

No. 683,673.

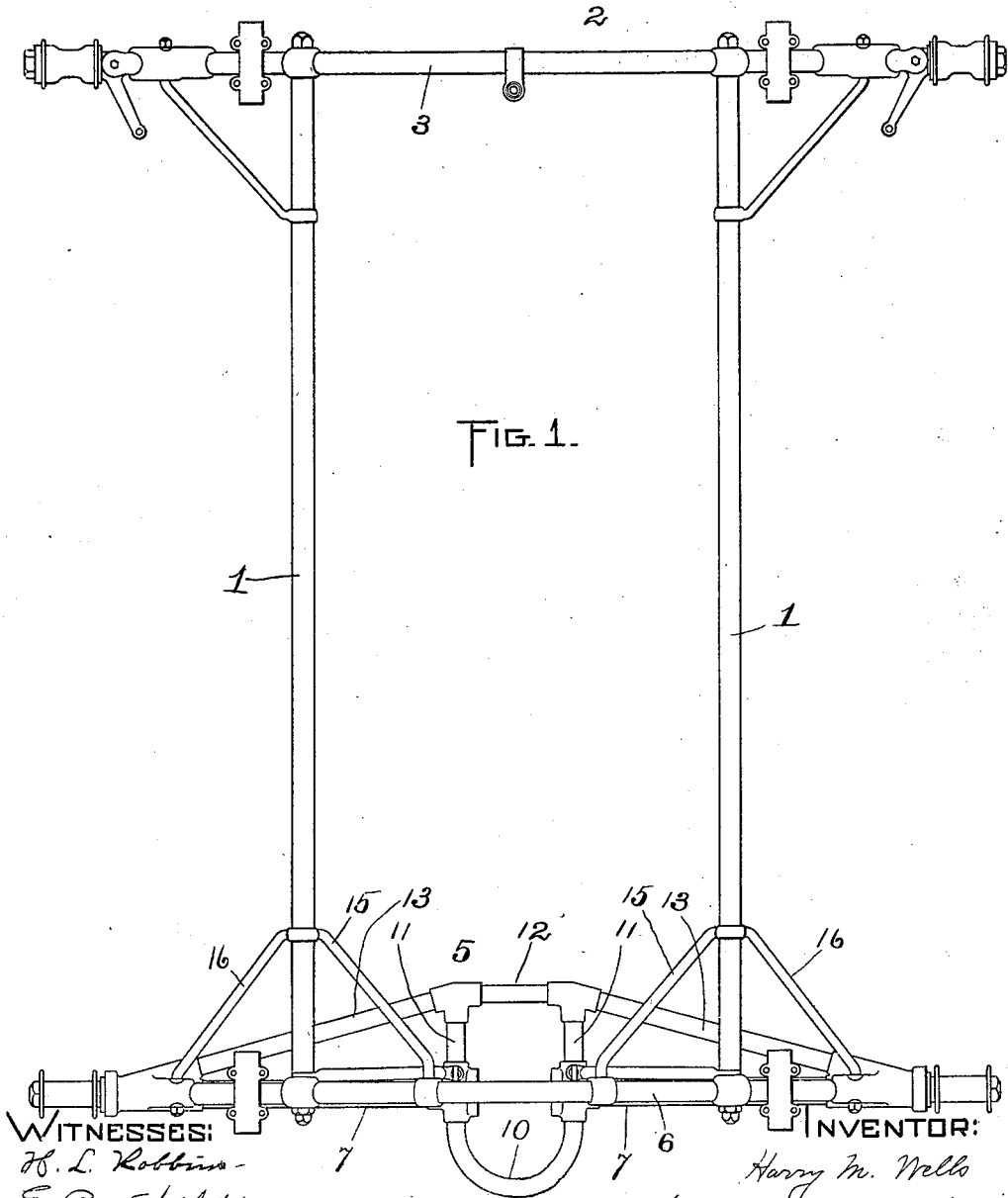
Patented Oct. 1, 1901.

