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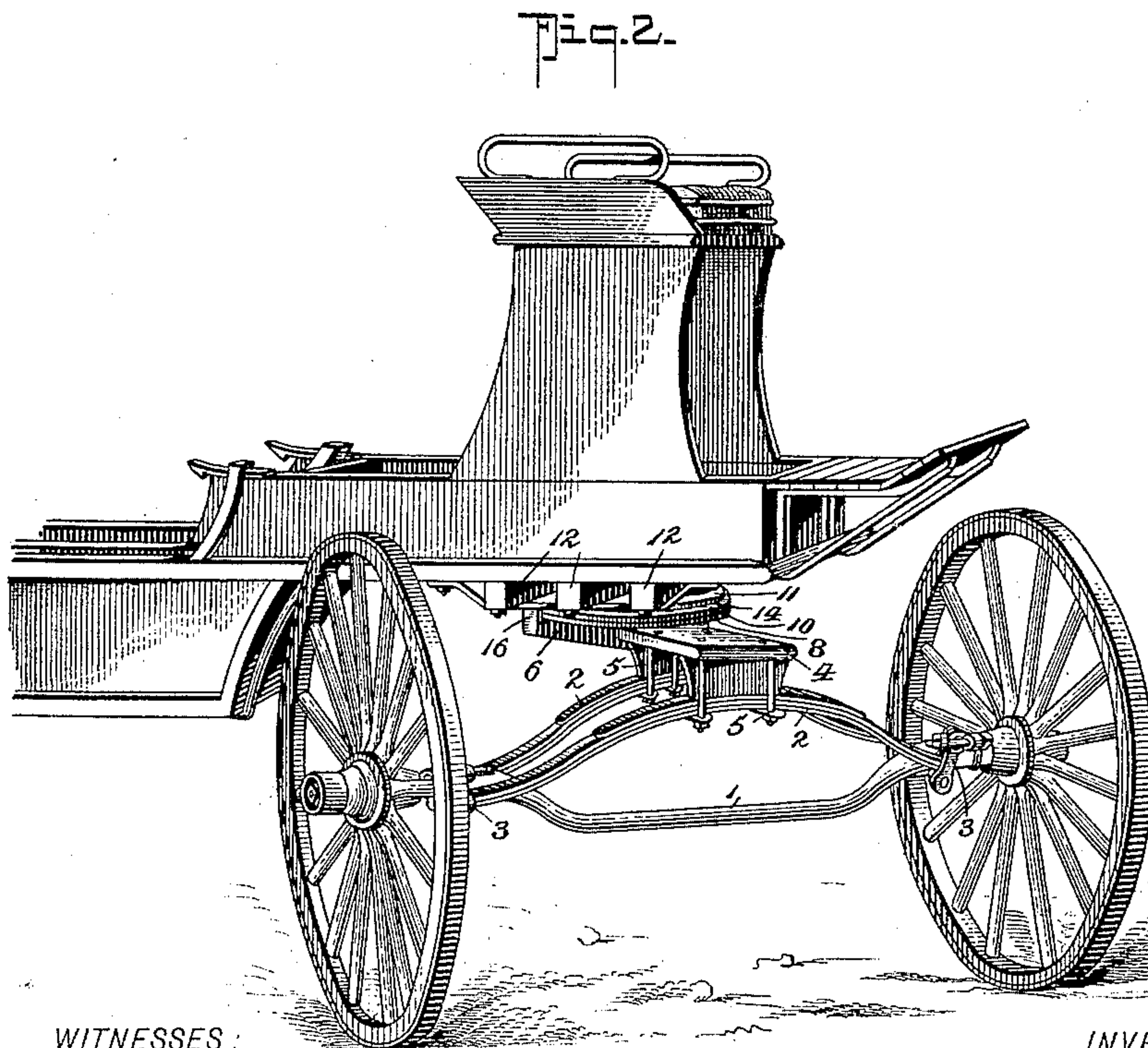
