No. 637,296. Patented Nov. 21, 1899.

G. S. STRONG.

RUNNING GEAR FOR AUTOMOBILE VEHICLES.

(Application filed Dec. 7, 1898.)

(No Model.) 3 Sheets—Sheet 1.

FIG. 1.

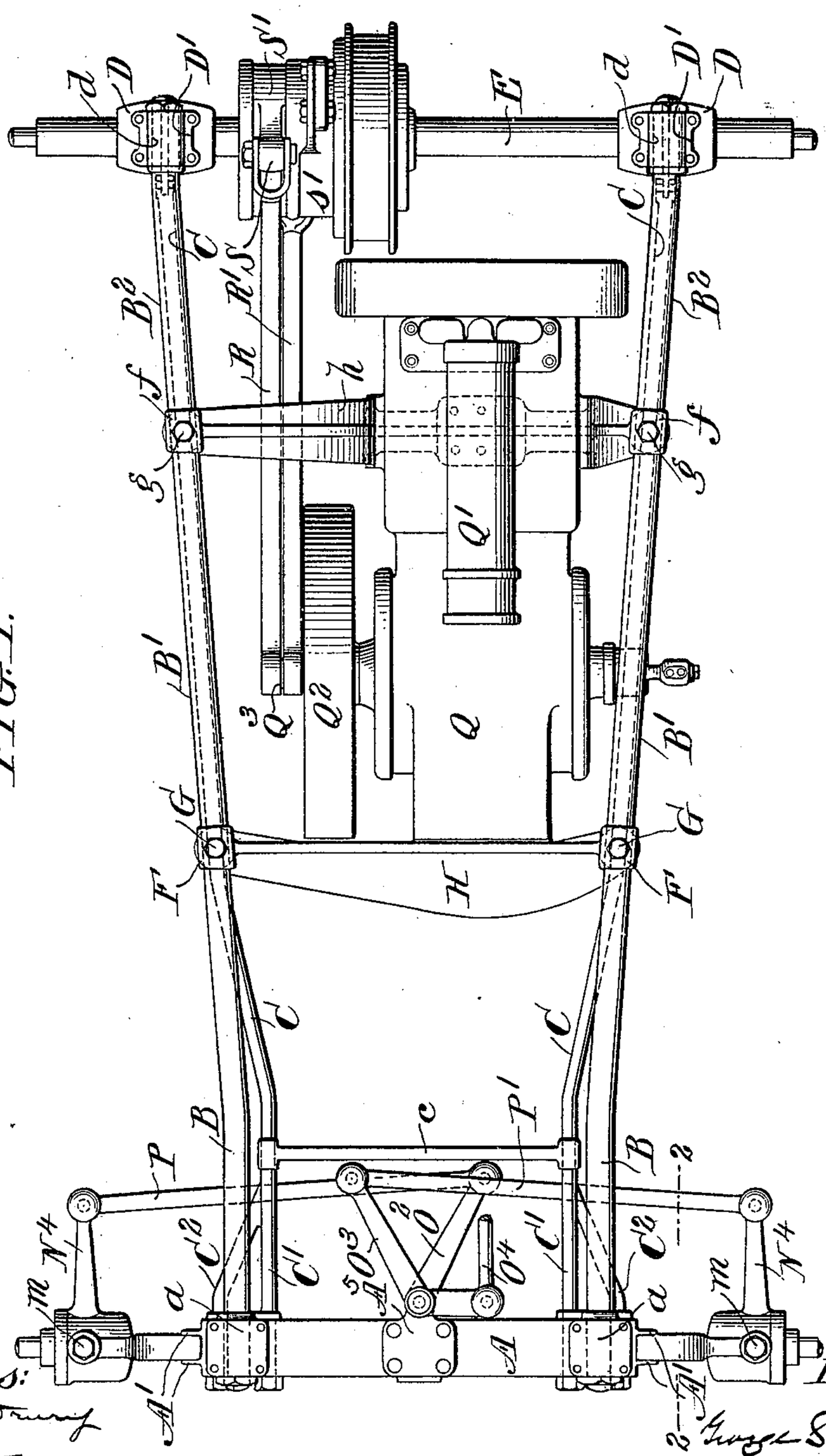

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FIG. 2.

