

PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in or relating to Spring Frames for the Driving Wheels of Cycles, Motor Cycles, and the like Vehicles.

I, PHILIP CONRAD VINCENT, a British subject, of High House, Horndon on Hill, Essex, do hereby declare the nature of this invention to be as follows:—

5 This invention is for improvements in or relating to spring frames for the driving wheels of cycles, motor cycles and the like vehicles of the type wherein the driving wheel is mounted at the rear angle of a triangulated structure which is pivoted
10 near its lower front angle to the main frame and is spring-connected thereto at or in proximity to its apex.

In known constructions of this type, the structure aforesaid has comprised two
15 separable triangular frames which are connected together side by side and on opposite sides of the rear wheel by means of bolts and distance pieces, or similar devices. Frequently also, each frame
20 has been formed of articulated members. These known constructions are lacking in rigidity and lateral stability, and one object of the present invention is to provide a construction in which these disadvantages are obviated.

According to the invention there is provided a frame structure of the type referred to for cycles, motor cycles or the like vehicles and comprising two triangular frames arranged side by side and on
30 opposite sides of the plane of the wheel characterised in that said frames are rigidly secured together at or near their lower front angles by a single brace
35 and/or at or near their apices by a similar brace, to which brace or braces the appurtenant members of the triangular frames are rigidly secured.

40 Preferably each of the braces comprises lugs to which the appurtenant members (e.g. tubes) of the triangular frames are welded, brazed or similarly connected.

In a convenient construction the brace which unites the triangular frames at
45 their lower front angles is integral with a bearing member adapted to be mounted (for example pivotally) on a spindle carried by the main frame of the vehicle or by
50 an element secured thereto.

If desired, the bearing member aforesaid may be split and provided with means (for example bolts) whereby it can be

clamped to a spindle which is pivotally mounted in the main frame of the vehicle
55 or in an element carried thereby.

In a specific embodiment of this invention which will now be described by way of example as applied to a motor bicycle, there is provided a frame structure comprising two triangular frames formed of tubes and arranged side by side with the rear wheel between them. Each of these frames comprises a chain stay and a back stay which are brazed into lugs on a forked end plate in which the axle of the rear wheel is mounted in the well-known manner, and a front stay. The triangular frames are rigidly connected together at their apices at the required distance apart by a single casting or forging which has at each end a pair of lugs to which said front and back stays are brazed. At the lower front angle the triangular frames are also rigidly connected together by
75 another forging or casting likewise provided with two pairs of lugs to which are brazed the lower and front ends of the front stays and the chain stays respectively. This latter forging or casting
80 also comprises a bearing member which constitutes the main bearing for a spindle by which the triangular frame structure is pivotally connected to the main frame of the bicycle.

The said main bearing may be pivotally mounted on the spindle aforesaid, or the bearing may be split and clamped by means of bolts to the spindle in which case said spindle is pivotally mounted in the main frame or in a part connected thereto. In either case the rear member of the main frame may be forked and provided with lugs to receive said spindle, or the spindle may be mounted at each end in a plate or other member attached to the engine casing or to the gear box, or in any other convenient manner.

It will be seen that by the means described above a rigid triangular frame
100 structure is provided, and that the main bearing for the pivot is an integral part of said structure. Moreover, the construction enables said main bearing to be of substantial length—approximately
105 equal to the distance apart of the trian-

gular frames—so that the structure is well supported at its pivotal point.

The invention is not restricted to the precise constructional details described, and any convenient spring suspension may be employed. If desired, the forging or casting which unites the triangular frames at their apices may be adapted to receive

a pair of links to which the spring device can be attached.

Dated this 15th day of February, 1927.

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COMPLETE SPECIFICATION.

Improvements in or relating to Spring Frames for the Driving Wheels of Cycles, Motor Cycles, and the like Vehicles.

I, PHILIP CONRAD VINCENT, a British subject, of High House, Hornndon on Hill, Essex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention is for improvements in or relating to spring frames for the driving wheels of cycles, motor cycles and the like vehicles of the type wherein the wheel is mounted at one of the angles of a triangulated structure, which structure is pivoted at or near another angle to the main frame of the vehicle, and is spring-connected at or in proximity to its third angle to the said main frame. In this Specification, the term "like vehicles" is intended to include light four-wheel vehicles, for example, light cycle cars, as it will be apparent from the following description that the frame-structure constituting the present invention can be applied to the main frames of such vehicles without any alteration in the frame-structure itself.

One object of the present invention is to improve the rigidity and lateral stability of constructions of the aforesaid type.

According to the invention a frame structure of the type referred to for cycles, motor cycles and the like vehicles, and comprising two triangular frames arranged side-by-side and on opposite sides of the plane of the wheel, is characterised in that said frames are permanently secured together (e.g. by welding or brazing) by a single brace at or near each of the two angles of the structure other than that at which the wheel is mounted to which braces the individual members of the triangular frames are also permanently secured.

