No. 623,037. Patented Apr. 11, 1899.

A. L. RIKER.

MOTOR VEHICLE.

(Application filed May 23, 1898.)

(No Model.)

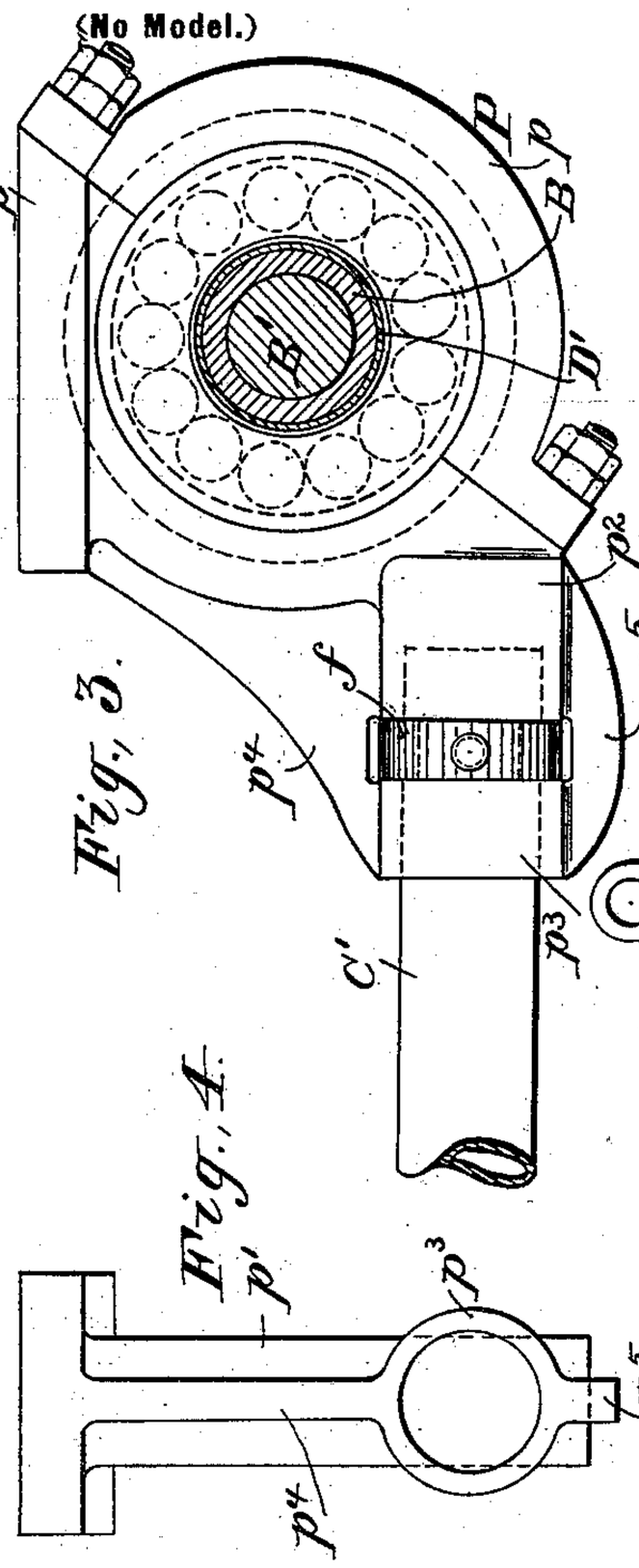

Fig. 3.

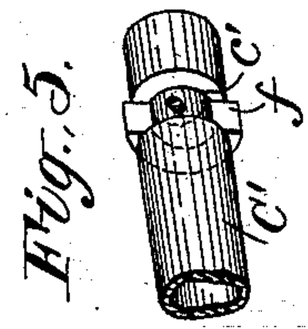

Fig. 5.