H. M. WELLS.
UNDERFRAME FOR AUTOMOBILES.

(Application filed Jan. 12, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:
H. L. Robbins
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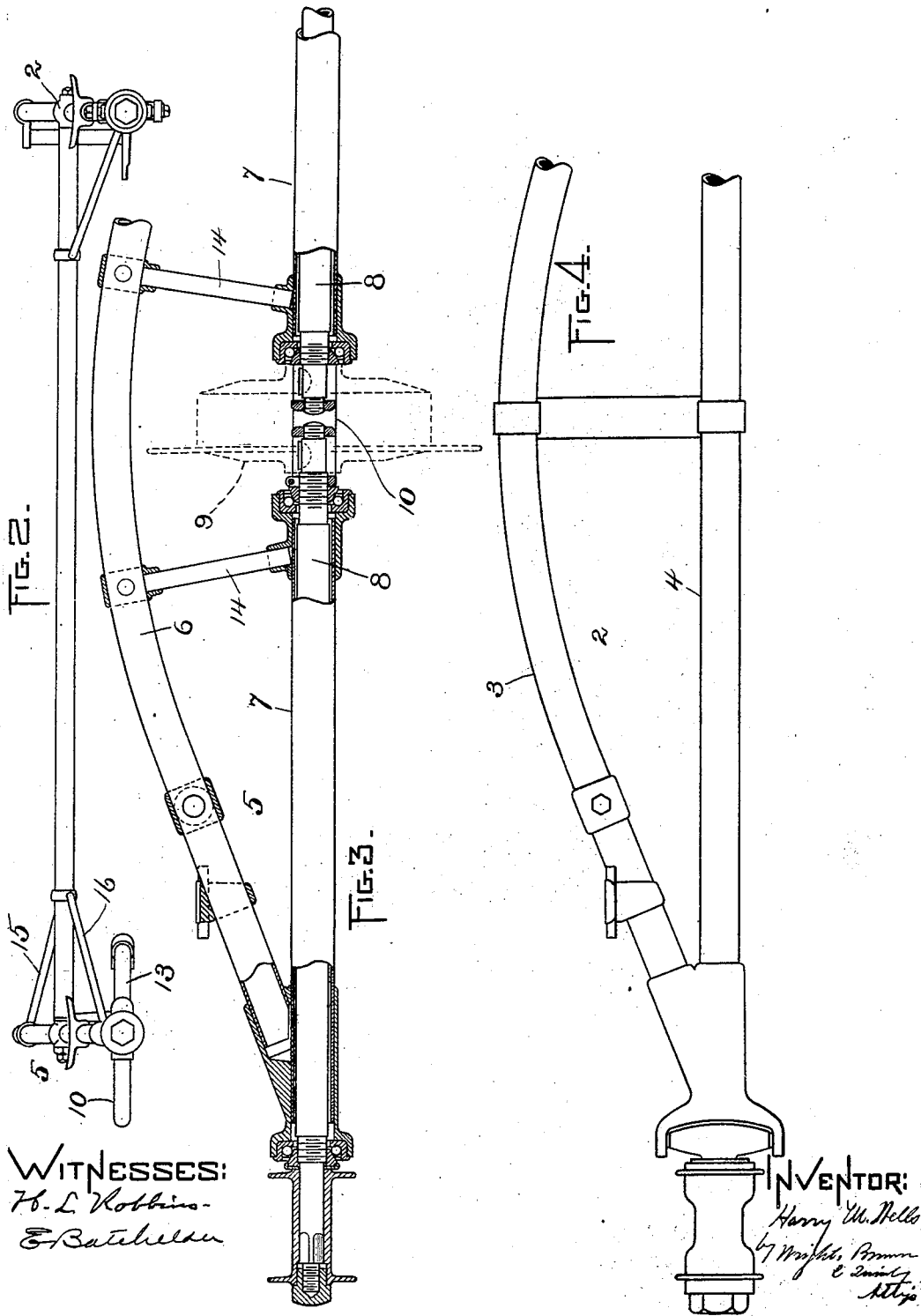
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3 Sheets—Sheet 2.