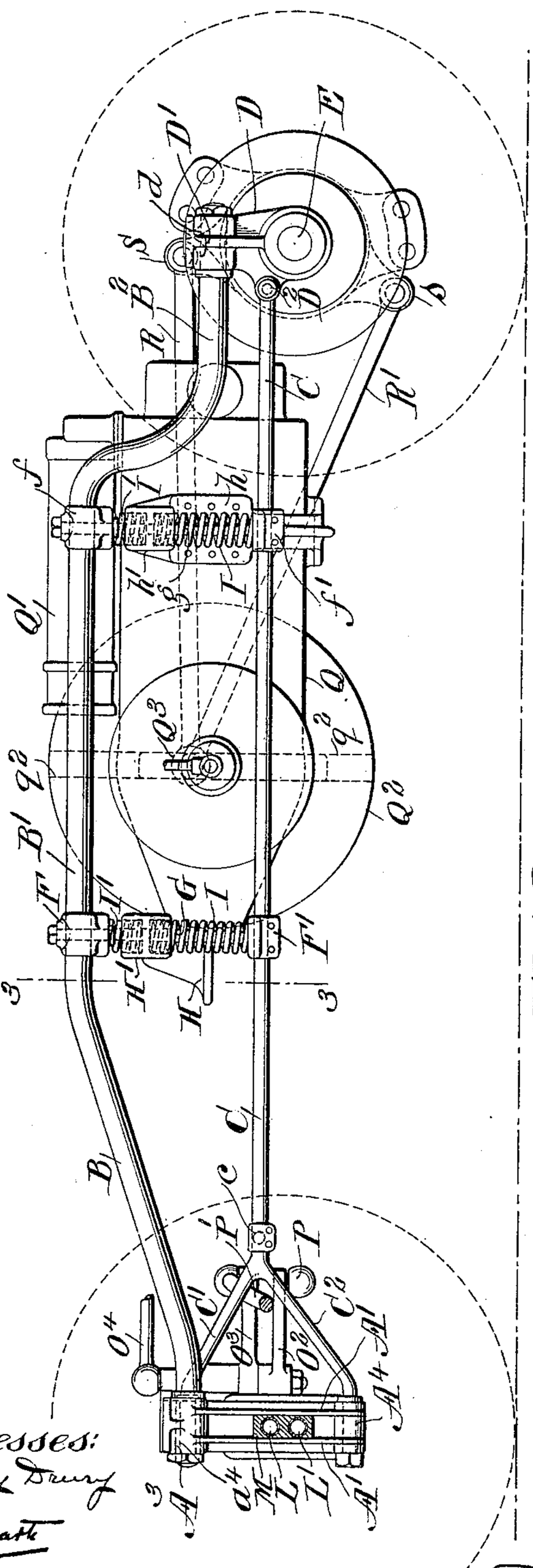

FIG. 4.

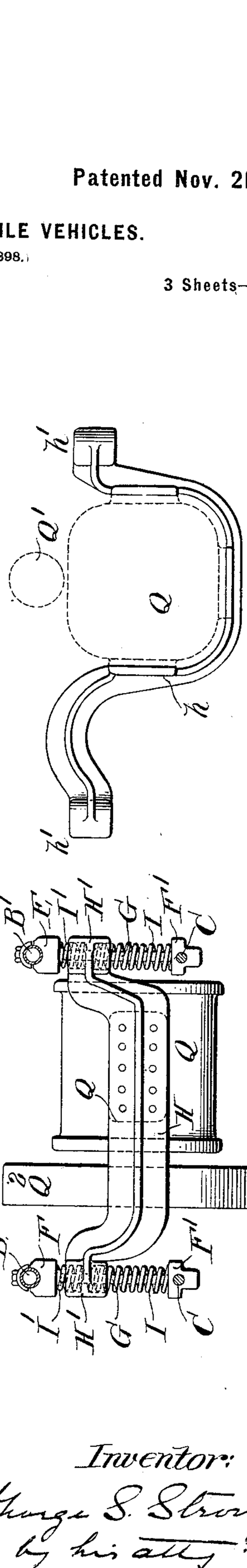

FIG. 3.

