

(No Model.)

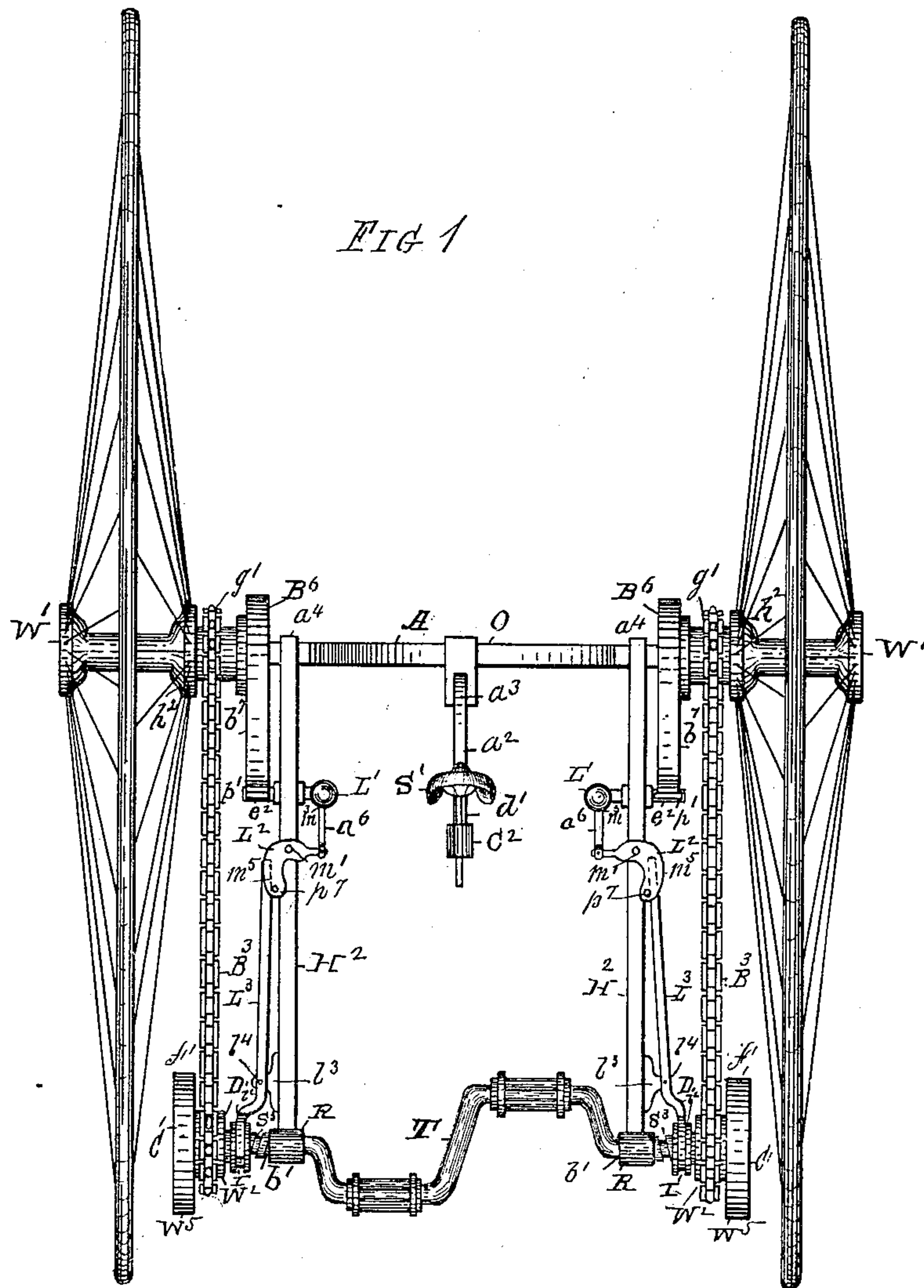
4 Sheets—Sheet 1.

J. GIBBONS & C. D. MENEELY.

VELOCIPÈDE.

No. 353,935.

Patented Dec. 7, 1886.



WITNESSES

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(No Model.)