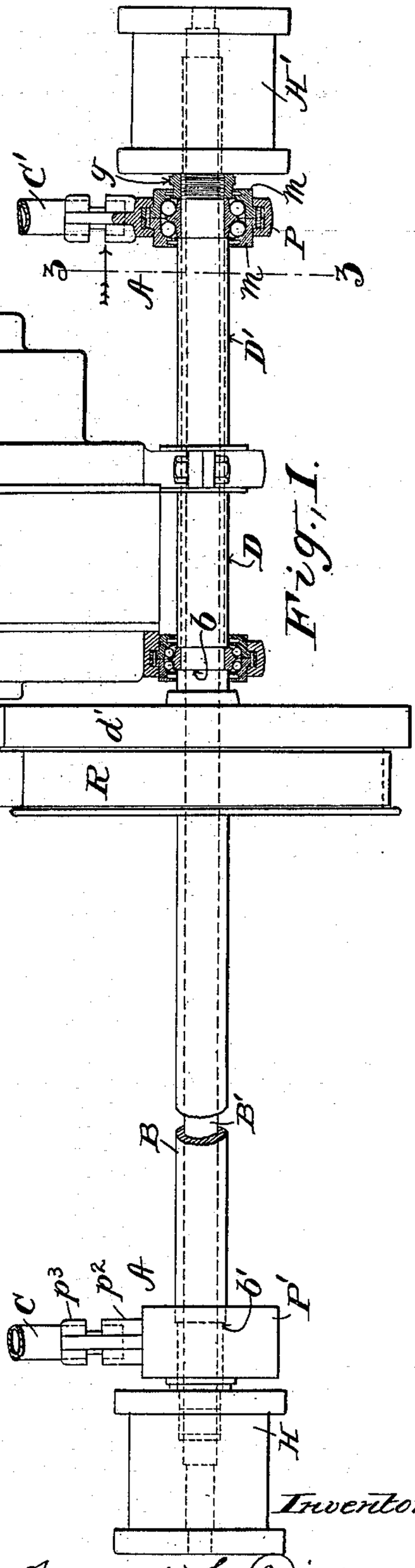

Fig. 1.

Fig. 4.

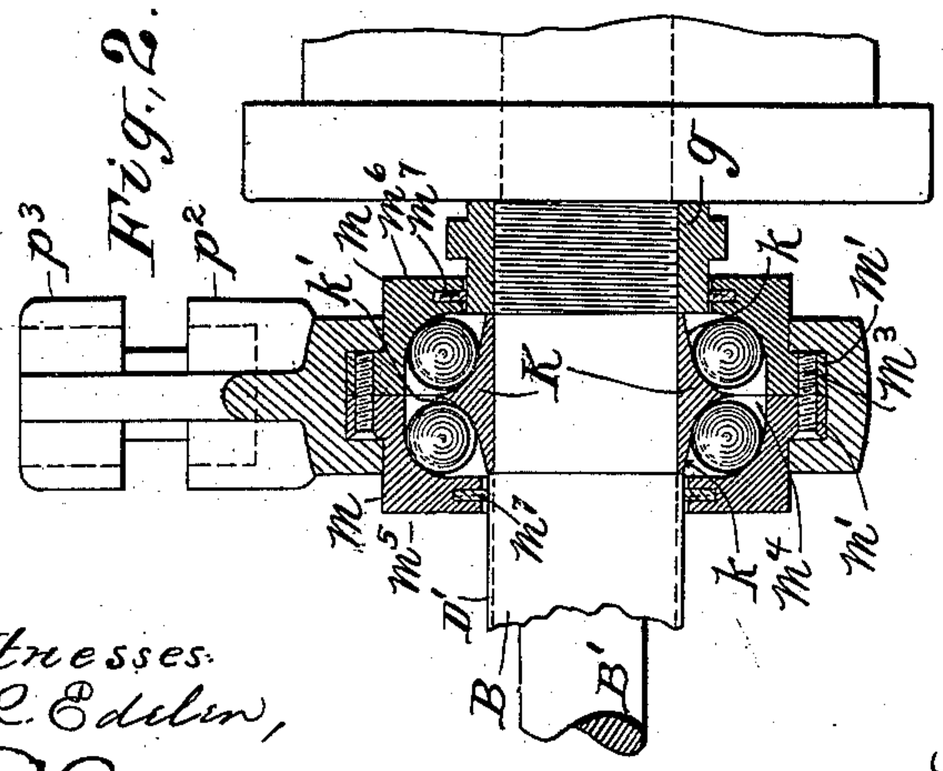

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

ANDREW L. RIKER, OF NEW YORK, N. Y.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 623,037, dated April 11, 1899.

Application filed May 23, 1898. Serial No. 681,541. (No model.)

To all whom it may concern:

Be it known that I, ANDREW L. RIKER, of New York, State of New York, have invented a new and useful Improvement in Motor-Vehicles, which improvement is fully set forth in the following specification.

This invention relates to the construction of motor-vehicles, and more particularly to certain portions of the running-gear thereof, comprising the frame, the axles, and the driving mechanism.

