(No Model.)

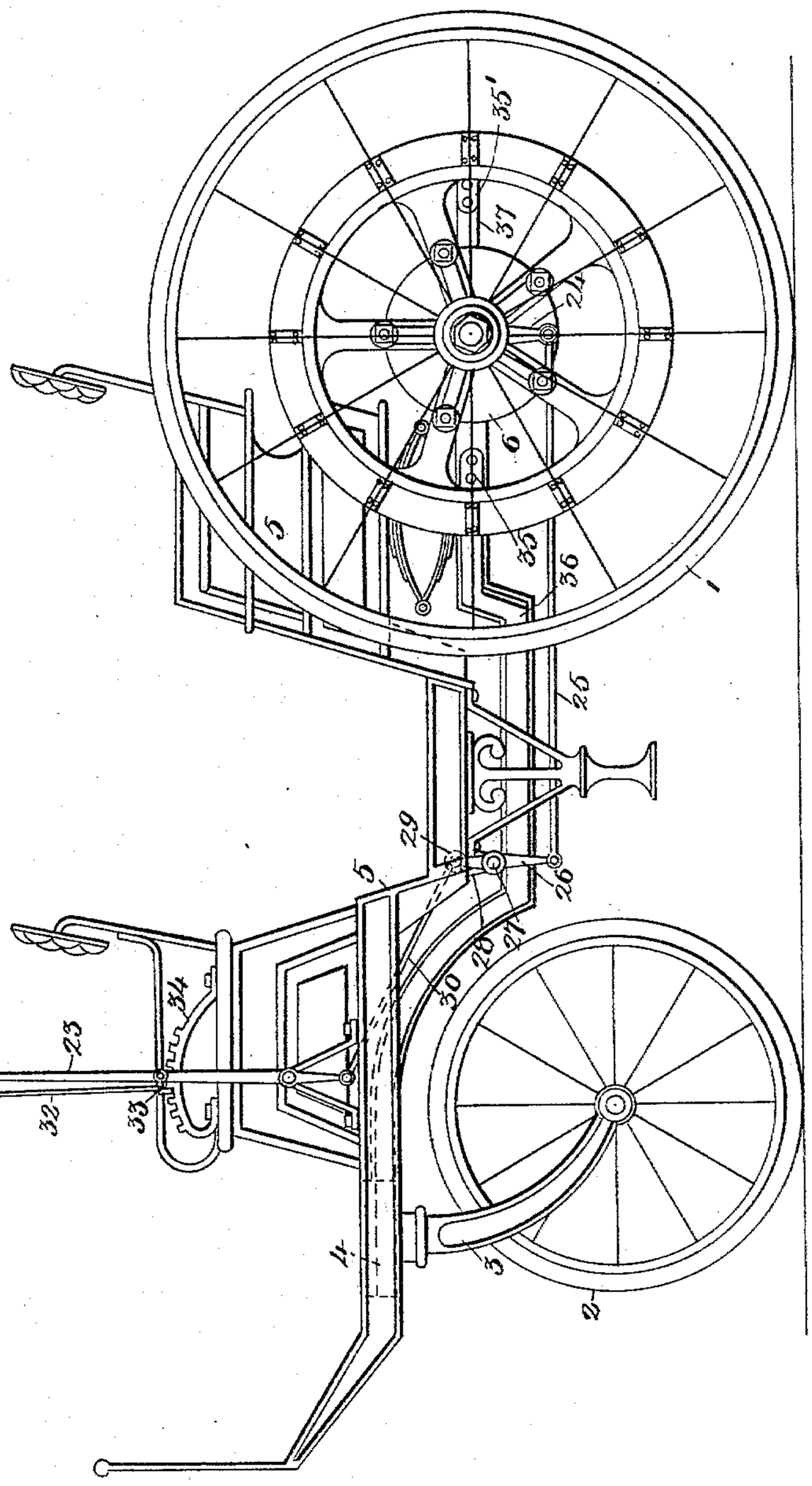
3 Sheets—Sheet 1.

