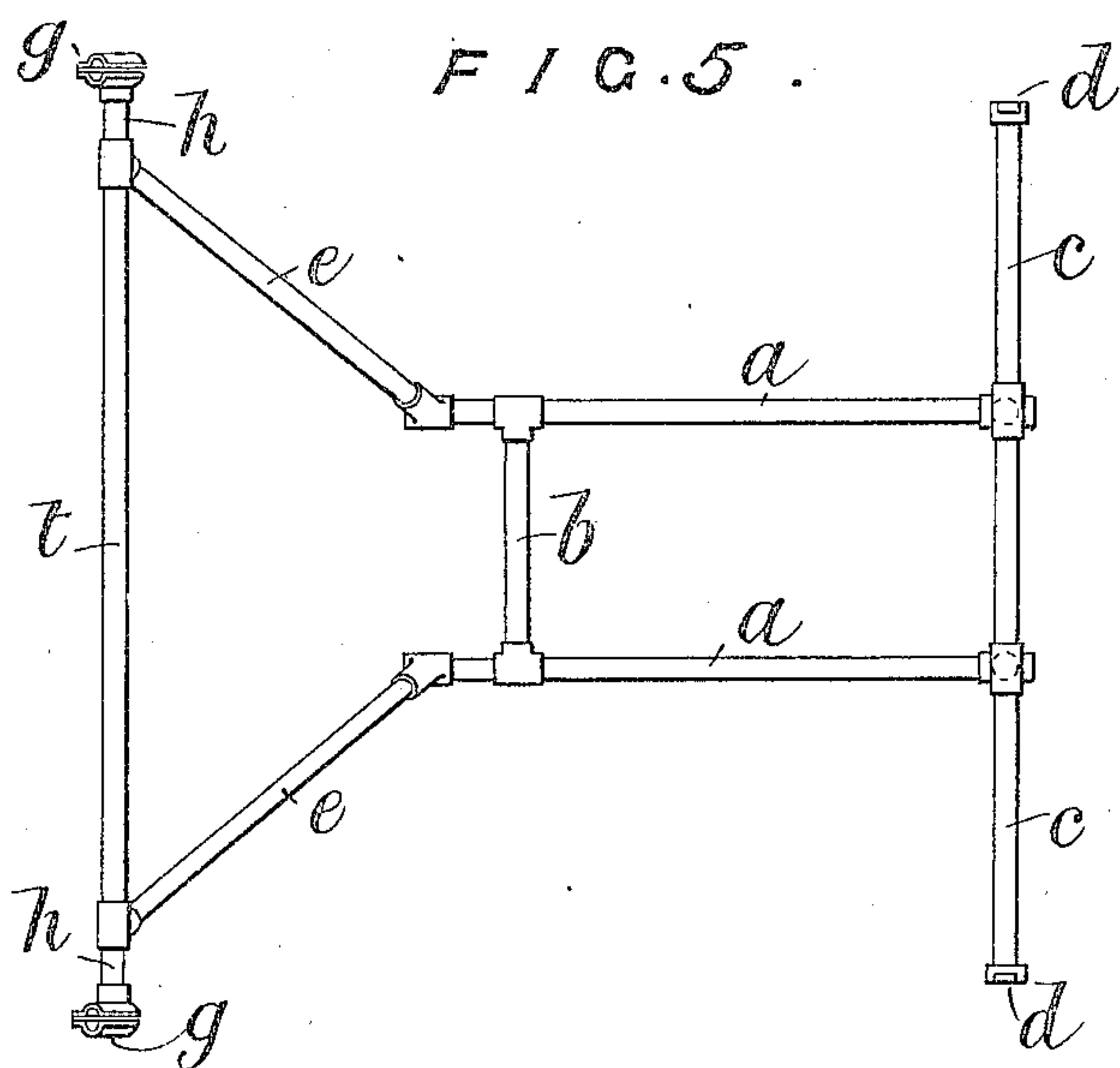
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*W. M. Avery*

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# UNITED STATES PATENT OFFICE.

CHARLES HERBERT NICHOLAS, OF LONDON, ENGLAND.

## MEANS FOR UNITING A PAIR OF BICYCLES TO FORM A QUADRICYCLE.

No. 822,688.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed September 20, 1904. Serial No. 225,223.

*To all whom it may concern:*

Be it known that I, CHARLES HERBERT NICHOLAS, engineer, a subject of the King of Great Britain, residing at 34 Stroud Green road, Finsbury Park, London, England, have invented certain new and useful Improvements in or Relating to Means for Unit-  
ing a Pair of Bicycles to Form a Quadricycle, of which the following is a specification.