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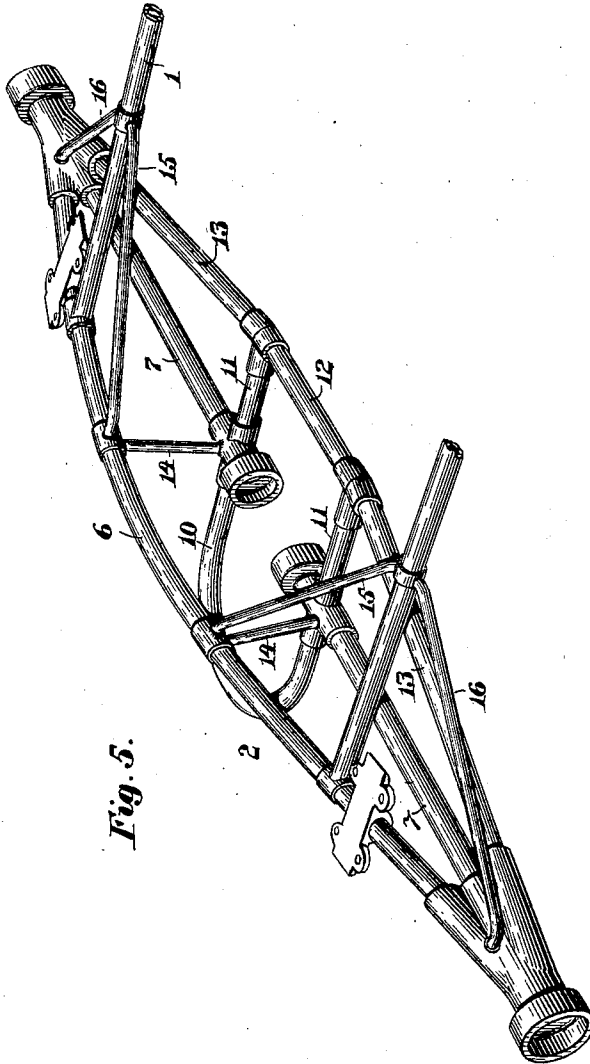


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

HARRY M. WELLS, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE
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UNDERFRAME FOR AUTOMOBILES.

SPECIFICATION forming part of Letters Patent No. 683,673, dated October 1, 1901.

Application filed January 12, 1901. Serial No. 42,982. (No model.)

To all whom it may concern:

Be it known that I, HARRY M. WELLS, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Underframes for Automobiles, of which the following is a specification.

This invention relates to the underframes of motor-vehicles, and more particularly to the construction of the cross-frame in which the driven axles have their bearing. Commonly this cross-frame comprises in its construction two tubular axle-housings, in which the independently-rotatable driven axles are journaled, and a horizontal yoke connecting the inner ends of said housings and adapted to accommodate the differential gear, which connects the axles. The housings have been prior to my invention combined with a vertical arch to form a truss structure for the purpose of withstanding vertical strains due to the weight of the superstructure and irregularities of the road; but provisions heretofore made for withstanding horizontal strains, and particularly the thrust of the driving-chain or other connection from the motor, with which many vehicles are equipped, may be regarded as inadequate, the axle-housings, and yoke structure having more or less of a tendency to cramp and buckle. The present invention overcomes this tendency by the provision of a horizontal truss construction for the cross-frame which supports the driven axles, whereby the axle-housings are stiffened, so as to avoid cramping or buckling and withstand extraordinary horizontal strains as well, and also contemplates the improvement and stiffening of the said cross-frame in related parts, as will hereinafter appear.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a plan view of an underframe constructed in accordance with my invention. Fig. 2 represents a side elevation thereof. Fig. 3 represents a partial section and rear elevation of the cross-frame in which the driven axles are supported. Fig. 4 represents a partial front elevation of the cross-frame at the opposite end of the underframe structure. Fig.

5 represents a perspective view of the rear cross-frame.

The same reference characters indicate the same parts in all of the figures.

In the drawings, 1 1 are two side bars or perches forming the longitudinal structure of the underframe.

2 is the cross-frame, to the ends of which the steering-axles are pivoted, said cross-frame, as shown, comprising an arched upper bar 3, connected to the perches 1 1, and a straight horizontal bar or chord 4, and 5 is the cross-frame at the opposite end of the underframe for supporting the driven axles, said cross-frame having a vertically-arched upper bar 6, connected to the perches 1 1, and two alined tubular axle-housings 7 7, having bearings at their inner and outer ends for the driven axles 8 8. The compensating gear, interposed between the inner ends of the housings 7 and connecting the axles 8, is indicated in dotted lines at 9 in Fig. 3.