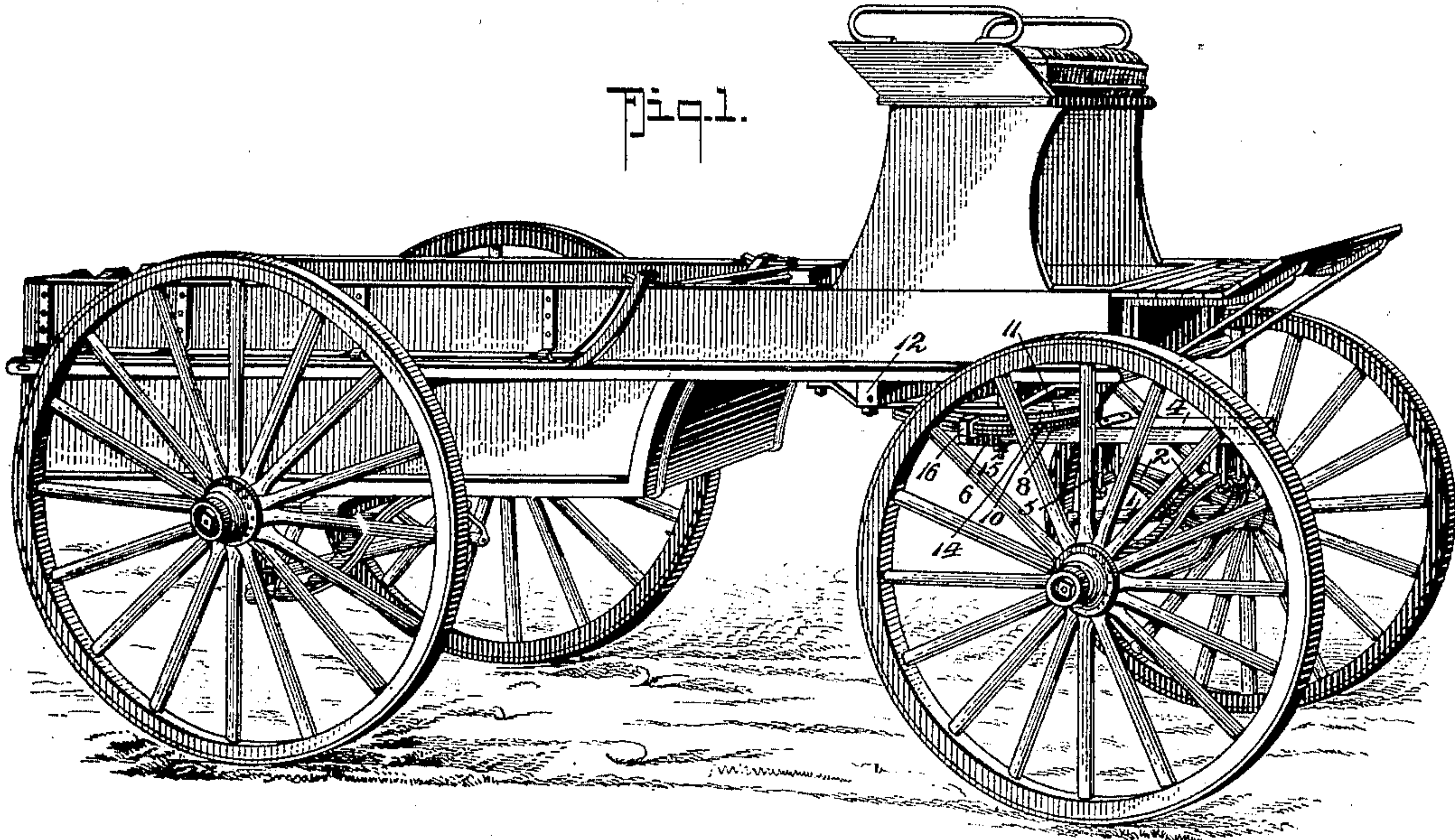
Patented Apr. 4, 1899.

