No. 697,722. Patented Apr. 15, 1902.

G. A. HUNT.

AUTOMOBILE FRAME.

Application filed Feb. 11, 1901.

(No Model.)

3 Sheets—Sheet 1.

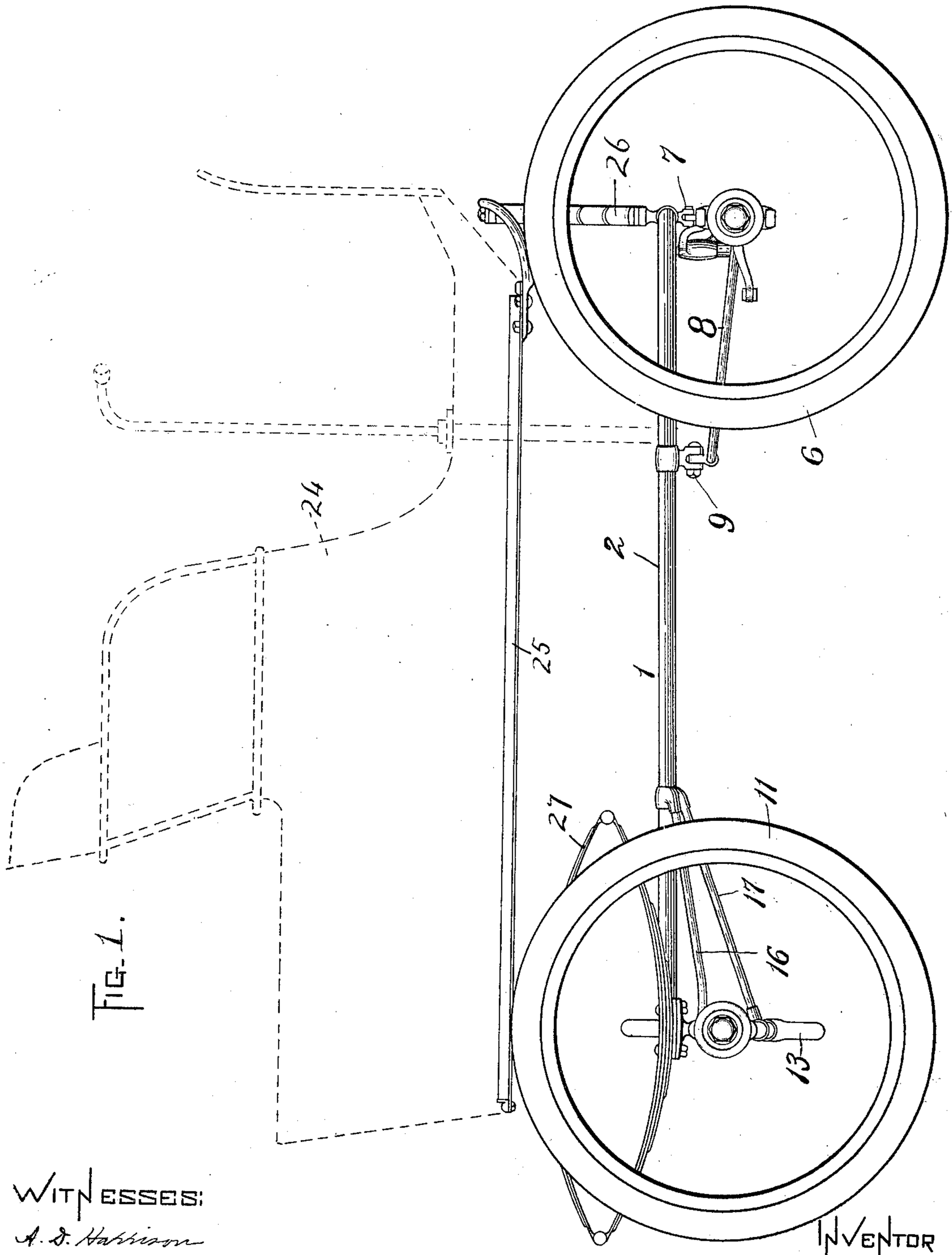

FIG. 1.

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3 Sheets—Sheet 2

FIG. 2.