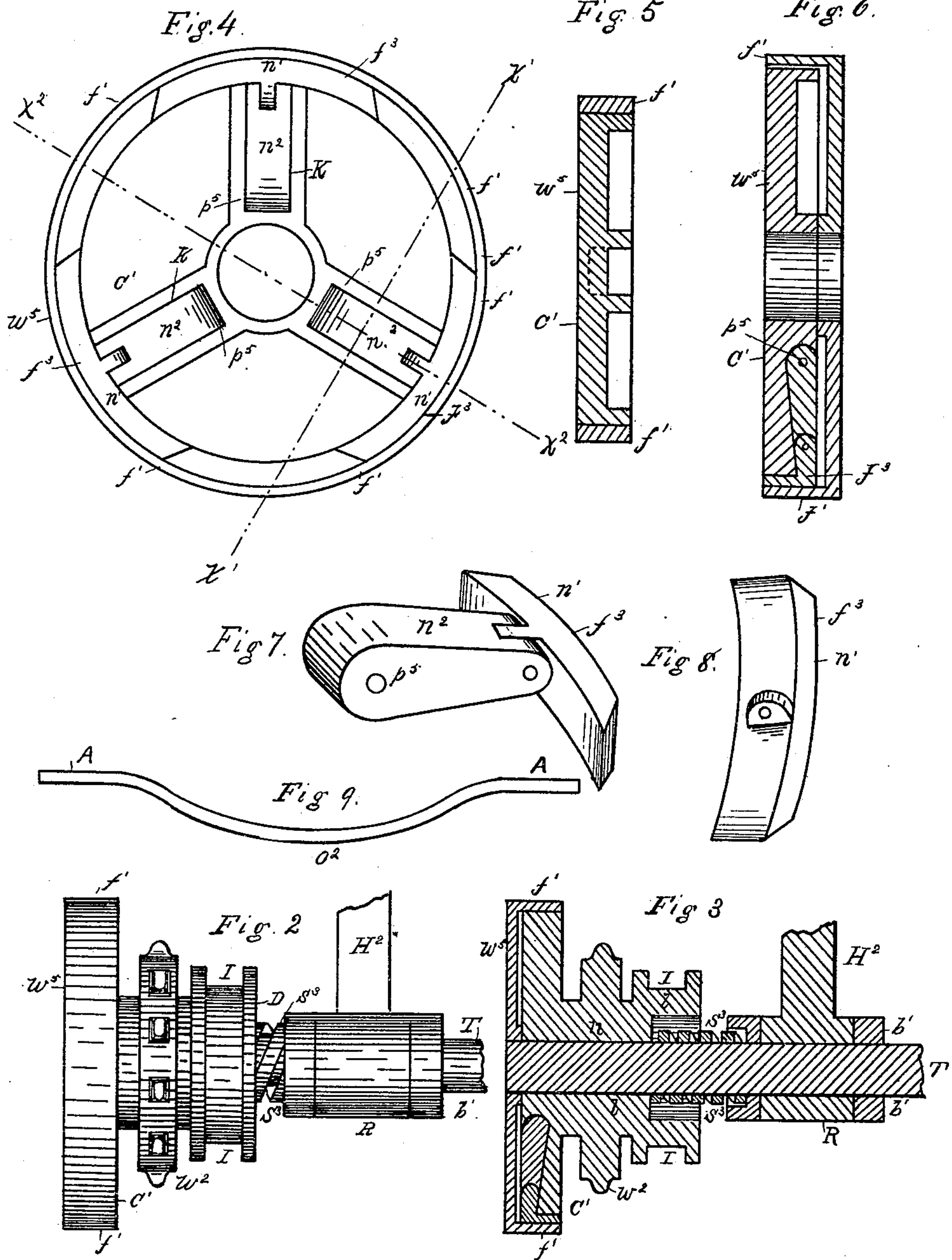
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