O. H. HESSE.
SHORT TURNING VEHICLE GEAR.

(No Model.)

(Application filed Jan. 5, 1899.)

3 Sheets—Sheet 1.



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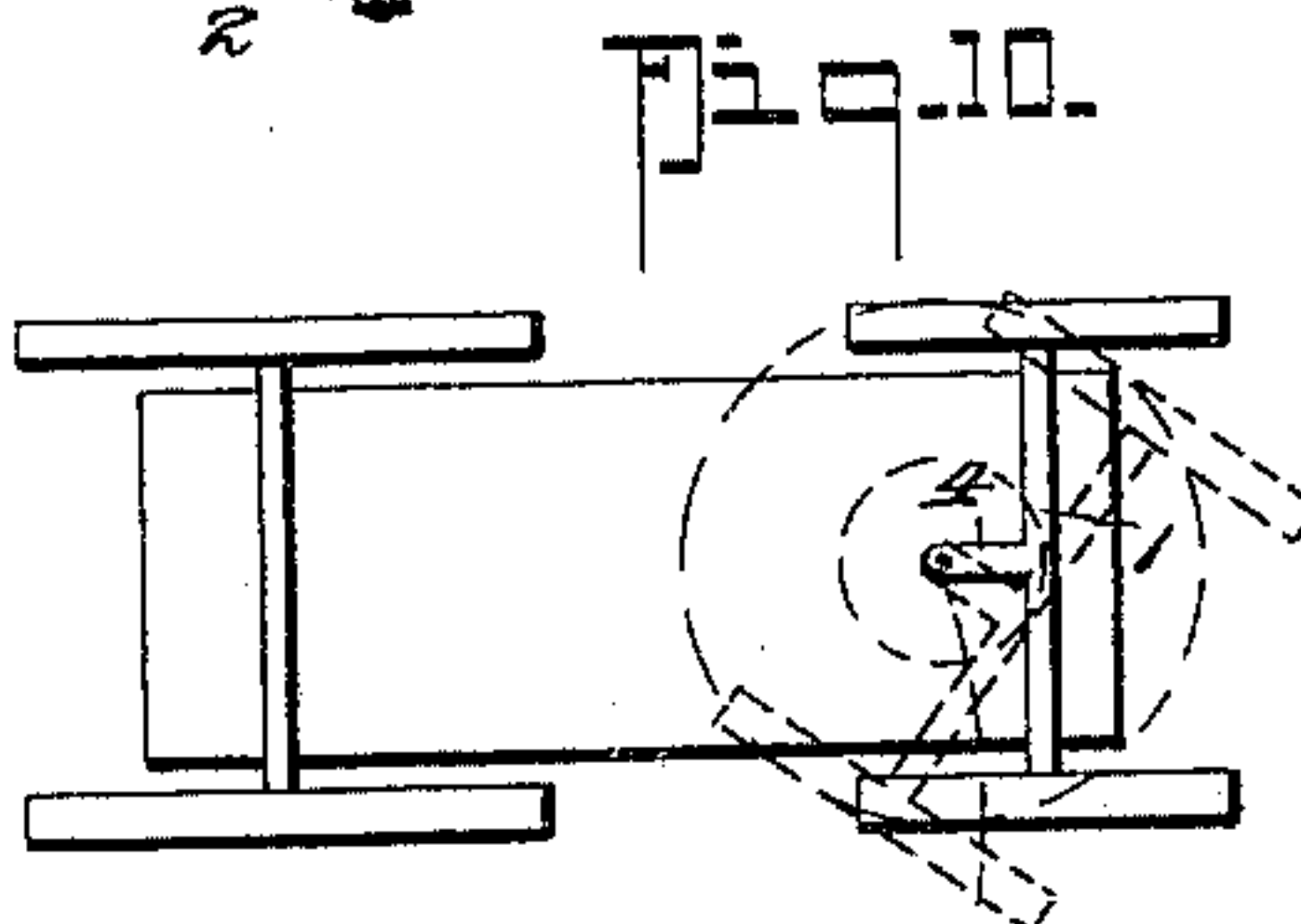
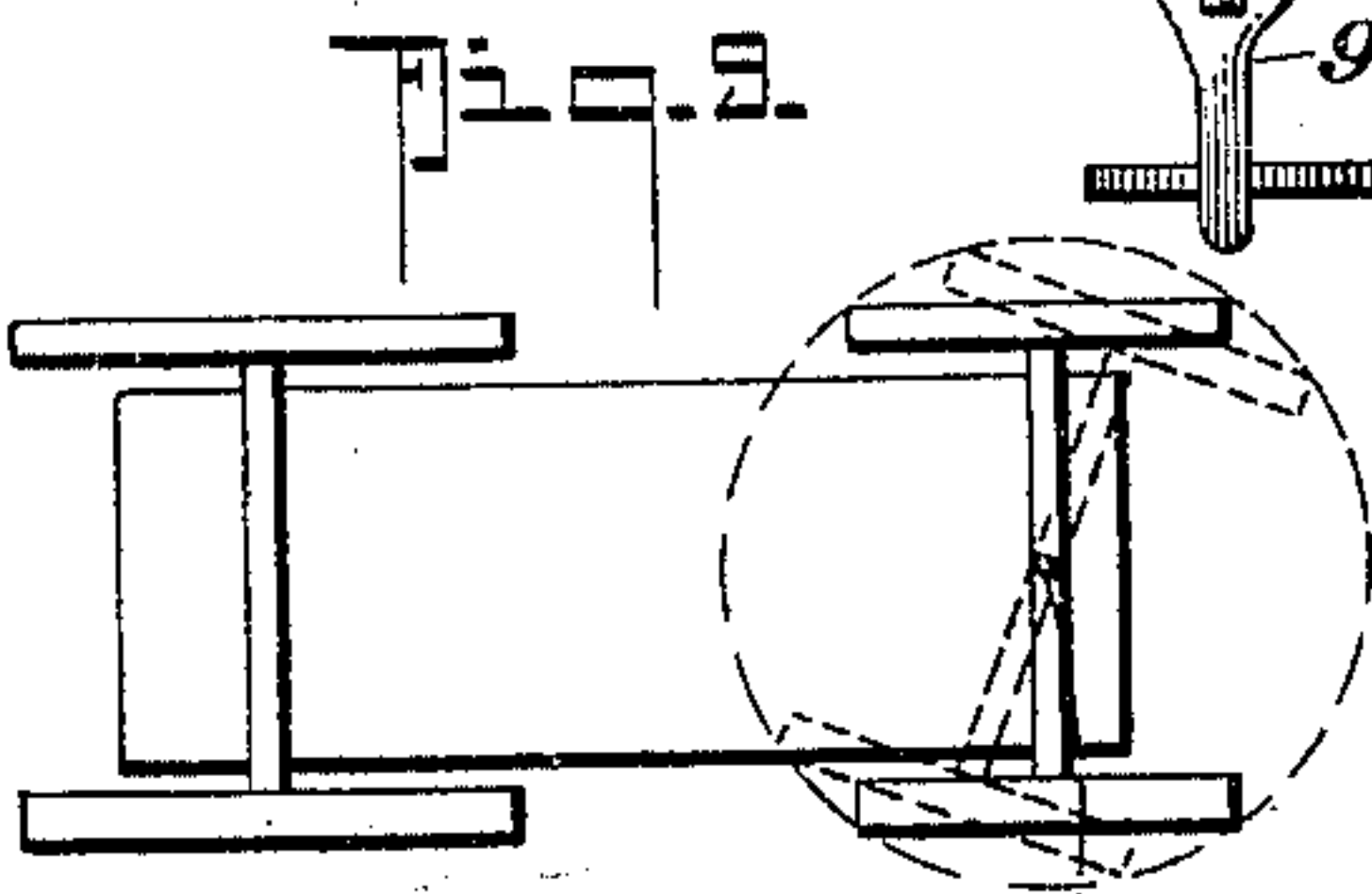
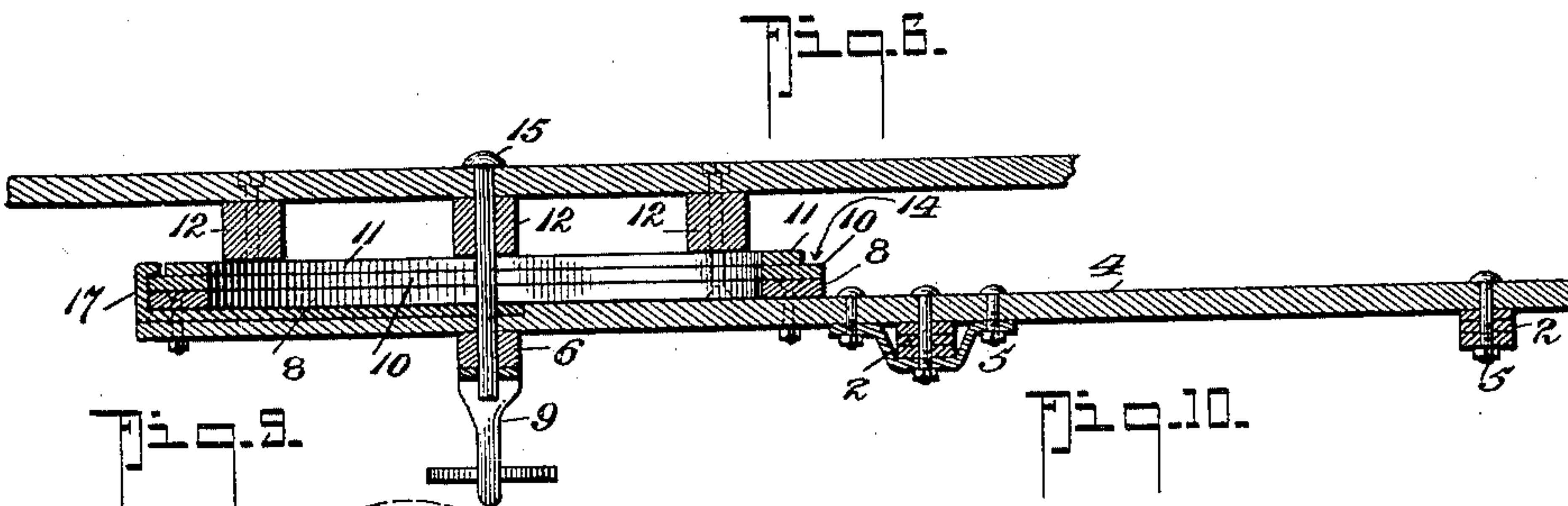