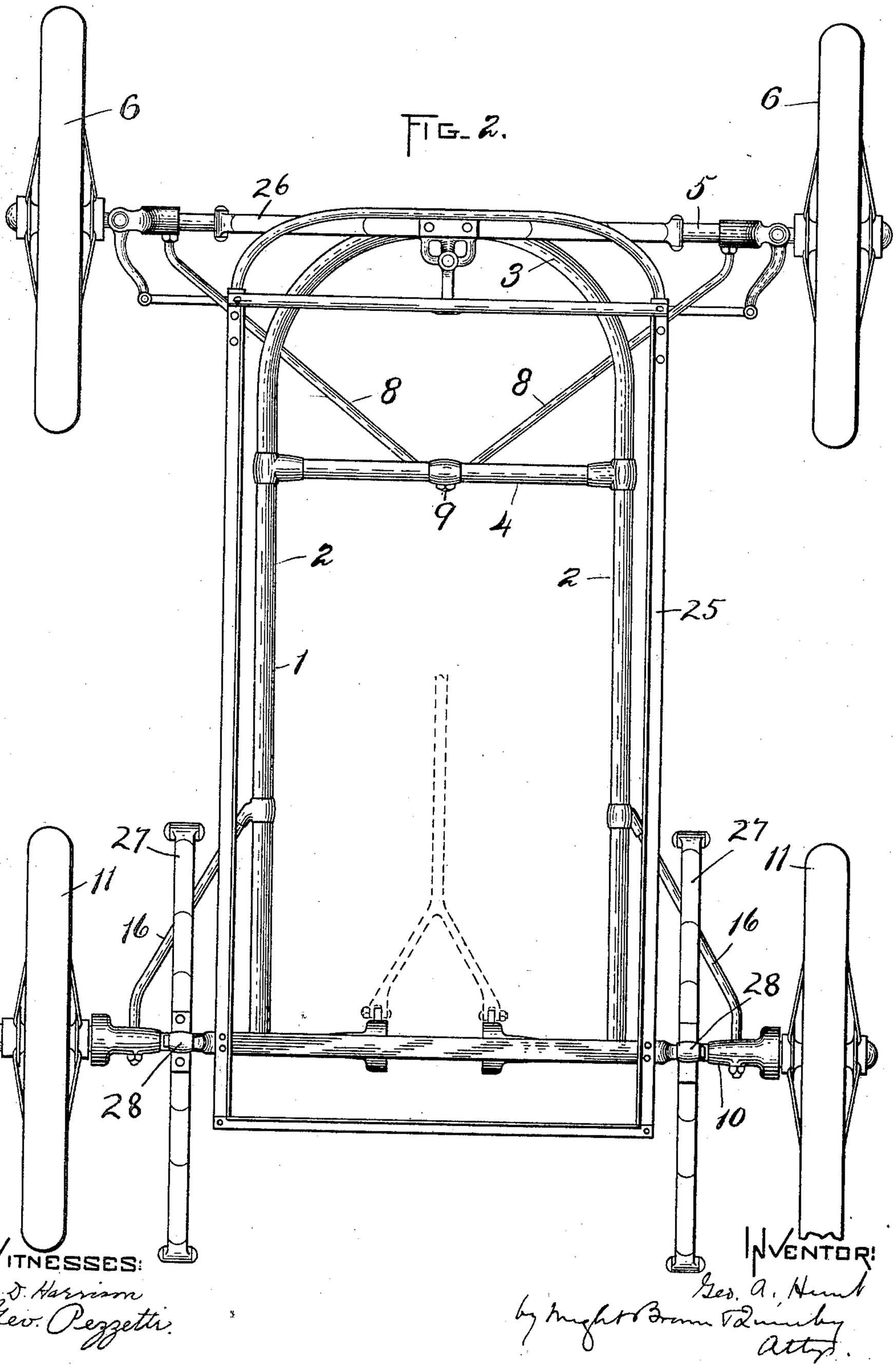

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FIG. 3.