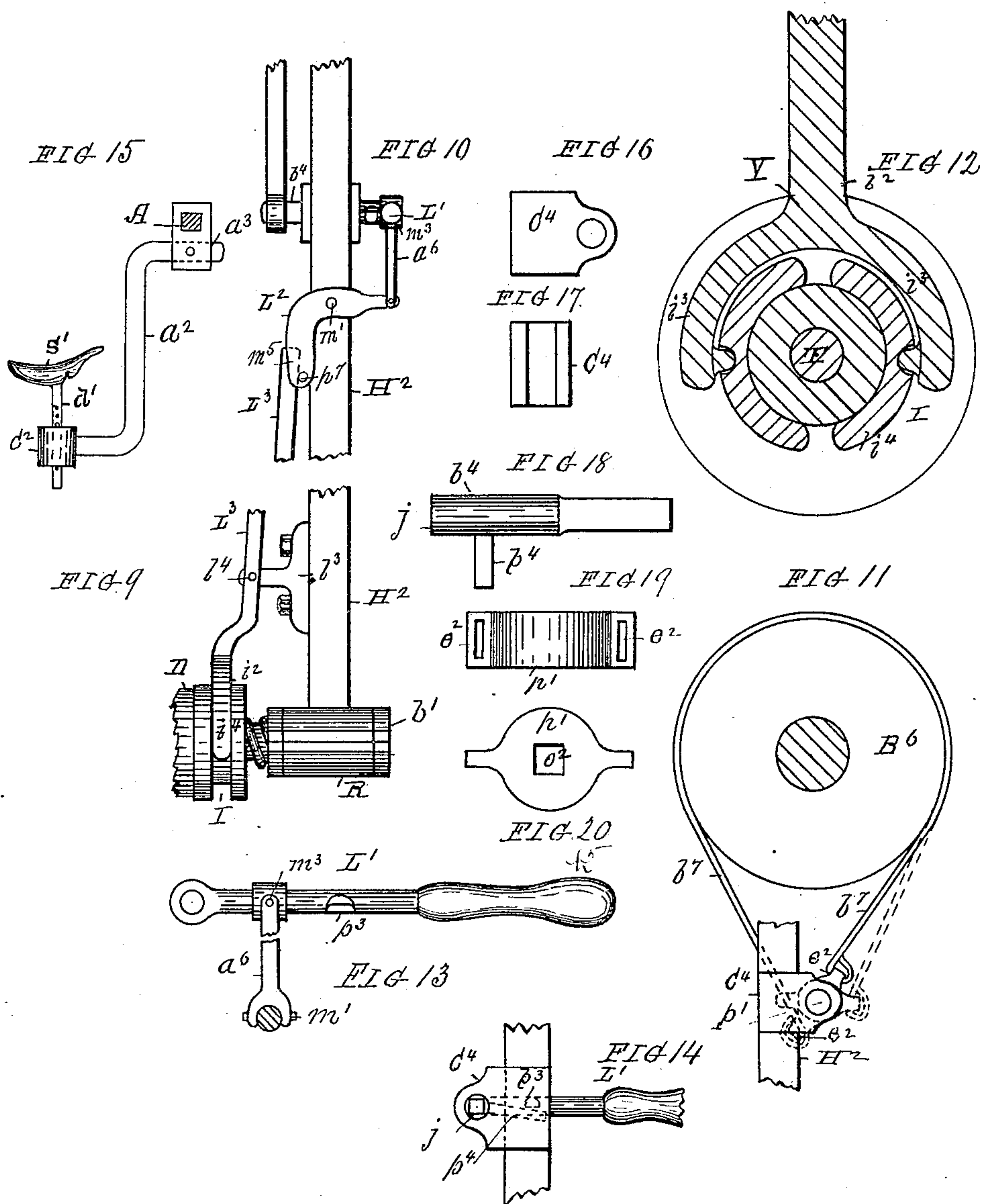
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