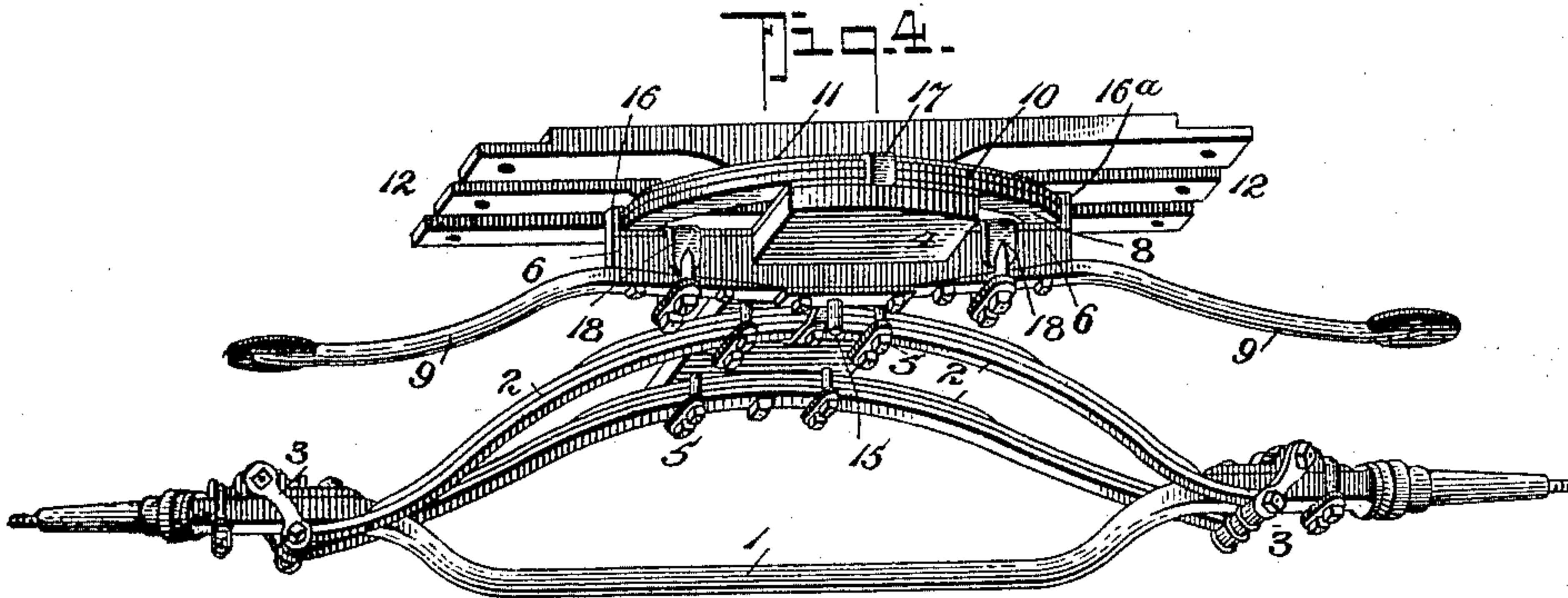
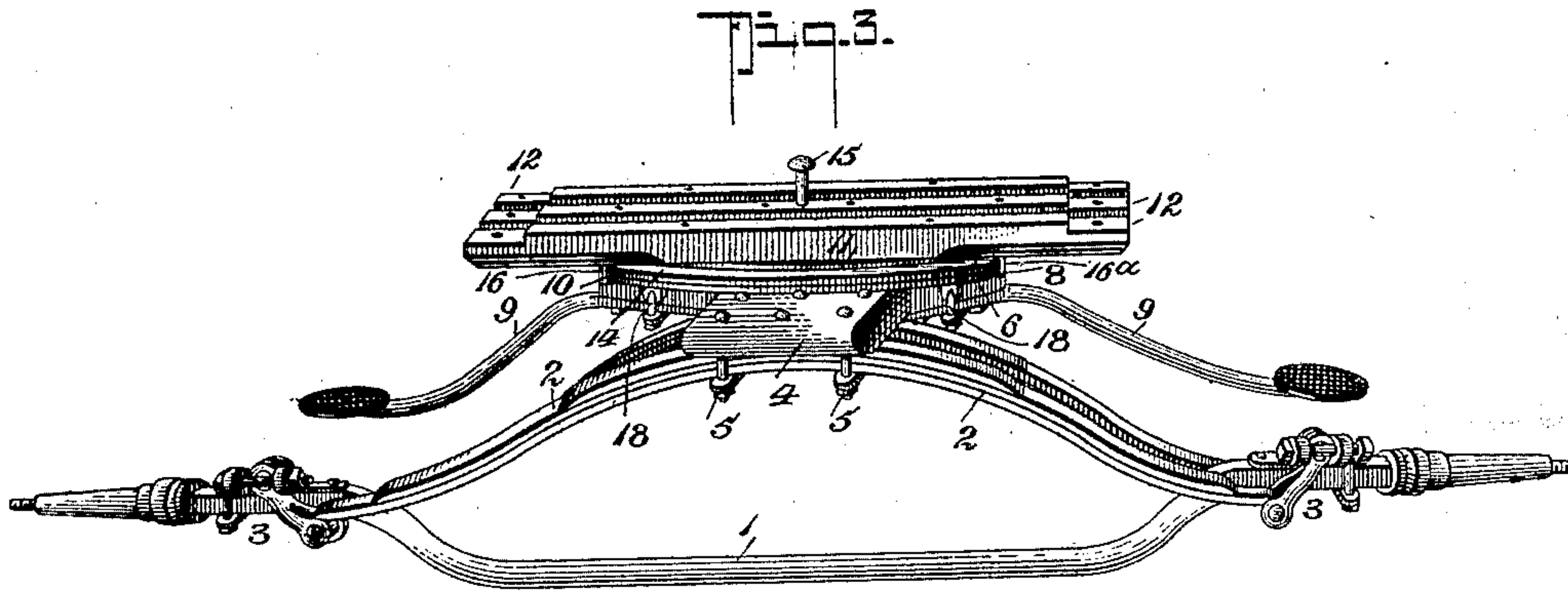
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