P. FLUCKS.

HORSELESS CARRIAGE.

No. 589,710. Patented Sept. 7, 1897.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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HORSELESS CARRIAGE.

No. 589,710. Patented Sept. 7, 1897.

Fig. 3.

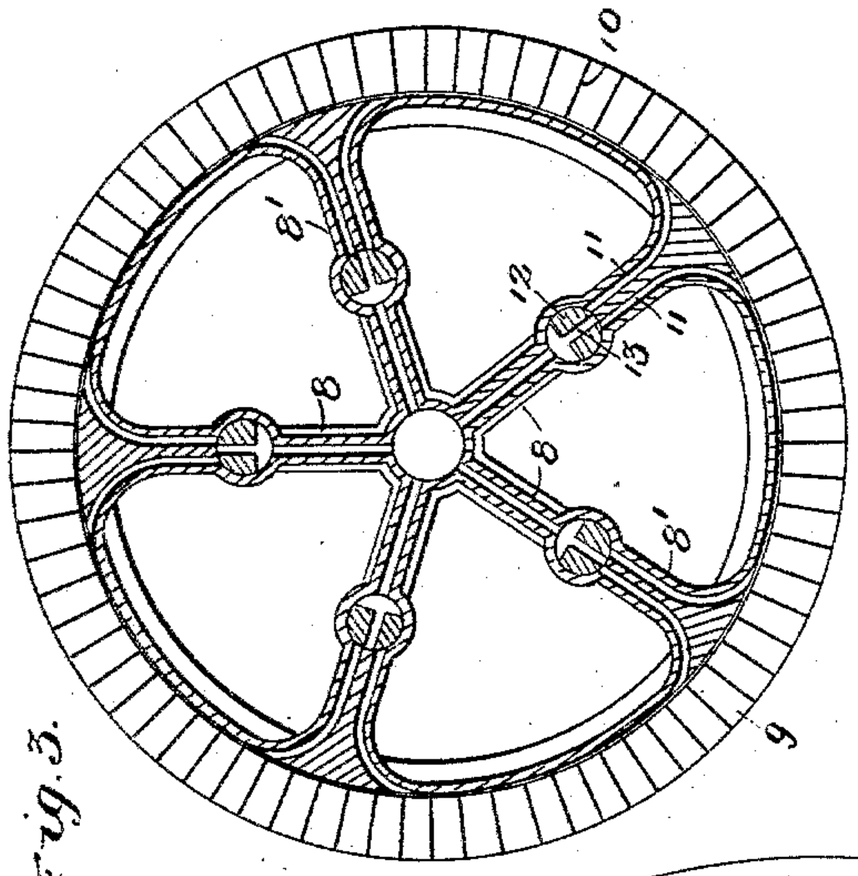


Fig. 4.