10 is a loop or yoke member connecting the inner ends of the housings 7 7 on the rear side of said housings, and 11 11 12 are three straight bars, forming three sides of a rectangular yoke structure on the front side of the axle-housings.

13 13 are diagonal braces connecting the corners of this rectangular structure with the outer ends of the axle-housings 7 7.

The loop 10, with the two bars 11 and the bar 12, constitutes a complete yoke, which passes around the differential gear, and it will be seen that the said yoke, together with the housings 7 7 and braces 13 13, constitutes a horizontal truss, the chord of which is composed of the houses 7 and loop 10, while the arch is composed of the diagonals 13 and connector 12, the bars 11 11 constituting transverse struts, interposed between the chord and arch and connected with the latter at the junction of the diagonals 13 13 with the connector 12.

The cross-frame by the described structure is strengthened and stiffened and enabled to withstand the pull of the driving-chain and to avoid buckling or disalignment of the axle-housings and the resulting cramping of the compensating gear and axle mechanism and

also accidental or unusual horizontal strains which may be encountered.

14 14 represent two upright struts or bars connecting the inner or adjacent ends of the axle-housings 7 7 with the arched upper bar 6, said struts being interposed for the purpose of withstanding the collapsing strains on the vertical truss and also to increase the unity of structure between the arch 6 of said truss and its chord, comprising the axle-housings and yoke, and cause the arch to support a part of the horizontal strains to which the chord is subject.

15 15 represent two diagonal struts or braces connecting the perches 1 1 at points forward of the cross-frame 2 with that portion of the arched upper bar 6 which lies between the ends of said perches, the rear ends of said diagonal braces being here shown as attached to the arched bar 6 at the locality of the upper ends of the upright braces 14 and their forward ends attached to the perches 1 1 at the same locality as the forward ends of two other diagonal braces 16 16, running to the outer ends of the cross-frame 2. The braces 15 tend to withstand buckling of the arched bar 6 in a direction parallel to the perches 1 1, and they also counteract the tendency of the whole cross-frame structure to rock on the ends of the perches as a fulcrum.

I claim—

1. In an underframe for automobiles, the combination with the longitudinal frame structure, of a cross-frame structure comprising a truss laid in a substantially horizontal plane and including two axle-housings, a yoke connecting the same, and suitable braces connecting the axle-housings with the yoke.

2. In an underframe for automobiles, the combination with the longitudinal frame structure, of a cross-frame structure comprising a truss laid in a substantially horizontal plane and including two axle-housings, a yoke

connecting the same, and two diagonal braces connecting the yoke with the outer portions of the respective axle-housings, on one side of the latter.

3. In an underframe for automobiles, the combination with the horizontal frame structure, of a cross-frame structure comprising a truss laid in a substantially horizontal plane and including two axle-housings, a loop on one side of the axle-housings connecting their inner ends and constituting part of a yoke, said housings and loop constituting the chord of the truss, an arch on the other side of the housings connecting their outer portions, and cross-struts interposed between the axle-housings and said arch and constituting parts of said yoke.

4. In an underframe for automobiles, the combination with the longitudinal frame structure, of a cross-frame structure comprising a truss laid in a substantially horizontal plane and including an arch and struts which comprise the diagonals 13, 13, connector 12 and struts 11 connected with said diagonals and connector at their junction, and a chord comprising two axle-housings connected with the outer ends of the diagonals and with the struts and a yoke member 10 connecting the inner ends of said housings.

5. In an underframe for automobiles, a cross-frame for the driving-axes comprising outer bearings for the axles, inner bearings therefor, a horizontal yoke connecting the inner bearings, and diagonal braces connecting the yoke with the outer bearings, said yoke and braces constituting part of a horizontal truss structure.

In testimony whereof I have affixed my signature in presence of two witnesses.

HARRY M. WELLS.

Witnesses:

A. M. WOOSTER,
W. J. BENNETT.