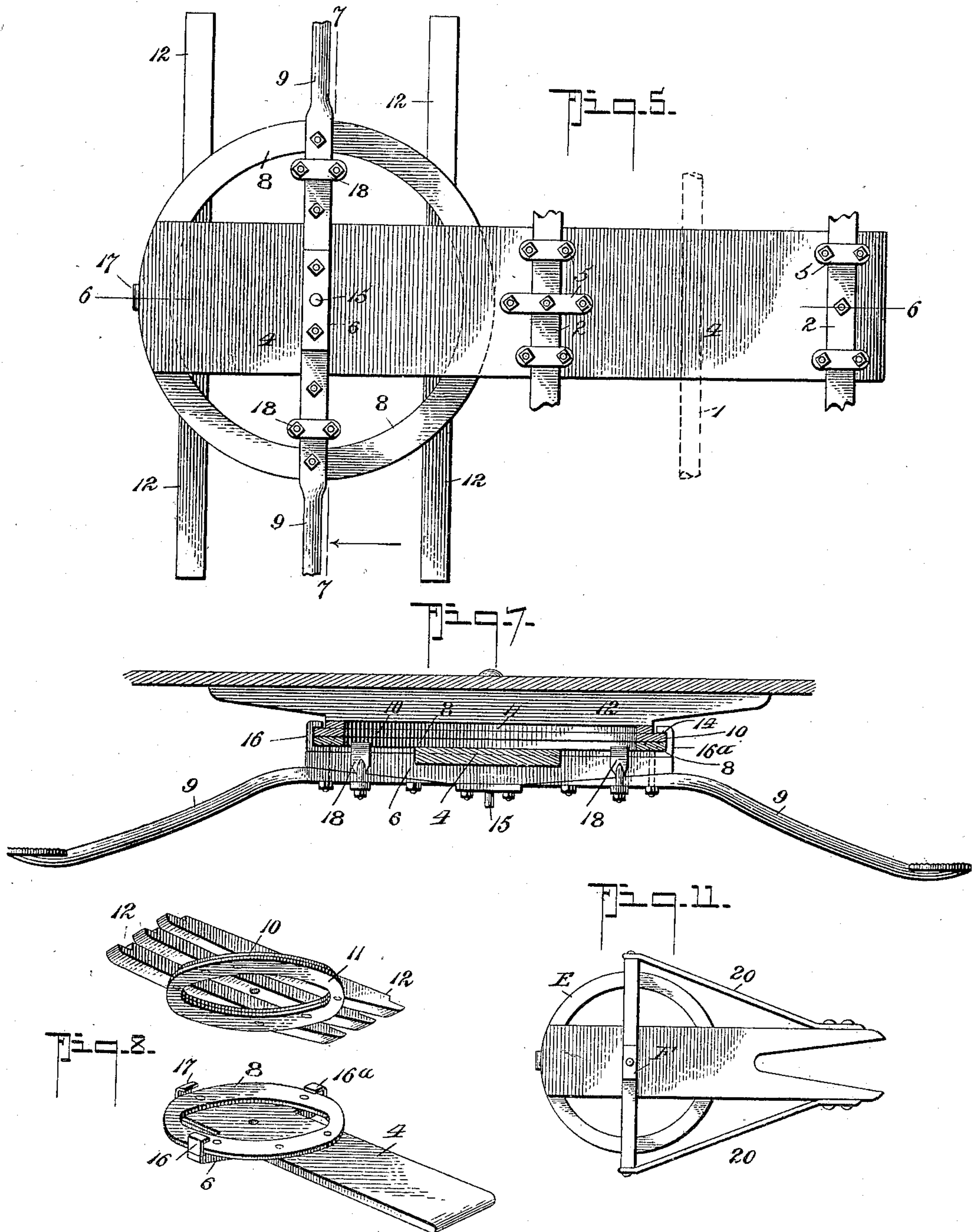
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UNITED STATES PATENT OFFICE.