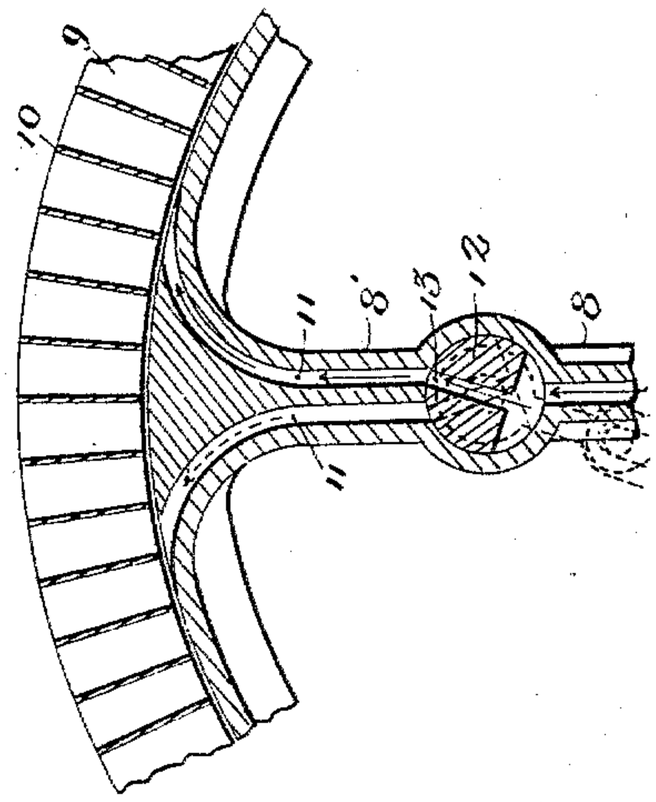
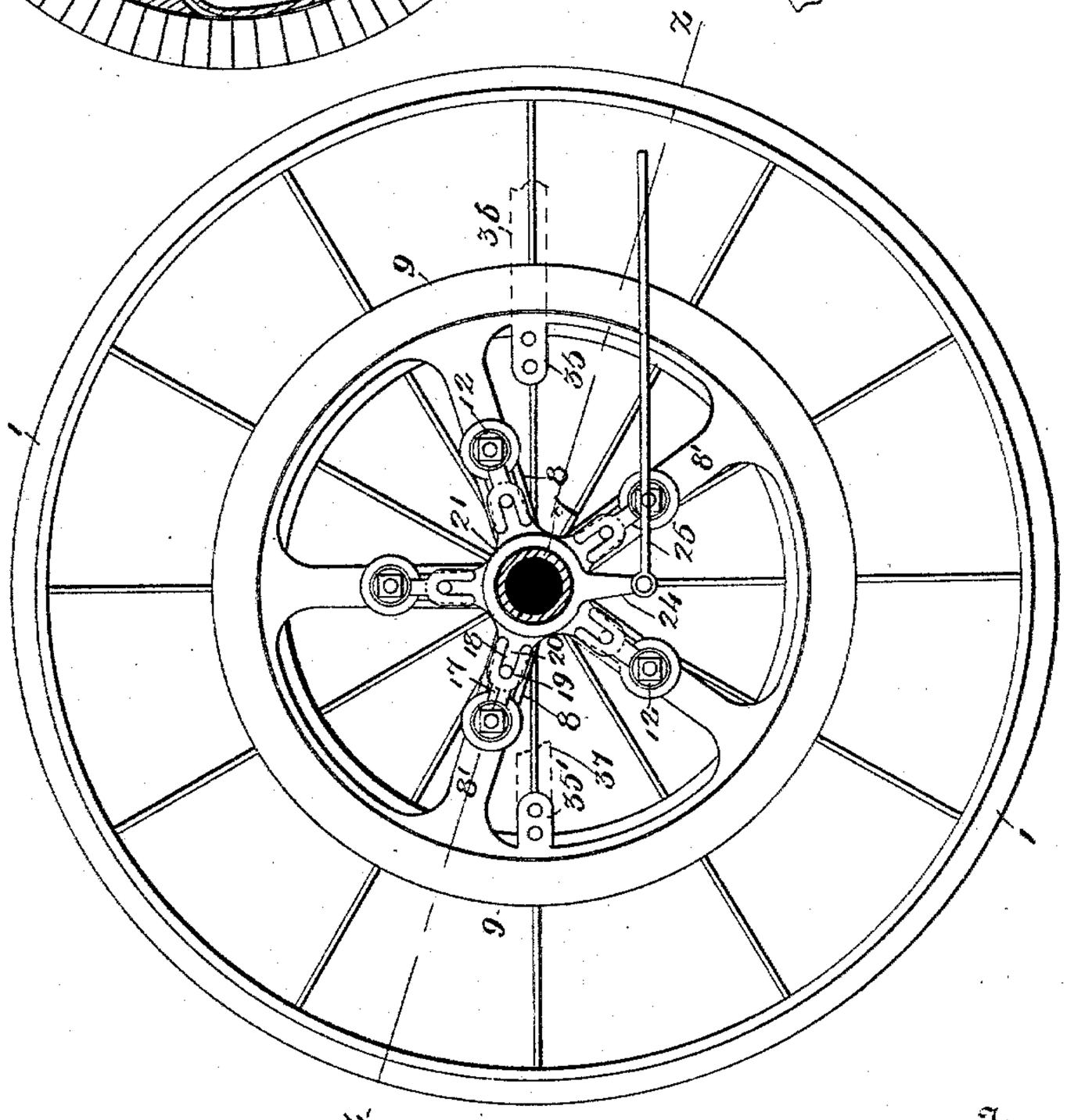


Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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HORSELESS CARRIAGE.