This invention has for its object to provide means for connecting together a pair of bicycles (of any usual construction and motor or pedal or otherwise driven) side by side in such manner that the combination may constitute a single vehicle capable of carrying more than two persons, the device so provided being designed to enable the cycles to be quickly and easily united to form a quadricycle and to be as readily detached from one another, so as to permit of the ordinary use of either machine alone when desired.

The invention consists, essentially, of a rigid frame adapted to be made fast to the frames of the two bicycles, so as to form a girder, bracing the machines firmly together abreast, yet holding them apart at a sufficient distance to accommodate between them means for carrying a passenger or passengers or other load. The device comprises a longitudinal middle member or backbone integral with transverse or divergent members or limbs toward its front and rear ends adapted to be detachably secured to the bottom or head tubes and to the rear hub-spindles of the respective bicycles, the frame thus constituted being furnished with a seat, luggage-carrier, or other appropriate contrivance for supporting the load, and means being provided for so coupling together the front wheels of the machines as to insure both being steered in unison.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation, Fig. 2 a plan, and Fig. 3 a rear end elevation, of a practical form of the invention, the two bicycles to which it is applied being indicated by dotted lines for the sake of distinction. Fig. 4 is a plan view showing a slight modification, the bicycles being omitted. The seat for the third passenger is omitted in Fig. 3. Figs. 5 and 6 are plan views representing further modifications.

Similar letters of reference indicate like parts in all the figures.

In the example illustrated in Figs. 1, 2, and 3 the central longitudinal member of the

frame consists of a pair of parallel horizontal tubes *a a*, connected together toward their forward ends by a cross-brace *b* and supported (somewhat below the level of the cycle-wheel centers) by their rear ends being attached to a cross-tube *c*, whose ends are made fast, by means of crank-arms *d d* upon the tube *c*, to the inner ends of the rear hub-spindles of the respective bicycles X and Y and by the upwardly and forwardly divergent front limbs or continuations *e e* of the tubes *a a*, being fixed to the bottom tubes *f f* of the respective cycle-frames by means of clips *g g* on the outwardly-projecting ends *h h* of the said members *e e*, which are also braced together at a lower level by means of a cross-tube *j*.

The length of the rear cross-tube *c* and the corresponding distance apart of the clips *g g* are such that the frames of the cycles X and Y are maintained in vertical planes abreast of one another and at a distance apart sufficient to accommodate a basket-chair Z for a third passenger and to afford the necessary clearance for the inner pedals *k k* of the respective cycles. The seat of the chair is supported by C-springs *z*, attached to the cross-tube *c*, the footboard of the chair resting upon the longitudinal members *a a*.

For the purpose of stiffening the structure, insuring the maintenance of the verticality of the cycles, and reducing the strain upon the rear hub-spindles a pair of upwardly-diverging struts *l l*, attached to the cross-tube *c*, are made fast each to the inner end of the seat-lug bolt *n*, whereby the upper ends of the backstays *m m* of the corresponding cycle are connected together and to the seat-lug. These struts *l l* are made adjustable, so as to be capable of being readily fitted to cycles of different sizes, the lower end of each strut being hinged to a clip *o*, whereby it is made fast to the cross-tube *c*, whereon the clip *o* is itself adjustable both angularly and lengthwise, while the upper end of each strut is connected to the seat-lug bolt *n* by means of a hinge-coupling, whereof one member *p* is fast on the strut *l* and the other, *q*, which can turn relatively to *p* upon a hinge-pin, is made fast to the seat-lug bolt, about which it is also angularly adjustable.

It will be perceived that the invention is susceptible of considerable modification in detail without departing from its essential characteristics. Thus, for example, as shown at A in Fig. 4, the central longitudinal member of the frame or backbone may be single



instead of duplex, as in Figs. 2 and 3, and the form and level of said frame or backbone may vary in accordance with the requirements of the load which it is to sustain, provided always that its points of attachment to the two cycle-frames remain substantially as described. In the example illustrated in Figs. 1 and 2 access to the chair Z is obtained over the cross-tube *j*, which for the purpose is placed conveniently low. In some cases, however—as, for example, where access to the frame A can be gained from the rear or when one or both of the bicycles is of the drop-frame or lady's pattern—the clips *g g* might be directly connected together by a transverse horizontal tube or member, as indicated at *t* in Figs. 5 and 6, and the central tube or tubes *a* might in such case be continued up to and be coupled direct to the member *t*, as indicated at *a'* in said figures.