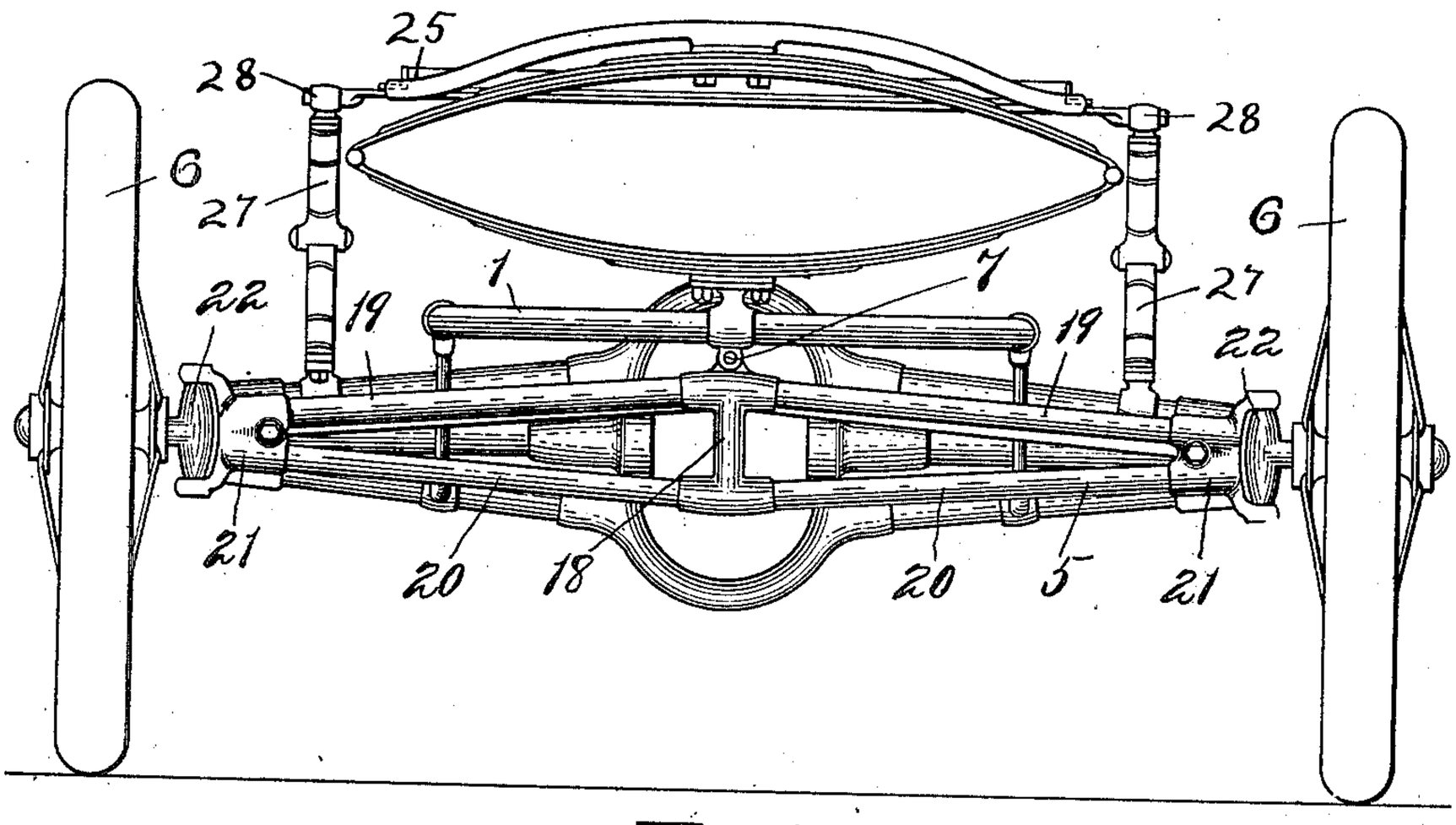
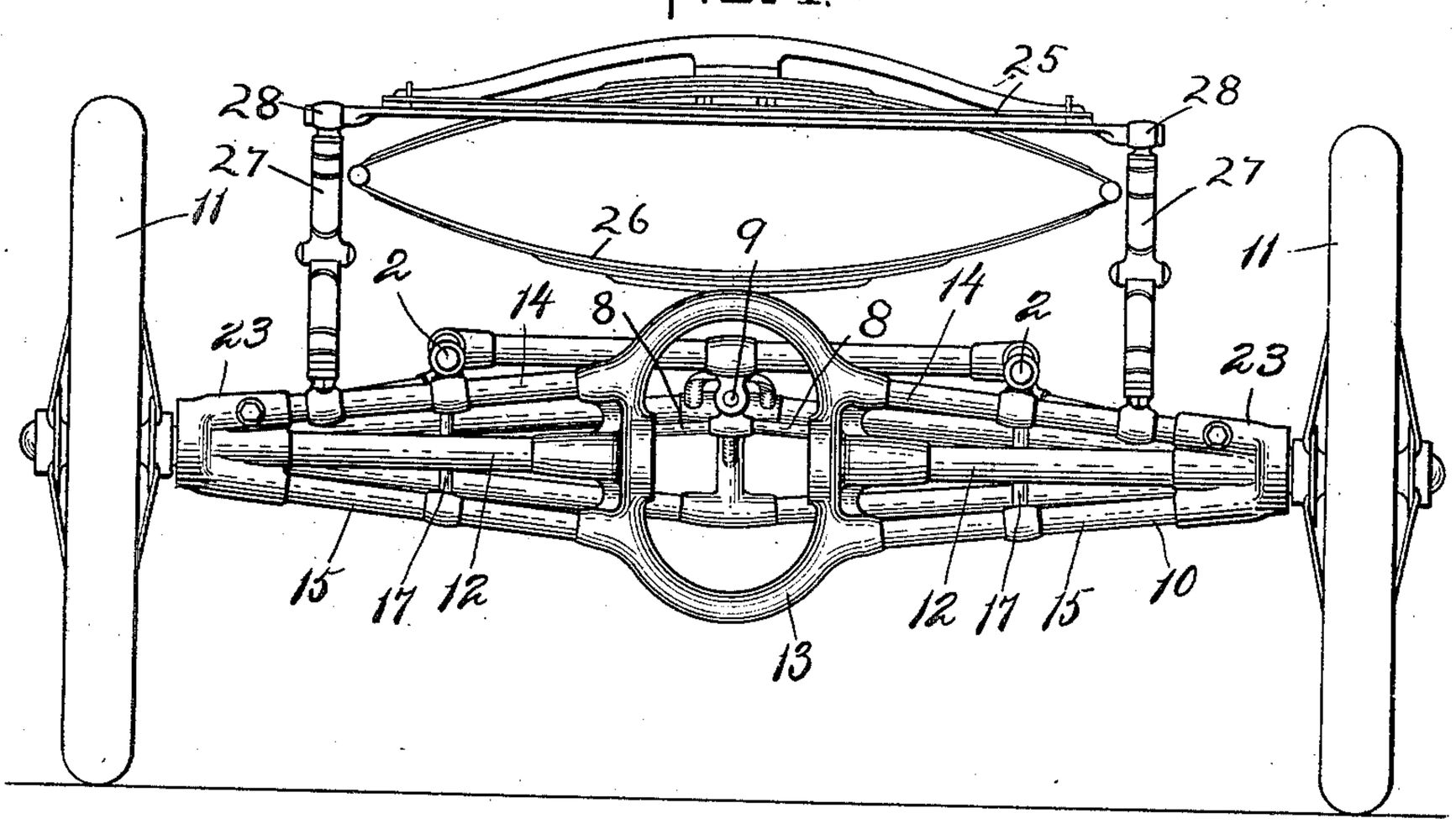