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FIG. 5.

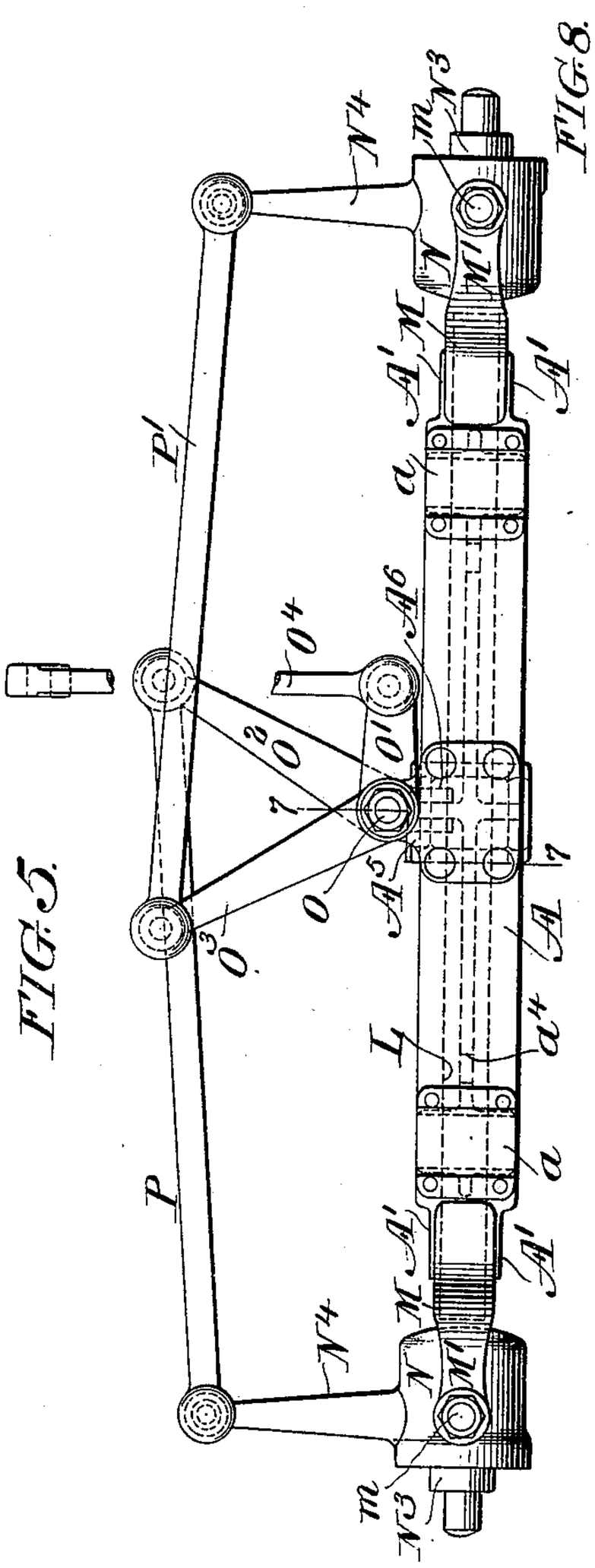


FIG. 6.