The improved running-gear herein described is an improvement on that described in my pending application, Serial No. 669,947, filed February 11, 1898, and is designed to simplify and cheapen the construction and lighten certain of the parts without detracting from the reliability and efficiency thereof.

The invention will best be understood by reference to the figures of the drawings forming a part of this specification, in which—

Figure 1 shows a plan view, in part section, of the rear portion of a running-gear frame, the hubs only of the wheels being shown and the side bars being broken away. Fig. 2 is an enlarged plan view, in partial section, of the joint uniting the side bars to the axle. Fig. 3 is a side and Fig. 4 an end elevation thereof; and Fig. 5 is a perspective view of the end of a side bar, with part of the key or collar.

Like letters of reference indicate like parts in all the figures of the drawings, in which—

A indicates generally the joint uniting the side bars C C′ with the tubular axle B, and B′ is a solid axle within the tubular axle B, each of which extends as an unbroken axle the entire width of the vehicle.

D is the motor, suitably supported on the rear axle and a third point on the frame, and D′ and D² are spacing-sleeves slipped on over a reduced portion of the tubular axle B and serve to firmly fix the motor in its proper position on said axle.

R is the brake-drum, and *d* is the driving-gear, fast on the tubular axle and in mesh with the pinion *d′* on the motor-shaft.

H H′ indicate the wheel-hubs operating substantially as in my application above referred to.

Surrounding the gearing and brake-drum may be a gear-casing of light sheet metal. (Not shown.) The yokes P P′, by which the side bars are attached to the axle, are alike, and a description of one will suffice for both. Surrounding the tubular axle B is a ring K, of hardened steel, having substantially similar concave raceways *k* cut around the opposite edges of its perimeter, leaving a projecting ridge *k′* between said ways and along the medial line of the perimeter of the ring K, as is clearly shown in Figs. 1 and 2. Two rows of hardened-steel balls travel in these raceways and are retained in place by a boxing or shell composed of the reversely-faced halves *m m*, Fig. 2, having along their contiguous edges projecting flanges *m′ m′*, through which suitable fastening devices, as screws m^3, are passed to secure the two halves of the box or shell together. The inner adjoining portions of these halves *m m* are cut away, so as to form, when the two halves are united, a semioval concavity m^4 in the inner periphery of the shell, each half of which concavity lies opposite one of the raceways *k* in the ring K. It will be observed that the balls of the bearing are secured between the shell and the raceways by closing the halves *m* of the shell over the balls and inserting the screw m^3, and that once secured the bearing can be neither loosened nor tightened. The object of this is to avoid any change in the adjustment of the bearings in the hands of unskilled persons, experience having demonstrated that it is much more desirable in this class of vehicles to leave the bearings as adjusted by skilled workmen, and in case of wear, which will not be apparent for a considerable time, to replace the worn parts by new.

The depending side flanges m^5 m^6 have washers m^7, of felt or other suitable material, secured in grooves to form a close fit around the axle and exclude dust from the bearing. The internal diameter of the flange m^5 is somewhat less than that of the flange m^6 for a purpose which will presently appear. It is to be observed that when this bearing is removed from the axle the balls and raceway are securely held in place in the shell, thus enabling the bearing as a whole to be readily removed and replaced without danger of loss of any of the parts.

The yoke P, Fig. 3, is shown as composed of two parts *p p′* of a ring formed to snugly fit

the outer periphery of the shell of the bearing, said parts $p\,p'$ being secured together by bolts passing through flanges, as shown in Fig. 3. Connected to or formed with one of the halves, as p', of the yoke P is a tubular socket p^2, having an internal diameter but slightly exceeding the external diameter of the side bars C C′ of the running-gear frame. Immediately in front of and forming substantially a continuation of the socket p^2, but with an intervening space between them, is a ring p^3, united to the yoke by the rib p^4, as shown, and further strengthened by the web or rib p^5, uniting the under side of the socket p^2 to the under side of the ring p^3. The side bars C C′ have an annular groove or depression c', Fig. 5, formed near the ends of the bars. To unite one of the bars—say C′—to the yoke, the end of the bar is inserted through the ring p^3 and into the socket p^2, thereby bringing the depression or groove c' opposite the space between the ring and socket. A suitable clamping-collar—as, for example, the two-part collar f, Fig. 3—is fitted into the groove c' in the bar C′ and secured in place by any suitable means, as a pin passing through the collar and bar. The thickness of this collar f should preferably be such as to bring its outer surface flush with the outer diameter of the ring p^3 and socket p^2 when the collar fits snugly in the groove of the bar C′. By reason of the coupling thus constructed the bars C C′ may turn freely in the sockets, but cannot be withdrawn therefrom without removing the retaining-collars f. The supports for the motor D on the rear axle may be and preferably are composed of yokes provided with ball-bearings similar to those used in connecting the side bars to the axle, except that the internal diameter of the flanges $m^5\,m^6$ is the same in the form of bearing used for supporting the motor and that the motor is coupled rigidly instead of flexibly to the yoke.