OTTO H. HESSE, OF LEAVENWORTH, KANSAS.

SHORT-TURNING VEHICLE-GEAR.

SPECIFICATION forming part of Letters Patent No. 622,623, dated April 4, 1899.

Application filed January 5, 1899. Serial No. 701,221. (No model.)

To all whom it may concern:

Be it known that I, OTTO H. HESSE, residing at Leavenworth, in the county of Leavenworth and State of Kansas, have invented a new and Improved Short-Turn Vehicle-Gear, of which the following is a specification.

This invention relates to vehicle-gearing, and it particularly seeks to provide certain improvements whereby a greater angle of movement of the axle within a shorter radius can be secured than with the ordinary form of axle, which has its pivot or king-bolt connection in the vertical plane thereof.

Broadly, my invention comprehends a gearing in which the fifth-wheel or king-bolt devices are disposed in a line at right angles to the axle and to the rear thereof, whereby the turn of the front gear can be proportionately shortened and the wheels strike under the vehicle-body as much farther to the rear of the king-bolt or fifth-wheel axis as the distance between such fifth-wheel axis and the wheel-axle.

Another feature of this invention lies in the novel full-circle-bearing construction, whereby the body of the vehicle is supported on the gearing so as to have no tilting motion on either side and in which the fifth-wheel devices are so joined as to be positively retained in their proper operative positions, even should the king-bolt break.

Again, my invention comprehends a novel construction of combined low-down and short-turn gear mechanism adapted to be attached to all kinds of delivery-wagons and in such manner that high wheels can be used and the body set low without effecting a short turn and in which the parts are so arranged as to permit of the use of a stiff-pole connection, if desired.

In its subordinate features the invention comprehends certain novel arrangement of parts and peculiar combinations thereof, which will be first described in detail and then pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a delivery-wagon equipped with my improved gear, said gear being shown straight ahead. Fig. 2 is a similar view illustrating the short-turn movement of my improved gear. Fig. 3 is a front

perspective view of the gear detached from the vehicle-body and equipped with step-irons. Fig. 4 is a similar view as seen from the rear end, the parts being in an inverted position. Fig. 5 is an inverted plan of the fifth-wheel and the gear-spring-holding devices. Fig. 6 is a longitudinal section of the same, taken practically on the line 6 6 of Fig. 5. Fig. 7 is a transverse section on the line 7 7 of Fig. 5. Fig. 8 illustrates several of the parts of my improved gearing in detail. Figs. 9 and 10 illustrate the movement of the ordinary form of axle and the turn movement of my improved form of axle, respectively; and Fig. 11 illustrates a modified construction, hereinafter specifically referred to.

In the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 indicates the axle, 2 the straddle-springs, and 3 the spring-equipped irons for attaching the springs to the axle, all of which are of the well-known Ludlow type, and, *per se*, form no part of this invention.

4 indicates what I term a "main" longitudinal bearing-bar of wood or metal, which is firmly secured at its forward end to the top or crown of the springs 3 by the clip-irons and bolts 5 5. This bar 4 is of suitable width and thickness and extends rearward central of and at right angles to the axle-spring, the distance of which is dependent on the size of wagon to be supported and the turn desired. In the form shown in the drawings the said bar 4 extends rearward sufficiently to have the king-bolt, which passes through its rear end in the manner presently described, at a point fifteen inches to the rear of the axle, the purpose of which will be presently explained.

In the accompanying drawings I have illustrated my improvements as combined with what is known to the trade as the "Ludlow" spring and axle, and while I prefer to embody such form of axle and spring in my complete gearing devices such form of axle and springs is not absolutely necessary to effect the general results for which my invention is intended, but in all cases I employ an axle construction which, when combined with my improvements, will produce a low-down short-turn gear.

6 indicates a cross-bar, preferably of wood, of suitable length and thickness made secure

on the bar 4. On this bar 6, as also on the bar 4, is fixedly held by suitable bolts and nuts the lowermost one 8 of the circle-irons which constitute the fifth-wheel gear-section, and when step-irons 9 are to be used they are bolted to the under side of the ends of the cross-bar 6, as clearly illustrated in Fig. 3 of the drawings. 10 indicates a second circle-bearing for the fifth-wheel section held to rest and turn on the lower circle-bearing 8 and having a like diameter. This bearing 10, together with the third or upper circle-plate 11, is fixedly secured to a series, preferably three, of transverse bars 12, made fast to the wagon-body, the uppermost one 11 of said circle-plates being of a somewhat less diameter than its adjacent or mate section, whereby an annular guide-flange 14 is produced, which, together with suitable guides or clip members, serve the double purpose of properly holding the fifth-wheel sections in alignment during turning, and also for securing the said circle members from displacement in case the king-bolt 15 should break, they also serving to reduce the wear on said king-bolt, which bolt 15 passes through the center one of the wagon or body supporting cross-bars and down through the rear end of the bar, as best shown in Fig. 6.