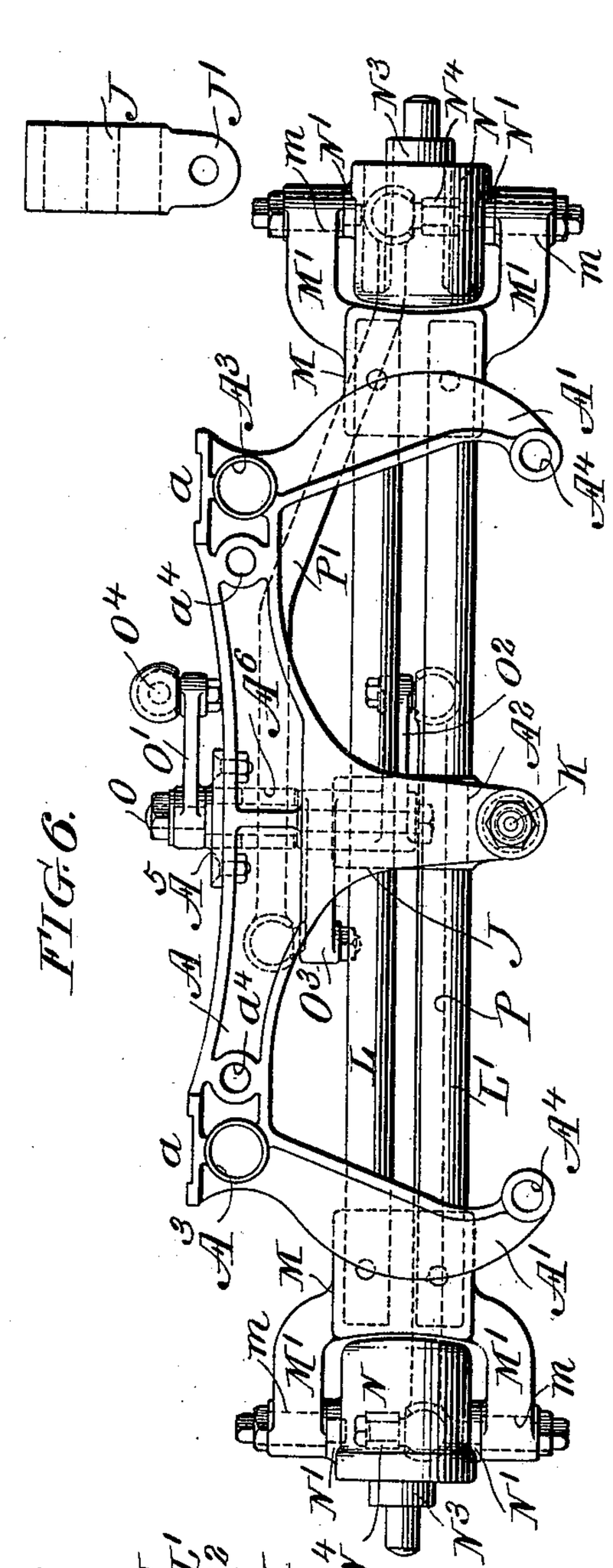
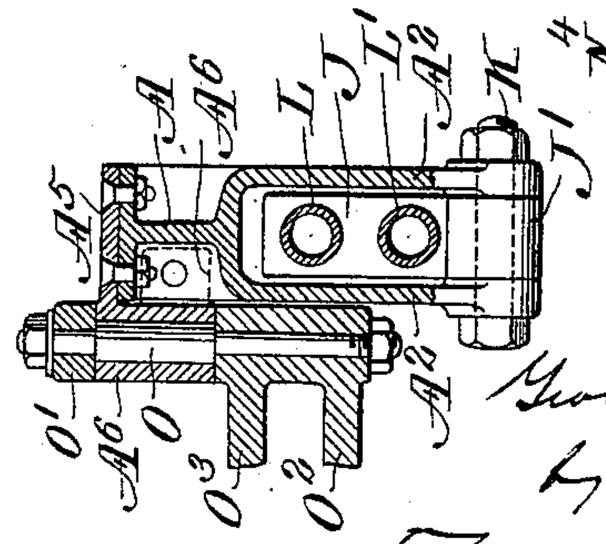


FIG. 7.



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UNITED STATES PATENT OFFICE.

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RUNNING-GEAR FOR AUTOMOBILE VEHICLES.

SPECIFICATION forming part of Letters Patent No. 637,296, dated November 21, 1899.

Application filed December 7, 1898. Serial No. 698,515. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. STRONG, a citizen of the United States of America, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Running-Gear for Automobile Vehicles, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the running-gear of automobile vehicles, and has for its objects to provide a strong and simple framework for the running-gear and to provide a simple, strong, and efficient arrangement and combination of the front bolster of the running-gear with an axle-bar carrying stud-axles at its ends.