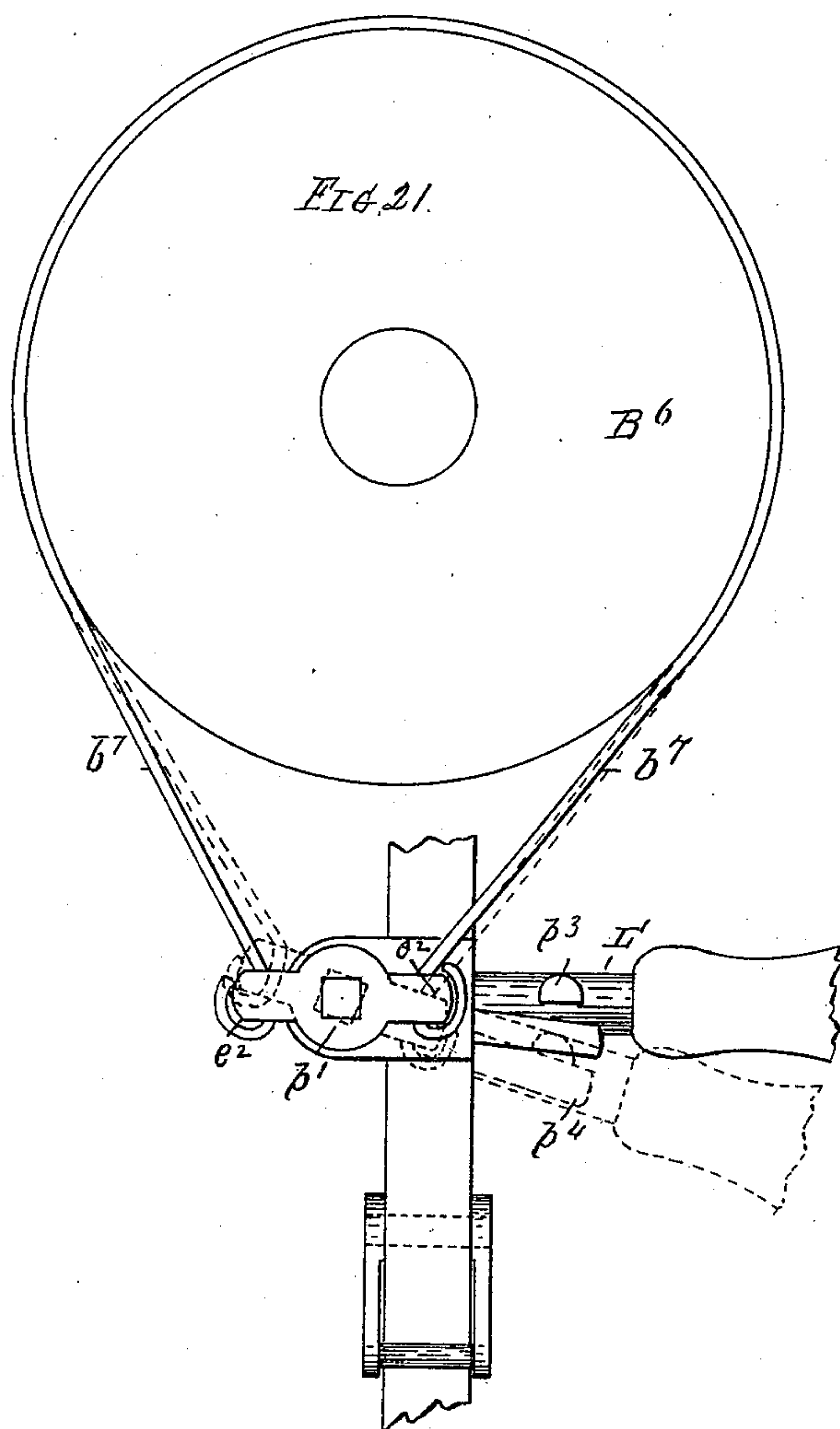
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UNITED STATES PATENT OFFICE.