In a convenient construction the brace which unites the triangular frames at one of the said angles constitutes, or is integral with, a bearing member adapted to be mounted (e.g. pivotally) on a spindle

carried by the main frame of the vehicle or by an element secured thereto, which bearing member extends substantially from one side to the other of the frame-structure.

If desired, the bearing member may be split and provided with means (e.g. bolts) whereby it can be clamped to a spindle which is pivotally mounted in the main frame of the vehicle or in an element or elements carried thereby.

In order that the constructional details may be the more clearly understood, reference is made to the accompanying drawings in which:

Figure 1 is a perspective and more or less diagrammatic illustration of a preferred construction;

Figure 2 is a similar view of a modification, and

Figure 3 is a diagrammatic side elevation on a smaller scale of a further modification.

Like reference numerals indicate like parts in the various figures of the drawings.

Referring to Figure 1, the frame-structure comprises two triangular frames formed of tubes and arranged side-by-side so that a wheel (the axis of which is shown in chain lines at 10) can be received between them. Each of these frames comprises a lower tube 11 and two side tubes 12, 13. In each frame the tubes 11 and 12 are welded or brazed into lugs on an end member 14 in which the axle of the wheel can be mounted by any convenient means. The two triangular frames are rigidly connected together at their apices at the required distance apart by a single casting or forging 15 which has at each end a pair of lugs to which the corresponding side tubes 12 and 13 are welded or brazed. At the lower front angle the triangular frames are also similarly rigidly connected together by another forging or casting 16 likewise provided with two pairs of lugs to which are welded or brazed the lower and front ends of the

corresponding tubes 13 and 11 respectively. The forging or casting 16 is pivotally mounted by the aid of any suitable bearings on a spindle carried by any relatively stationary part of the vehicle, and the forging or casting 15 is connected by helical springs 17 to the main frame of the vehicle.

It will be seen from the foregoing description that a rigid triangular frame structure is provided, and that the main bearing for the pivot is an integral part of said structure. Moreover, the construction allows said main bearing to be of substantial length—approximately equal to the distance apart of the triangular frames—so that the structure is well supported at its pivotal point. Furthermore, the construction is such that the structure is adapted to withstand any side stresses to which it may be subjected, and any tendency of the wheel to lean over is overcome.

In the construction illustrated in Figure 2 parts corresponding to those described with reference to Figure 1 are indicated by like reference numerals. The forging or casting 16 is not pivotally mounted on the spindle aforesaid as hereinbefore described, but said forging or casting comprises a bearing member 18 which is split and can be clamped by bolts 19 to said spindle which latter in this case is pivotally mounted in the main frame of the vehicle or in a part connected thereto. Also, the frame structure is resiliently connected to the main frame by a leaf spring 20 instead of by helical springs. This leaf spring is mounted at its upper end on a pin 21 carried by a pair of links 22 secured to the forging or casting 15.

In either of the constructions described, the pivot for the frame-structure may be mounted in lugs provided on the main frame of the vehicle, or on the engine casing or gear box in the case of a motor bicycle, or in any other convenient manner.

The invention is not restricted to the precise constructional details hereinbefore described. For instance, if desired and to enable the triangular frame-structure to

be applied to existing main frames, the pivot bearing 16 may be provided at the apex of the triangle and the forging or casting 15 at one of the lower angles of the frame-structure, as shown in Figure 3. Moreover, any convenient spring suspension may be employed.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A frame-structure of the type referred to for cycles, motor cycles and the like vehicles, and comprising two triangular frames arranged side-by-side and on opposite sides of the plane of the wheel, characterised in that said frames are permanently secured together (e.g. by welding or brazing) by a single brace at or near each of the two angles of the structure other than that at which the wheel is mounted to which braces the individual members of the triangular frames are also permanently secured.

2. A frame-structure according to Claim 1, wherein the brace which unites the triangular frames at one of the said angles constitutes, or is integral with, a bearing member adapted to be mounted (e.g. pivotally) on a spindle carried by the main frame of the vehicle or by an element secured thereto, which bearing member extends substantially from one side to the other of the frame-structure.

3. A frame-structure according to Claim 2, wherein the bearing member is split and provided with means (e.g. bolts) whereby it can be clamped to a spindle which is pivotally mounted in the main frame of the vehicle, or in an element or elements carried thereby.

4. A triangulated frame-structure for cycles, motor-cycles or the like vehicles, substantially as described or substantially as illustrated in any of the figures of the accompanying drawings.

Dated this 15th day of November, 1927.

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[This Drawing is a reproduction of the Original on a reduced scale.]