The nature of my improvements will be best understood as described in connection with the drawings in which they are illustrated, and in which—

Figure 1 is a plan view of my improved running-gear, showing the motor supported thereon and the operative connections between the motor and the rear or driving axle of the vehicle. Fig. 2 is a side elevation of the parts shown in Fig. 1, with the end of the axle-bar, however, shown in section, taken as on the line 2 2 of Fig. 1. Fig. 3 is a cross-sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is an elevation showing the construction of the rear cradle-bar. Fig. 5 is a plan view of the front bolster and parts connected therewith. Fig. 6 is a front view of the said front bolster, the axle-bar, and other parts immediately connected thereto. Fig. 7 is a cross-sectional view on the section-line 7 7 of Fig. 5, and Fig. 8 is a detached view of the block by which the axle-bar in my preferred construction is connected with the front bolster.

A indicates the front bolster of the vehicle, having upon its upper face platforms *a a*, upon which the springs are secured to support the vehicle-body at each end of the bolster. It is formed with downwardly-extending arms or forks, (indicated at A′ A′,) and also at the center of the bolster it is carried downward in forks or arms. (Indicated at A^2 A^2.) At A^3 A^3 perforations are formed through the upper end of the bolster proper, at A^4 A^4 similar perforations in the lower ends of the arms A′, and at a^4 a^4 other perforations are provided. The purpose of these perforations will be hereinafter explained.

A^5 (see Figs. 5, 6, and 7) is a plate secured to the top of the bolster at its center and having formed in it a tubular bearing-block A^6.

D D (see Figs. 1 and 2) are the rear-axle boxes of the wagon, formed with upwardly-extending blocks D′, having at their upper ends perforations (indicated at *d*) and near the box proper transversely-perforated shoulders, as indicated at D^2.

B B are compression members of the truss connecting the front bolster and rear-axle boxes. They are preferably made of pipe formed as indicated clearly in Figs. 1 and 2, secured at their front ends in the perforations A^3 of the bolsters and at their rear ends in the perforations *d* of the rear-axle blocks.

C C indicate the tension members of the truss, formed as clearly shown in Figs. 1 and 2, secured at their rear ends to the shoulders D^2 of the axle-box and preferably formed with forks C′ C^2 at their front ends, the upper forks being secured in the perforation a^4 and the lower forks in the perforations A^4 of the bolster. I have indicated a cross-connection *c* as fastening the two tension-bars together just in front of their forks.

E indicates the rear axle of the vehicle, upon which the axle-boxes D D are supported. F F′ and *f f′* indicate boxes or clamps secured, respectively, to the members B and C of the truss and to which are secured strut-rods G G and *g g*.

H is a cradle-bar upon which is supported the front end of the motor-casing, and which is formed or provided with perforated ears or projections H′, and through which the strut-rods G G pass, the said ears or projections being supported on springs I I and preferably also acted on by springs I′ I′, as indicated in Fig. 3.

h is a second cradle-bar, upon which the rear end of the motor-casing is supported, this bar being also provided with ears or projections *h′ h′*, through which the strut-bars

g g pass, springs I and I′ being provided to support and act upon the bars, as in case of the bar H.

Q is a motor-casing, the motor being preferably a gas or oil engine, and Q′ indicating a device connected with the exhaust of such engine, which, as it forms no part of my present invention, need not be further described.

Q^2 indicates a crank and fly-wheel secured to the driving-shaft of the engine and carrying a crank-pin Q^3, which I propose to make transversely movable, so as to vary its eccentricity, as by attaching it to a slide moving in the transverse groove q^2 of the fly-wheel. The mechanism for doing this, however, is not illustrated, as it forms no part of my present invention. Attached to the crank-pin Q^3 are connecting-rods R and R′, which are attached, through rod R, to an upwardly-extending lever-arm S of a clutch S′ and the rod R′ to a downwardly-extending lever-arm s of a clutch indicated at s'. These clutches for the purposes of my present application may be of any well-known construction which when moved in one direction will engage and rotate the axle E, while being free to move in the other direction without engaging the said axle, the connection with the crank-pin being such that one clutch is moving forward while the other is moving backward.

It will be obvious from the description hereinbefore given that the spring-support of the motor upon the running-gear, while permitting a change in the position of the motor with regard to the driving-axle, will not in any way affect its capacity to drive the axle, the clutch connection being of such a character that it will not be affected by any possible movement of the driving-axle of the motor with respect to the driving-axle E of the vehicle. The spring-support of the motor enables it to be carried with much less tendency to its injury or injury to the running-gear than would be the case if fastened rigidly together, the construction of the running-gear in the form shown in the drawings being of great simplicity and convenience.