The tubular axle B is turned down or reduced on the end or portion where the motor is supported, thereby forming the shoulder b, the reduced portion extending from said shoulder b to the end of the axle. This tubular axle is also turned down or reduced for a short distance on its opposite end, forming the shoulder b' at the point where the bearing for the side bar C is attached to the axle.

In assembling the parts the first bearing for the motor is slipped over the reduced portion of the axle and the edge of the raceway K pushed firmly up against the shoulder b. The spacing-sleeve D^2 is then placed over the axle and bears against the opposite edge of the raceway K. The second motor-bearing is then applied, after which the spacing-sleeve D′ is slipped over the axle. The ball-bearing for the side bar C′ is now placed over the end of the axle, with the flange m^5 innermost (see Fig. 1) and the edge of the raceway K fitting snugly up against the end of the sleeve D′. A collar g, having internal screw-threads, is then screwed onto the tubular axle tightly up against the outer edge of the raceway K, thereby binding the motor and the side-bar yoke securely in position. This collar g performs an important office, and it is necessarily made of heavier metal than the sleeves D′ D^2, and in order that it may enter the annular opening in the flange m^6 of the bearing it is necessary that the internal diameter of said flange be greater than that of the flange m^5, which surrounds the comparatively thin sleeve D^2. The bearings of the joint A for the side-bar C are applied in substantially the same way except that the inner edge of the raceway K is fitted up close to the shoulder b' of the tubular axle instead of against the end of a sleeve, there being no sleeve surrounding the tubular axle on that side of the vehicle. The hubs of the two wheels have bearing on the axle, as in my former application referred to, and are secured by nuts engaging screw-threads on the ends of the solid axle B′.

By this construction I obtain a strong reliable running-gear with the minimum weight of metal and provide a flexible joint between the side bars and axle that is simple and effective.

What I claim is—

1. In a running-gear for vehicles, a yoke hung to an axle to turn in a vertical plane transverse to said axle, and a side bar connected to the yoke so as to turn therein, but without translatory motion relative thereto, substantially as described.

2. In a vehicle, an axle, a raceway surrounding said axle, a casing surrounding said raceway, balls interposed between the casing and raceway, a yoke secured to the casing, and a side bar having its end secured to turn in said yoke, substantially as described.

3. In a vehicle, a yoke secured to turn transverse of the axle, a socket in said yoke, a ring attached to the yoke in proximity to the socket, a side bar passing through said ring and entering said socket, a circumferential annular groove near the end of the side bar, and a collar seated in the groove in the side bar and filling the space between the ring and socket, substantially as described.

4. In a motocycle an axle, a motor hung on a reduced portion of said axle with one of its bearings abutting a shoulder thereon, a second motor-bearing, a spacing-sleeve extending between the two motor-bearings, a bearing for a side bar yoke on the axle, a spacing-sleeve between said side-bar-yoke bearing and one of the motor-bearings and a screw-threaded collar on the axle and engaging the outer edge of the side-bar-yoke bearing, whereby the three sets of bearings are firmly secured in their respective positions, substantially as described.

5. In a running-gear for vehicles, a solid axle, a tubular axle surrounding the same, each axle extending in unbroken length entirely across the vehicle, a motor hung on bearings surrounding the tubular axle, a side-

bar-yoke bearing near the end of said axle, a spacing-sleeve around said axle between the motor-bearing and said side-bar-yoke bearing, a screw-sleeve on the axle clamping the side-bar-yoke bearing against the end of the spacing-sleeve, a second side-bar-yoke bearing on the opposite end of the axle and clamped between a shoulder on the axle and a second screw-sleeve, wheel-hubs on the respective ends of the compound axle and nuts engaging the ends of the solid axle, whereby the tubular axle is free to turn on the solid axle, and the wheel-hubs and several bearings are free to turn in their respective positions while all the parts are secured against relative longitudinal movement, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ANDREW L. RIKER.

Witnesses:

THOS. L. PROCTOR,

A. C. SCHULZ.