No. 589,710. Patented Sept. 7, 1897.

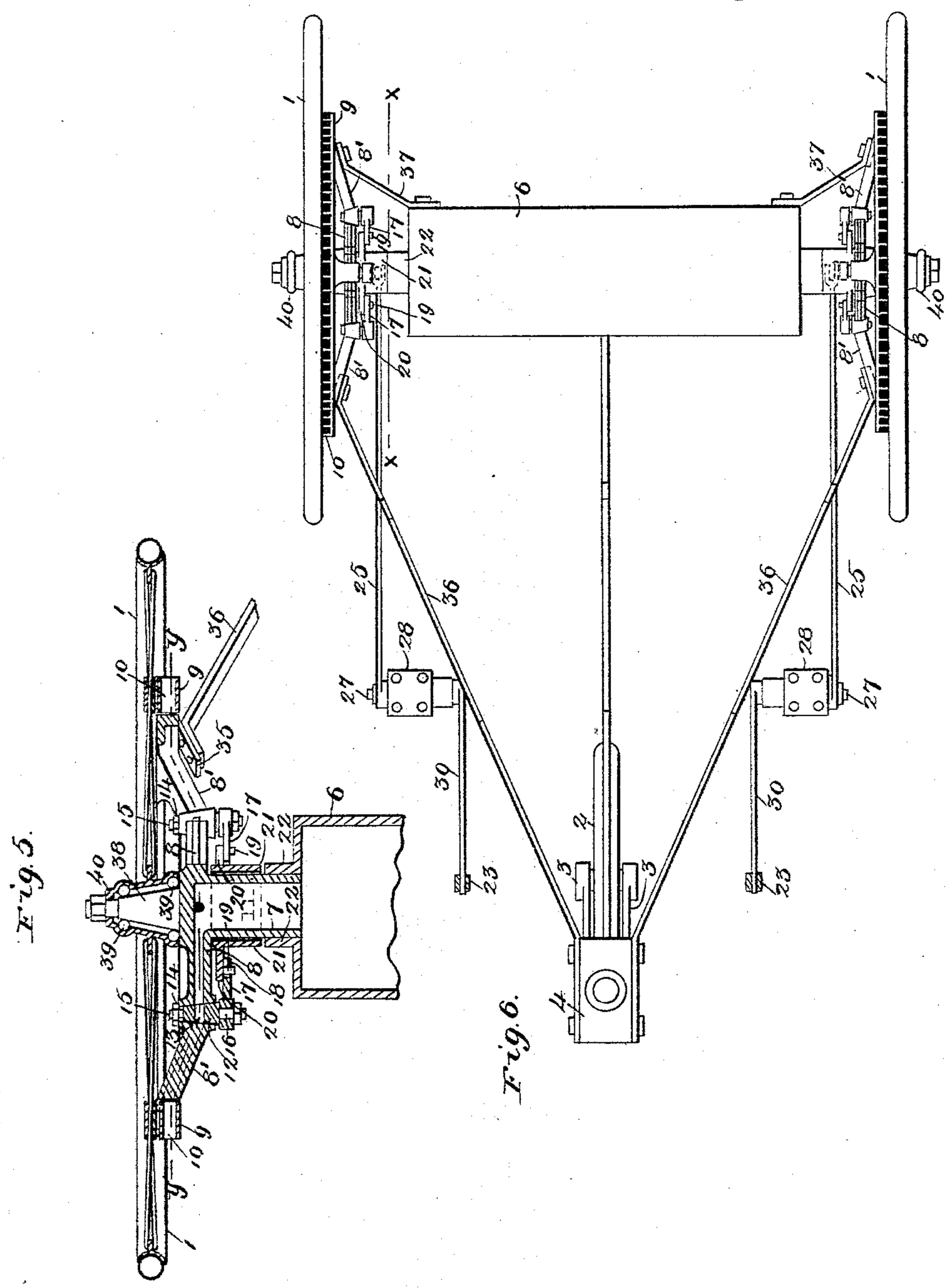

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

PAUL FLUCKS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO GOTTHOLD LANGER, OF SAME PLACE.