FIG. 4.



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UNITED STATES PATENT OFFICE.

GEORGE A. HUNT, OF READING, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO F. C. ALDEN, OF READING, MASSACHUSETTS.

AUTOMOBILE-FRAME.

SPECIFICATION forming part of Letters Patent No. 697,722, dated April 15, 1902.

Application filed February 11, 1901. Serial No. 46,869. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. HUNT, of Reading, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automobile-Frames, of which the following is a specification.

This invention relates to the running-gear of automobile vehicles; and it has for its object to provide a light and strong frame suitable to withstand running strains, but having provisions for yielding to some extent to inequalities in the road.

The invention consists in certain novel features of construction and arrangement, which I will now proceed to describe and claim.

Of the accompanying drawings, Figure 1 represents a side elevation of an automobile-frame constructed in accordance with my invention. Fig. 2 represents a plan view thereof. Fig. 3 represents a front elevation. Fig. 4 represents a rear elevation.

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

In the drawings, 1 represents a longitudinal frame structure comprising side bars or perches 2 2, connected across at their forward ends by a curved portion 3 and joined at a point back of the front end of the frame by a cross-bar 4.

5 is the front cross-frame, to the ends of which the steering-wheels 6 6 are swiveled, said cross-frame being pivoted at 7 to a downwardly-projecting bracket or lug attached to the extreme front of the curved portion of the longitudinal frame structure 1, so as to be capable of swinging and assuming a different inclination than is assumed by the frame structure 1 and the vehicle-body when one of the steering-wheels is raised or lowered to a greater extent than the other by reason of the character of the road. To prevent the cross-frame 5 from swinging in a horizontal plane with respect to the frame 1, I provide a pair of brace-bars 8 8, which extend from the middle point of the cross-bar 4 to the outer ends of the cross-frame 5 and are connected with the cross-bar 4 by a pivotal joint 9, so as to be capable of oscillating in a vertical plane with the cross-frame 5. The two halves of the curved part 3 on either side of the pivot 7 may be considered as bars converging forwardly. Such converging allows the cross-frame 5 to tilt to a very considerable degree without striking the longitudinal frame 1.