The guides or clips for holding the circle members 8, 10, and 11 are in the nature of two side hook-clamps 16 16^a and a rear end clamp 17, which may be made of separate members; but, as shown, they are integral portions of the bar having angle members, and said bar is held on the upper face of the cross-bar 6 and the longitudinal bar 4 by the clip-irons 18.

It will be readily understood that my improved gearing can be so arranged that it can be attached to any style or shaped vehicle-body, and by supporting the fifth-wheel at a point to the rear of the axle it is manifest that as the said gear is turned it moves in a compound direction—that is, it does not turn in a true circle, as can be effected by moving the axle of the ordinary king-bolt connection, but in a substantial elliptical path, the inner wheel in this movement striking just so much to the rear of the point at which the inner wheel of the ordinary form of axle would strike as the distance between the axle and the king-bolt at the rear thereof. This operation will be clearly understood by reference to the diagram illustrated in Figs. 9 and 10, in which Fig. 9 shows the line of travel of the wheel-axle mounted on a body of given size, while Fig. 10 illustrates the movement of a small-sized body and front wheels and axle arranged in accordance with my invention.

By my combination a like delivery-wagon having a body, say, of five and one-half feet long and thirty inches wide can be so turned that the front wheels will travel in a circle of six feet for the inside wheel and fourteen feet for the outer wheel, whereas an ordinary gear of the same size and wagon-body of like di-

mensions would require a circle of about twenty feet in which to make the short turn. So far as described it will be seen that the axle as moved inward has a turn correspondingly shortening the distance between the circle-path of the outer wheel and the king-bolt as the inner wheel is proportionately swung farther to the rear of the said king-bolt. Furthermore, my combination permits the use of a stiff pole by extending the main and circular bar so as to form a pair of hounds to attach on the top of the spring instead of the axle, as indicated in Fig. 11, by reference to which it will be seen that the rear end of the bar 4 is made to receive the end of the pole, and said bar is also made fast to the cross-bar by stay-rods 20.

E indicates the fifth-wheel, and F the transom-body of the king-bolt of the modified form.

By constructing an improved short-turn gearing as shown in connection with a Ludlow spring and axle the same will have a full circle-bearing on the bar of the vehicle in such manner that no tilt to either side can possibly occur, and by using the three guides provides more positively for holding the several circle members in such manner as to relieve the strain on the king-bolt and also to keep the several parts together should the king-bolt break, such construction also admitting of the use of a high wheel with a low-body set and a wheel-body and short turn.

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

1. In a short-turn vehicle-gear; the combination with the axle-bar and the springs connected thereto; of a supporting-bar secured to the springs and projected longitudinally rearward therefrom; a cross-bar fixedly secured to the longitudinal bar at a point to the rear of the axle-spring; a circle-plate fixedly secured upon the longitudinal and cross bars; a body-support, comprising a plurality of transverse bars; a fifth-wheel circle-plate fixedly secured on the lower face of the said body-supporting bars and opposing the bottom fixedly-held circle-plate; the king-bolt carried by the body-support and projected through the lower cross-bars, and guide-clamps fixedly secured to the lower longitudinal and transverse bars, all being arranged substantially as shown and for the purposes described.

2. In a vehicle-gearing, the combination of the front axle and the rearwardly-extending supporting-bar secured thereto; of fifth-wheel connections mounted on the supporting-bar at a point to the rear of the axle, said connections comprising three complete circle-plates, the lowermost one being securely held on the supporting-bar; the vehicle-body-supporting bars fixedly connected to the two upper circle-plates, the uppermost one of said circle-plates being of less diameter than the others, whereby a flange or guide member is

formed on one of the upper circle-plates and guide-clamps fixedly secured to the supporting-bar adapted to engage the guide-clamps; of the circle-plates connected to the body-supporting bars, all being arranged substantially as shown and described.

3. The combination with the front axle; of the supporting-bar fixedly secured thereto and projected longitudinally rearward therefrom, said bar having a transverse member; a fifth-wheel circle-plate fixedly secured to the said bar and its transverse member; a clamping member secured upon the upper face of the cross-bar and the longitudinal bar and below the fixedly-held circle-plate, said clamp member having vertically-projecting clamps at the ends of the cross member and at the rear of the longitudinal bar, said clamps terminating in inwardly-projecting lips; cross-

bars adapted to be fixedly secured to the vehicle-body; a pair of circle-plates fixedly secured to the said cross-bars on the lower side thereof, one of said plates being of equal diameter and opposing the lower fixedly-held circle-plate, the top one of the two upper circle-plates being of less diameter than its mate, whereby an annular flange and guide is provided adapted to receive the projecting ends of the fixedly-held clamps, whereby to hold the two fifth-wheel sections clamped together and the upper one from lateral motion; and the king-bolt, all being arranged substantially as shown and for the purposes described.

OTTO H. HESSE.

Witnesses:

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ED. SPITZE.