HORSELESS CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 589,710, dated September 7, 1897.

Application filed January 18, 1897. Serial No. 619,587. (No model.)

To all whom it may concern:

Be it known that I, PAUL FLUCKS, a subject of the Emperor of Germany, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Horseless Carriages, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in horseless carriages or motor-vehicles; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a carriage with my improvement attached thereto. Fig. 2 is an elevation of the inner surface of one of the drive-wheels or approximately a section on the line *x x* of Fig. 6. Fig. 3 is a section on *y y* of Fig. 5—that is, through the several arms constituting the "spider," through which the compressed air or other fluid is conveyed to the drive-wheels. Fig. 4 is a similar sectional detail on a larger scale, showing but one of the arms of the spider and the blades of the drive-wheel against which the fluid impinges. Fig. 5 is a section on the line *z z* of Fig. 2, and Fig. 6 is a top plan view of the device with the body of the carriage removed.

The object of my invention is to construct a horseless carriage or motor-vehicle, wherein the driving-wheels of the same shall constitute a part of the motor by which the vehicle is propelled. In the present construction no special mechanical connections are interposed between the motive power and the vehicle-wheels, the latter being directly acted upon by the expansive power of the compressed fluid with which the supply-reservoir of the motor is charged. The fluid used and the method of charging the reservoir are immaterial so far as the present invention is concerned. It may be compressed air or ammonia or other gas that may be conveniently conducted from the reservoir to the motor. By my construction a most desirable form of carriage results, inasmuch as a compact mechanical arrangement is attainable.

In detail the invention may be described as follows:

Referring to the drawings, 1 1 represent the driving-wheels; 2, the steering-wheel, mounted between the members of a fork 3, the base of which is pivotally carried along the under surface of a casting 4, carried by the forward portion of the wagon-body 5.

6 represents the motor storage-reservoir located between the driving-wheels, the reservoir terminating in the reduced tubular extensions or bearings 7, arranged in the line of the axis of rotation of the driving-wheels, the passage of each of which extensions communicates with the passages of a series of arms 8, radiating in a plane parallel to the plane of rotation of the wheels 1, the said arms being continued in the shape of a series of extensions or arms 8′, having passages communicating with the passages of the arms 8, said arms 8′ diverging outwardly from the arms 8 proper, whereby the combined arms 8 and 8′ form, as it were, a dish-shaped spider whose arms communicate with the passage of the extension 7 of the reservoir. The outer end of each extension 8′ is located adjacent to the inner circle of a ring 9, between whose lateral walls are disposed a series of blades 10, said ring being secured to or in any mechanical manner being made to form a part of the wheel 1, the ring 9 being, furthermore, concentric with the outer rim of the wheel.

From the foregoing it is apparent that if fluid or air under pressure with which the reservoir 6 is charged is permitted to escape therefrom by way of the arms of the spider said fluid would impinge forcibly against said blades 10 and cause the wheel 1 to revolve in a direction dependent on the direction or angle of escape of the fluid out of the arms 8 8′ and the particular side of the blade that was impinged upon. It is accordingly my purpose to describe the construction by which rotation is imparted to the drive-wheels first in one direction and then the other, or how the carriage may be stopped altogether.