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VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 353,935, dated December 7, 1886.

Application filed December 2, 1885. Serial No. 184,420. (No model.)

To all whom it may concern:

Be it known that we, JOHN GIBBONS, of West Troy, county of Albany, State of New York, and CHARLES D. MENEELY, of the city of Albany, State and county before named, have jointly invented new and useful Improvements in Bicycles, of which the following is a specification.

Our invention relates to improvements in bicycles, and more particularly to that class of them which are made with two wheels of the same size arranged on an intermediately-placed axle, although in some of its features our invention may be applied to other classes of bicycles.

The object and purpose of our invention is to improve the bicycle as relates to the relative arrangement of the seat and its connection with the axle; to also improve the clutch which connects and disconnects the power received from the treadle-crank shaft, and to improve the braking mechanism and its connections for changing the direction of the bicycle.

Accompanying this specification, to form a part of it, there are four plates of drawings, containing twenty-one figures illustrating our invention, with the same designation of parts by letter-reference used in all of them.

Of these illustrations, Figure 1 shows a perspective of our improved bicycle with what is its rear turned toward the sight. Fig. 2 illustrates in a side elevation and as arranged upon one end of the treadle-crank shaft the clutch thereat, its shipper shown with its operating-arm omitted, a sprocket-wheel, a sleeve that forms a bearing at that end of the latter, one of the hangers in part by which said treadle-crank shaft is suspended from the main axle, there being oppositely arranged at each end of the treadle-crank shaft duplicates of the parts shown in this figure. Fig. 3 is a central vertical section of the mechanism shown at Fig. 2, taken longitudinally. Fig. 4 shows one of the wheels containing a set of the clutching-shoes radially arranged therein, and with what is the inner side of the wheel when in position shown as turned toward the sight. Fig. 5 is a cross-section taken on the line $x'x'$ of Fig. 4. Fig. 6 is a diametrical section taken on the line x^2x^2 of Fig. 4. Fig. 7 is a perspective

of one of the clutch-shoes and its pivoted arm, shown as removed from the wheel. Fig. 8 is a perspective of one of the clutch-shoes shown without its pivoted arm. Fig. 9 is a plan view of the axle, showing the curve made frontwardly in it for adaptation to the seat. Fig. 10 represents a side elevation of one set of the levers and connections which operate the brake and clutch at each side of the seat. Fig. 11 is a side elevation of one of the brake-wheels and its brake-strap, with a part of the mechanism immediately connected therewith for operating it, the parts being shown with what is their inner face when in position in the bicycle turned toward the sight in the illustration. Fig. 12 is a combined side elevation and section of one of the clutch-shippers. Fig. 13 is a combined side elevation and section of one of the hand-levers and a part of its connections. Fig. 14 is a side elevation of the hand-lever illustrated at Fig. 13, but illustrated as taken in connection with a part of one of the hangers and a clip arranged thereon. Fig. 15 is a side elevation of the saddle and the arm which connects it with the axle, the latter being illustrated in cross section. Fig. 16 is a side view of a clip constructed to attach to each of the hangers. Fig. 17 is an end view of one of the clips. Fig. 18 is a side elevation of a horizontally-arranged bar made with a rounded or journal part and a square end part, the latter being adapted to engage with one of the brake-belt turn-plates, and its journal part to turn in bearings in the sides of each of the clips, said bar being also made with a pin projected at right angles from its side. Fig. 19 is a top view of one of the brake-belt turn-plates, of which there is one at each side of the machine. Fig. 20 is a side elevation of the brake-belt turn-plate. Fig. 21 is a side elevation of one of the brake-wheels, brake-belts, brake-belt turn-plates, one of the hand-levers, one of the clips, and one of the hangers, with all the parts of this figure being taken with what is their inner face when in position turned toward the sight in the figure.

The several parts of the bicycle thus illustrated are designated by letter-reference, and the function of the parts is described as follows:

The letters W' indicate the wheels on which

the bicycle moves, and these wheels are of the same size and are arranged upon the main axle A. This axle, centrally, is made with an out-curve, O, which is extended laterally and frontwardly, as indicated at Fig. 9, and a^2 designates an arm, which is attached to the axle at a^3 . This arm is projected downwardly from the axle and bent so as to be extended laterally and rearwardly to be over the treadle-crank shaft, where it connects with a cylinder, C^2 , in which the saddle-stud d' is made vertically adjustable.

The letters S' designate the saddle.

The letters H^2 designate hangers, which are attached to the axle A at a^4 , and each of these hangers, of which there is one at each side of the saddle, are constructed upon their lower ends with sleeves R, that interiorly form bearings b' for the treadle-crank shaft T, and in which the latter when actuated turns.

The letters D designate sleeves, of which there is one at each end of the treadle-crank shaft. Upon each of these sleeves D there is exteriorly formed a clutch, C' , a sprocket-wheel, W^2 , and a clutch-shipper groove, I.

The letter S^3 indicates a spiral spring that encircles the treadle-crank shaft T, outside of each of the bearing-sleeves R, said springs being arranged to abut against the said sleeves R at one end and against the sleeves D at their outer ends.

The letter l indicates a chamber made in the sleeves D, to in part contain the springs S^3 where encircling the treadle-crank shaft T. The letter W^6 indicates a wheel upon each end of the treadle-crank shafts, said wheels each being keyed to said shaft, so as to move with it, and each of them is made with a rim-flange, f' , projected inwardly to contain the clutch, and for the engagement thereat of the clutch-shoes of the sleeves D.

The letters B^3 designate the chain-belts which communicate motion to the wheels W' from the treadle-crank shaft T when operated by the rider. These chain-belts run on the sprocket-wheels W^2 of the sleeves D, and in the sprocket-grooves g' of the hubs h^2 on the wheels W' .