The cross-frame 5 comprises a vertical cross piece or strut 18 under the hinge or pivot 7, end socket-pieces 21 21, to which the steering axles or knuckles 22 are pivoted, diagonal upper bars or braces 19 19, and diagonal lower bars or braces 20 20, connecting said center piece 18 with the socket-pieces 21. The weight of the superstructure tends to bend the center of the cross-frame downwardly and the ends upwardly, putting the upper bars 19 under compression and the lower bars 20 under tension. The described construction of the cross-frame adapts it to effectively withstand the strains to which it is subjected and at the same time enable it to be of light construction.

At the rear end of the running-gear is located the cross-frame 10 for supporting the driving-wheels 11 11. This rear cross-frame has the usual alined tubes or housings 12 12 for the driving-axles, said tubes being separated at their inner ends by a space to accommodate the usual differential gear and driving-sprocket. It is also constructed with a vertical yoke 13, connecting the inner ends of the axle-housings 12 12 and diagonal brace-bars 14 15, extending from the upper and lower portions of this yoke to socket-pieces 23 23 at the outer ends of the housings 12. These braces, with the yoke and the axle-housings, form a double-truss structure which braces the axle-housings both above and below, and imparts thereto the strength which is necessary to withstand vertical strains. The principle of construction is similar to that followed in the front cross-frame 5, there being in each case a middle cross-piece and upper and lower diagonal bars extending therefrom to the socket-pieces at the outer ends of the frame. The rear ends of the perches 2 2 overlie the upper brace-bars 14 and are rigidly connected therewith at about their middle points. From the perches 2, at points forward of the rear cross-frame, I extend diagonal braces 16 16 to the outer ends of the cross-frame, and from about the

same points on the perches I extend other diagonal braces 17 17, which run downwardly and join the lower brace-bars 15 at points underneath the joints between the perches 2 and the upper brace-bars 14. These braces 17 serve to prevent a relative oscillatory movement between the perches and the lower brace-bars 15.

It will be observed that the yoke 13 as to its annular conformation is made in one integral piece, thus providing a simpler and stronger structure than one made up of jointed pieces. The yoke is provided with sockets, into which the inner ends of the bars 14 15 and the axle-tubes 12 are jointed, preferably by brazing. The yoke 13, bars 14 15, and end socket-pieces 23 are made sufficiently stout and joined in such manner as to constitute a complete frame for hanging the driving-axles and withstanding all ordinary running shocks. The axle-tubes 12 do not contribute materially to the strength of the cross-frame, but are preferably made of relatively light stock and serve merely to sheath and protect the axles.

24, Fig. 1, represents the vehicle-body, and 25 a rectangular frame, which supports and virtually constitutes a part of said body. To the forward end of this frame is attached the upper bow of the transverse double-bow spring 26, connecting the body to the under frame 1, and to the rear end of the frame 24, on each side thereof, are attached the two longitudinal double-bow springs 27 27, connecting the body to the rear cross-frame 10. The upper bows of these latter springs are attached by hinge-joints 28 28 to the rectangular frame 25, so that the springs may oscillate to some extent with respect to the body and allow of a longitudinal movement of the body with respect to the running-gear. At the forward end of the vehicle this longitudinal movement is permitted to a limited extent by the torsional give of the spring 26. In driving motor-carriages it is a common expedient to mount the motor on the body, with a rigid thrust connection between it and the driving-axle and provisions for permitting an oscillatory movement of the motor with respect to the body. By providing for longitudinal movement of the body with respect to the running-gear, as herein described, I allow the longitudinal movements due to jolts to be distributed between the body and the motor.

I do not confine myself to the exact details of construction above set forth, as considerable variation may be made without departing from the spirit of my invention.

I claim—

1. In an automobile-underframe the combination of a cross-frame for the driving-wheels comprising a substantially vertical yoke, upper and lower outwardly-converging diagonal bars projecting from both sides of said yoke and connected at their outer ends, tubular axle-housings located between the upper and lower diagonal bars on each side, longitudinal perches attached to the upper diagonal bars, and diagonal braces connecting said perches with the lower diagonal bars and located in substantially the same vertical planes with the perches.

2. An automobile-underframe comprising a longitudinal frame structure having side bars formed with a curved portion at their forward ends and having a downwardly-projecting bracket or lug at the extreme front, and a cross-frame for the steering-wheels pivoted to the said bracket or lug underneath the said curved portion.

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

GEORGE A. HUNT.

Witnesses:
A. D. HARRISON,
C. F. BROWN.