In the drawings the clips *g* are shown as attached to the down-tubes *f* of the cycle-frames at some little distance below the head-lugs *r*; but it is preferred for the sake of strength to keep the clips *g* as near to the lugs *r* as possible. The clips *g* might obviously, if necessary, be arranged for attachment to the heads *s* of the cycle-frames instead of to the down-tubes *f*.

In order that the front wheels *x y* of the respective cycles X Y may be steered in unison, any appropriate part of the turning-gear of both machines may be suitably coupled together. In the example illustrated a short lever-arm *u* is fixed on the inner end of each front-hub spindle, the lever projecting forward in a direction approximately parallel to the plane of the wheel and at right angles to the steering-spindle axis, the forward ends of the two levers *u* being pivotally connected, as at *v*, to the opposite ends of a transverse coupling-rod *w*, whereby movement about the steering-spindle axis is communicated from the one front wheel to the other.

As examples of the purposes to which the invention may be applied it will suffice to mention, (in addition to a chair-support, as illustrated,) an ambulance or stretcher-carriage, a goods or baggage truck, and a machine-gun carriage.

I claim—

1. A device for connecting together a pair of bicycles or the like to form a quadricycle, comprising a structure disposed between the bicycles in a plane below the axes of the wheels thereof, members leading from the forward part of said structure and having means for connecting the ends thereof with parts of the frames of the bicycles, a transverse member to which the rearward part of said structure is rearwardly connected, provided with means for connecting the ends thereof to the inner ends of the hubs of the rear wheels of the bicycles, and upwardly-divergent struts extending from said trans-

verse member, adjustable thereon and having means connecting the upper ends of the same with parts of the seat-supporting elements of the bicycles.

2. A device for connecting together a pair of bicycles or the like to form a quadricycle, comprising a structure disposed between the bicycles in a plane below the axes of the wheels thereof, upwardly and forwardly divergent members leading from the forward part of said structure and having clips for connecting the ends thereof with parts of the frames of the bicycles, a transverse member to which the rearward part of said structure is rearwardly connected, provided with means for connecting the ends thereof to the inner ends of the hubs of the rear wheels of the bicycles, and upwardly-divergent struts extending from said transverse member, adjustable thereon and having means connecting the upper ends of the same with parts of the seat-supporting elements of the bicycles.

3. A device for connecting together a pair of bicycles or the like to form a quadricycle, comprising a structure disposed between the bicycles in a plane below the axes of the wheels thereof, upwardly and forwardly divergent members leading from the forward part of said structure and having means for connecting the ends thereof with parts of the frames of the bicycles, a transverse member to which the rearward part of said structure is rearwardly connected, provided with means for connecting the ends thereof to the inner ends of the hubs of the rear wheels of the bicycles, and upwardly-divergent struts extending from said transverse member, adjustable thereon and having hinge-couplings connecting the upper ends of the same with parts of the seat-supporting elements of the bicycles.

4. A device for connecting together a pair of bicycles or the like to form a quadricycle, comprising a structure disposed between the bicycles in a plane below the axes of the wheels thereof, upwardly and forwardly divergent members leading from the forward part of said structure and having means for connecting the ends thereof with parts of the frames of the bicycles, a transverse member to which the rearward part of said structure is rearwardly connected, provided with cranks for connecting the ends thereof to the inner ends of the hubs of the rear wheels of the bicycles, and upwardly-divergent struts extending from said transverse member, adjustable thereon and having means connecting the upper ends of the same with parts of the seat-supporting elements of the bicycles.

5. A rigid frame for rigidly bracing together a pair of bicycles abreast to form a self-supporting quadricycle adapted to carry a load additional to the cycle-riders, consisting in the combination of an intermediate longitudinal member, a transverse member



at the rear end of and integral with said longitudinal member; means for rigidly and detachably fastening the ends of said transverse member to the rear hub-spindles of the  
5 respective cycles; divergent limbs forming forward continuations of the longitudinal member; clamps for rigidly and detachably fastening the ends of said divergent limbs to the respective cycle-frames at or near the  
10 bottom head-lugs; upwardly-divergent braces

adjustably attached to the transverse member between the ends thereof; and means for adjustably and detachably fastening the upper ends of said braces to the seat-lug bolts of the respective cycles, substantially as 15 specified.

CHARLES HERBERT NICHOLAS.

Witnesses:

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T. W. RENNARD.