Each of the clutches C' is composed of the shoes $n' n' n'$, that centrally tongue into the radially-placed shoe-arms n^2 , and which latter, where tongued in, are pivoted at p^3 , and the arms n^2 are arranged in radially-formed slots K, produced in the end faces of each of the sleeves D, and therein are pivoted at p^5 . The outer face of each of the shoes n' project a little beyond the outer end face of the sleeves D, in which they are radially arranged, so that when the sleeve is forced to contact with the rim-flange f' of wheel W^5 the shoes are forced outwardly by the action of their pivoted and radially-arranged arms, and the outer faces of the shoes designated at f^3 engage with the inner face of the flange f' of said wheel W^5 , so that the sleeves D are actuated to turn by such clutching engagement, and motion is communicated from the treadle-crank shaft to said sleeves D, and from thence by means of the

chain-belts to the hubs of the wheels W' . The spring S^3 , abutting against the bearings b' and the sleeves D, keeps the latter and the wheel W^5 in clutching engagement.

The clutch-shippers consist of an encircling groove, I, formed in each of the sleeves D, a shipper-arm, i^2 , having forked ends $i^3 i^3$, and shoes i^4 , pivoted to each of said ends, the forked ends of the arm and the shoes pivoted thereto being adapted to run in the groove I and in part encircle the sleeves D thereat, as shown at Fig. 12, the function of the clutch-shippers being to disconnect the clutch by moving the sleeve D, containing the clutch-shoes, away from their engagement with the flange f' of the wheel W^5 , before described, so that said sleeve will turn on the treadle-crank shaft and the latter will cease to communicate motion to the wheels W' .

The letters B^6 indicate the braking-wheels, of which there is one arranged upon the inside of each of the hubs of the wheels W' , so as to move with the latter, and b^7 a belt of elastic metal or other suitable material, which is adapted to loop around the upper part of each of said wheels and to have its ends meet in a downward stretch below the bottom of said wheels, where the ends of the belts of each brake are attached to a turn-plate, p' , the latter being provided with eyes e^2 , to receive and have secured therein the ends of the brake-belts. These turn-plates p' are each made with a square opening, O^2 , to receive the square end of the bar b^4 , the latter being made with the journal part j , adapted to turn in one of the clips C^4 , attached to one of each of the hangers H^2 . The letter p^4 designates a pin projected from said bar b^4 at right angles thereto, and the letter L' designates the hand-levers, the fulcrum ends of each of which are adapted to journal onto the rounded ends of one of the bars b^4 . The letter p^3 indicates a pin projected from the side of each of said hand-levers L' , and when the latter at either side of the seat are pressed down on their handle ends h^5 , the pin p^3 on the hand-levers will engage with the pin p^4 on each of the bars b^4 , causing the latter to turn in their bearings in the clips, and thus draw in the brake-belt b^7 , so as to put the latter in a state of tension on the brake-wheels B^6 , as indicated at Figs. 11 and 21 by the dotted lines thereat. The letters a^6 indicate downwardly-projected arms, of which there is one for each of said hand-levers L' .

The letters L^2 indicate pivoted turn-levers, that are each pivoted at m' to one of the hangers H^2 , and each of these turn-levers at their inner ends is pivoted to one of the downwardly-projected arms a^6 , each of which at its upper end, m^3 , is pivoted to each one of the two hand-levers L' , so that when the latter are pressed down on their handle ends the turn-levers L^2 are forced outwardly on their lower arms, m^5 .

The letters L^3 indicate the clutch-shipping levers, of which there is one at each side of the saddle. These levers are pivoted at L^4 to a bracket, l^3 , on each of the hangers H^2 , the lower

end of these being forked at Y to enter the groove I, made in the sleeves D. The upper ends of these levers L^3 are made to engage with a pin, p^1 , on each of the turn-levers L^2 , so that as the latter are forced downwardly upon their inner arms the outer arms, m^3 , by means of the pin thereon, engage with the upper end of the lever L^3 , so as to force their upper ends outwardly and their lower forked ends, Y, inwardly, the latter moving the sleeves D and the clutching mechanism away from its engagement with the wheel W^5 on the treadle-crank shaft. Each of the hand-levers L^1 , when moved downwardly on their handle ends, commence to operate immediately to disconnect the clutch with which they connect, and if pressed down far enough the pins p^3 of the hand-levers engage with the pins p^4 of the bars b^4 to put on the brakes, and thus the clutch can be thrown off without operating the brake by moving the hand-levers down a short distance only.