As a matter of fact, each extension 8′ is provided with two passages 11, diverging from each other as they approach the outer end of the extension 8′, one passage being adapted to convey fluid to one face or side of the series of blades and the other passage to

the opposite face. Located at the juncture of each arm 8, with its extension 8′, is a rock-valve 12, provided with a port 13, adapted to establish communication between the passage of the arm 8 and either one of the passages 11, or when it occupies an intermediate or normal position to shut off communication altogether between these respective passages. (See Fig. 3.) The valve is conical, so that it may readily be inserted within its bearings, where it is properly secured at one end by a nut 14, passed over the screw-threaded end of a stem 15, carried at one end of the valve. From the base of the conical valve projects outwardly in a line of its axis a stem 16, about which is passed and firmly secured one end of a lever 17, disposed substantially parallel to the arm 8 or at right angles to the axis of rotation of the valve and extending toward the tubular extension 7 of the reservoir. The inner end of each lever 17 is provided with a fork 18, the members of which are adapted to embrace a pin 19, projecting laterally from one of a series of arms 20, disposed radially at one end of the periphery of a sleeve 21, adapted to loosely embrace the tubular extension 7. The sleeve is kept in position on the tubular extension 7 by the base of the series of arms 8 on one side and by the annular collar or neck 22 on the opposite side, the collar 22 forming a part of the reservoir and serving to directly receive the extension 7, carried by it. The sleeve 21 is adapted to be freely rocked about the tubular extension, which serves as a bearing therefor, the same being manipulated from the controlling-lever 23 (of which there are two, one on each side of the driver's seat) by intermediate connections, as follows: Projecting or depending from approximately the medial portion of the periphery of the sleeve is an arm 24, whose free end has pivotally secured thereto one end of a connecting-rod 25, the opposite end of the same being pivotally secured to the outer end of an arm 26, carried at the outer end of a rock-shaft 27, mounted in a suitable bearing 28, carried by the wagon-body, the inner end of the rock-shaft having secured thereto an upwardly-extending arm 29, whose free end has pivotally secured thereto the lower end of a connecting-rod 30, the upper end of which is pivotally secured to the short arm of the controlling-lever 23. The latter is provided with a bell-crank lever 31, from the short arm of which depends a bar 32, connected to a pawl 33, pivotally secured to the lever, the pawl being adapted to seize any one of a series of teeth of a curved toothed rack-bar 34, disposed one on each side of the driver.

From the foregoing it is apparent that to whatever position the lever 23 may be tilted it may be locked in said position by the pawl against the rack-bar. It is further apparent that by tilting the lever 23 in one direction or the other the sleeve 21 will be rocked accordingly and that the latter by the connections already described and referred to will control the positions of all the valves 12 simultaneously, rocking the latter to either permit the fluid from the reservoir 6 to pass by way of one of the passages 11 or the other and thus to rotate or impel the driving-wheels in one or the other direction, or the said valves 12 may be rocked to a position to shut off communication altogether between the reservoir 6 and passages 11, in which case the carriage would come to a full stop, or the lever 23 on each side of the carriage-body might be operated independently, in which instance one wheel might be allowed to remain stationary and the other set in motion, whereby the carriage would be made to turn a corner.

35 represents lugs to which the tie-rods 36, forming a part of the body-frame, can be connected, the opposite ends of the tie-rods being secured to the forward end of the frame. The reservoir is further secured to the spider by braces 37, riveted at one end to the lugs 35′. The wheels 1 are directly supported by and revolve about the conical spindles 38, forming an integral part of the bases of the spiders formed by the arms 8 8′, suitable ball-bearings 39 being interposed between the spindle and the conical hub 40 of the wheel. The wheels 1 being thus carried by the spider in effect directly support the reservoir by the fluid of which they are driven. The wheels thus form the movable portion of the motor by which the carriage is driven, the fluid of the reservoir directly impinging on the blades 10, carried by the wheels. The reservoir can be charged in any suitable manner.

Having described my invention, what I claim is—

1. In a horseless carriage, a suitable carriage-body, a reservoir mounted in connection with the same, a series of fixed radial arms independent of the wheels leading from the reservoir and having passages for conducting the fluid of the reservoir and causing the same to impinge against the wheels and drive the same in either direction, the center of said arms or spider being disposed substantially in the line of the axis of rotation of the wheels, substantially as set forth.