Passing now to the mechanism shown in connection with the front bolster, L and L′ indicate pipe-sections united at their ends in blocks or heads M M and forming the front axle-bar of the vehicle. The pipe construction shown is that which I prefer to use; but it will be understood that the front axle may be made of angular bars or, indeed, of any convenient construction. The axle-bar passes between forks A′ A′ and the forks A^2 A^2 of the front bolster and is secured to the central forks A^2 by a horizontal pivot, (indicated at K,) the union being effected in the construction shown (see Figs. 7 and 8) through a cast block J, through which the pipes L L′ pass and to which they are secured at their center, while the horizontal pin K passes through the end J′ of this block.

The blocks or headers M M are formed with forked ends M′ M′, through which pass pins m m, upon which in turn is pivotally secured the stud-axle box N, which is formed with journals N′ at top and bottom for the entry of the pins m. N^3 indicates the stud-axle proper, which extends, as shown, from the rear closed end of the stud-axle box or casing. N^4 N^4 indicate lever-arms attached to the sides of the stud-axle boxes and connected by means of links P and P′ with lever-arms O^2 and O^3, extending at an angle, as shown, from the journal O, to or upon which they are secured, preferably as shown in Fig. 7. Also secured to this journal, which moves in the cylindrical journal-box A^6, is a lever-arm O′, connected by rod O^4 with any convenient lever or device for actuating it and simultaneously controlling the stud-axle boxes and the wheels secured thereto.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A running-gear framing for automobile vehicles having in combination a front bolster and two rear-axle boxes as D D, truss compression members as B connecting the top of the bolster with the upper ends of the boxes D, truss tension members C connected to the boxes D below the members B and formed with forked front ends C′ C^2 one fork connecting with the top of the bolster and the other with its lower side or extension and strut-rods G g extending between the compression and tension members of the truss.

2. A running-gear framing for automobile vehicles having in combination a front bolster and two rear-axle boxes as D D, truss compression members as B connecting the top of the bolster with the upper ends of the boxes D, truss tension members C connected to the boxes D below the members B and formed with forked front ends C′ C^2 one fork connecting with the top of the bolster and the other with its lower side or extension, strut-rods G g extending between the compression and tension members of the truss, cradle-bars H and h for a motor guided on struts G g and springs as I I′ for elastically supporting said bars on the truss.

3. The bolster A having the downwardly-extending central forks A^2 and terminal forks A′ A′, in combination with an axle-bar passing between the forks of the bolster, and pivoted to the central forks A^2, stud-axles N^3 secured on vertical pivots to the ends of the axle-bar, and running-gear framing secured to the bolster proper and to the end of the terminal forks respectively above and below the axle-bar.

4. The bolster A having the downwardly-extending central forks A^2 and terminal forks A′ A′ in combination with an axle-bar passing between the forks A′ A′ and connected by a horizontal pivot to the central forks A^2, stud-axles N^3 secured on vertical pivots to the ends of the axle-bar, a vertical shaft O se-

cured in bearings at one side of the bolster, levers O^2 O^3 connected to the stud-axle and secured to shaft O and an actuating-lever O′ also secured to said vertical shaft.

5. The bolster A having the downwardly-extending central forks A^2 and terminal forks A′ A′ in combination with an axle-bar formed of pipe-sections L L′ with terminal castings M M said bar passing between the forks A′ A′ of the bolster and being connected to the central forks through a block J by a horizontal pivot, and stud-axles secured by vertical pivots to the terminal castings M M.

6. In an automobile vehicle the combination of the running-gear comprising an upper and a lower member, a motor and its supporting-frame, springs interposed between the upper and lower members of the running-gear and connections between said springs and the motor-supporting frame.

7. In an automobile vehicle, a motor and its supporting-frame, said motor comprising a crank, two rods connected thereto, a driving-axle, two clutches arranged to drive said axle and having arms extending in opposite directions and connected one to each of said rods, in combination with the running-gear having an upper and lower member, springs interposed between the upper and lower members of the running-gear, and connections between said springs and motor-supporting frame.

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