The bicycle thus constructed is operated by the rider's feet working the treadles, and by the arrangement of the clutching mechanism at each end of the treadle-crank shaft with the clutching end of the sleeves D thereat, and by which motion is communicated to the chain-belt and by them to the hubs of the wheels W' . To change the direction of the bicycle or to turn it, that one of the wheels W' making the shortest curve in the proposed line of direction is disconnected, and by a further movement of the same lever the brake is applied to the wheel, the relative speed of these two wheels as varied giving direction to the line of motion.

In an application for a patent upon improvements upon this class of bicycles made by us and filed in the Patent Office July 23, 1885, and known as Serial No. 172,393, a means for putting on the brakes and disconnecting the clutching mechanism at the same time is shown and described. In said former application the brakes each consisted of a bearing-shoe that was forced upwardly so as to engage with a groove formed in a brake-wheel constructed on the hubs of the main wheels, which differs materially from the friction-belt shown herein, which is operated by being pulled down onto the brake-wheel arranged on each of the hubs, and the clutch was formed in said older application by means of cheeks upon a sleeve on the treadle-crank shaft, which were, by a spring, forced to engage with the inside face of a wheel that was secured at each end of the treadle-crank-shaft.

I am aware that a velocipede-seat has been made by downwardly bending the axle and constructing said seat with a rearwardly-curved back-support, to which latter the seat was suspended. This older device differs from ours in the fact that in the latter the axle itself is curved laterally instead of downwardly, and the seat is suspended from the axle proper, instead of from the back support, as in the older device before named.

Having fully described our invention, what

we claim, and desire to secure by Letters Patent, is—

1. In a bicycle having two wheels of the same size arranged side by side, the combination of the axle A, made with the laterally and frontwardly extended outcurve O, the arm a^2 , attached to the axle at the outcurve and extended downwardly and rearwardly therefrom, and the seat or saddle S' , connected to the downward extension of said arm, substantially in the manner as and for the purposes set forth.

2. In a bicycle, the combination of the pivoted shoes n' , radially arranged in the outer face of the sleeve D, and the wheel W^5 , made with the rim-flange f' , and attached so as to move with the treadle-crank shaft T, substantially as and for the purposes set forth.

3. The combination of the treadle-crank shaft T, having the clutch-wheel W^5 , provided with a rim-flange, f' , said wheel being attached to the outer end of said shaft, the sleeve D, having its outer end face made with the radially-arranged and pivoted shoes n' , and having thereon the sprocket-wheel W^2 and shipper-groove I, said sleeve being arranged on said treadle-crank shaft, and the spring S^3 , arranged on the latter between its bearings and said sleeve D, substantially as and for the purposes set forth.

4. The combination, with a bicycle-wheel, of a brake-wheel arranged on the hub thereof, a belt arranged to loop over the top of said wheel in frictional engagement thereon, with its ends below and away from said wheel, a turn-plate to which the ends of the brake-belt are secured, a horizontal shaft or bar having bearings to turn in and at one of its ends secured to said turn-plate, said shaft or bar being made with a pin projected at right angles therefrom, and a hand-lever provided with a fulcrum bearing on the end of said shaft or bar and a pin laterally projected from its side at right angles thereto, said pin on the hand-lever being adapted to engage with the pin on said shaft or bar, substantially as and for the purposes set forth.

5. The combination, with the braking mechanism, substantially as described, of the pivoted hand-lever L^1 , made with the pivoted arm a^6 , the turn-lever L^2 , the pivoted lever L^3 , the latter made with the forked lower end, Y, the sleeve D, made with the encircling groove I, the clutch C' , and the treadle-crank shaft T, made with the wheel W^5 , having the rim flange f' , constructed and arranged to operate substantially in the manner as and for the purposes set forth.

Signed at Troy, New York, this 23d day of October, 1885, and in the presence of two witnesses, whose names are hereto written.

JOHN GIBBONS.
CHARLES D. MENEELY.

Witnesses:

CHARLES S. BRINTNALL,
GEO. A. DARBY.