2. In a horseless carriage, a suitable carriage-body, a reservoir mounted in connection with the same and adapted to support the wheels, a series of arms having passages leading from the reservoir, a ring having a series of blades carried by, or forming a part of each wheel, the fluid confined within the reservoir being adapted to be led through the arms and impinge on the blades and drive the wheels in one direction or the other, substantially as set forth.

3. In a horseless carriage, a suitable carriage-body, a reservoir for the same, tubular extensions carried at the opposite ends of the reservoir and disposed in line of the axis of rotation of the wheels, a spider forming a part of each extension and comprising a series of arms having passages communicating

with the tubular extension, a valve carried by each arm and adapted to be controlled by the operator, wheels carried by the spider, and a series of blades forming a part of each wheel and adapted to be impinged upon by the fluid from the reservoir, substantially as set forth.

4. In a horseless carriage, a suitable reservoir, a dish-shaped spider carried at each end thereof, suitable arms radiating from the base of the spider and communicating with the reservoir, extensions forming each a continuation of each arm, passages formed in each extension communicating with the passage formed in the arm proper, a valve mounted at the juncture of each arm and its extension said valve having a port adapted to establish communication between the passage of the arm and either of the passages of the extension-arm, the outer ends of the passages of the extension-arms being adapted to eject the fluid supplied from the reservoir in opposite directions, a series of blades carried by wheels and arranged in a circle concentric with the outer rim of the wheel, the said blades being adapted to be impinged by the fluid thus ejected from either one or the other of the said passages of the extension-arms, and the wheels thus be driven in one direction or the other, substantially as set forth.

5. In a horseless carriage, a suitable reservoir, a spider at each end of the same, a tubular extension forming a part of the spider and communicating directly with the reservoir, a rotatable sleeve passed over said tubular extension, a series of arms radiating from the periphery of the sleeve, a series of arms forming a part of the spider and having passages leading to the tubular extension, each arm having one passage, a series of extension-arms for the aforesaid arms, each extension-arm having two passages, a valve located at the juncture of the passages of the extension-arms and the arms proper of the spider, a lever carried by each valve and adapted to cooperate with the arm of the sleeve adjacent thereto, means under the control of the operator for rocking the sleeve in either direction and thereby establish communication between the passage of each arm of the spider and either one of the passages of the extension-arm, the outer ends of the passages of the extension-arms being deflected in opposite directions, a wheel carried by each spider, a ring carried by each wheel concentric with the outer rim of the wheel and having a series of blades, the ejecting ends of the passages of the extension-arms being located along the inner circle of the blade-ring, whereby the fluid ejected through either passage of the extension will impinge against the blades of the ring, and cause the wheel to rotate in one direction or the other, the controlling devices for the sleeve on one side of the carriage being independent of those on the other side, whereby each wheel is under perfect control of the operator, substantially as set forth.

6. In a horseless carriage, a suitable spider having a tubular extension or bearing at the base thereof, a series of arms and extensions therefor radiating from one end of the extension, a valve located at the juncture of each arm and its extension, a lever secured to each valve and disposed substantially in line with the arm of the spider and directed toward the tubular extension, a fork at the free end of each lever, a rotatable sleeve loosely embracing the tubular extension, a series of arms radiating from the sleeve and corresponding in number to the number of valves or levers carried thereby, a pin projecting laterally from each arm of the sleeve and adapted to be embraced by the fork of each valve-lever, a controlling-lever mounted on the body of the carriage, and intermediate connections between the controlling-lever and the sleeve for rocking the latter and controlling the escape of the fluid held in the reservoir, substantially as set forth.

7. In a horseless carriage, a suitable reservoir, a spider for each end of the same, a tubular extension or bearing forming a part of the spider and carried at each end of the reservoir, a spindle formed at the base of the spider and serving to support the wheel of the carriage, the axis of the spindle being in line of the axis of the tubular extension, the spider being adapted to convey the fluid from the reservoir against the wheel, and impart rotation to the same, substantially as set forth.

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

PAUL FLUCKS.

Witnesses:
EMIL STAREK,
ALFRED A. MATHEY.