

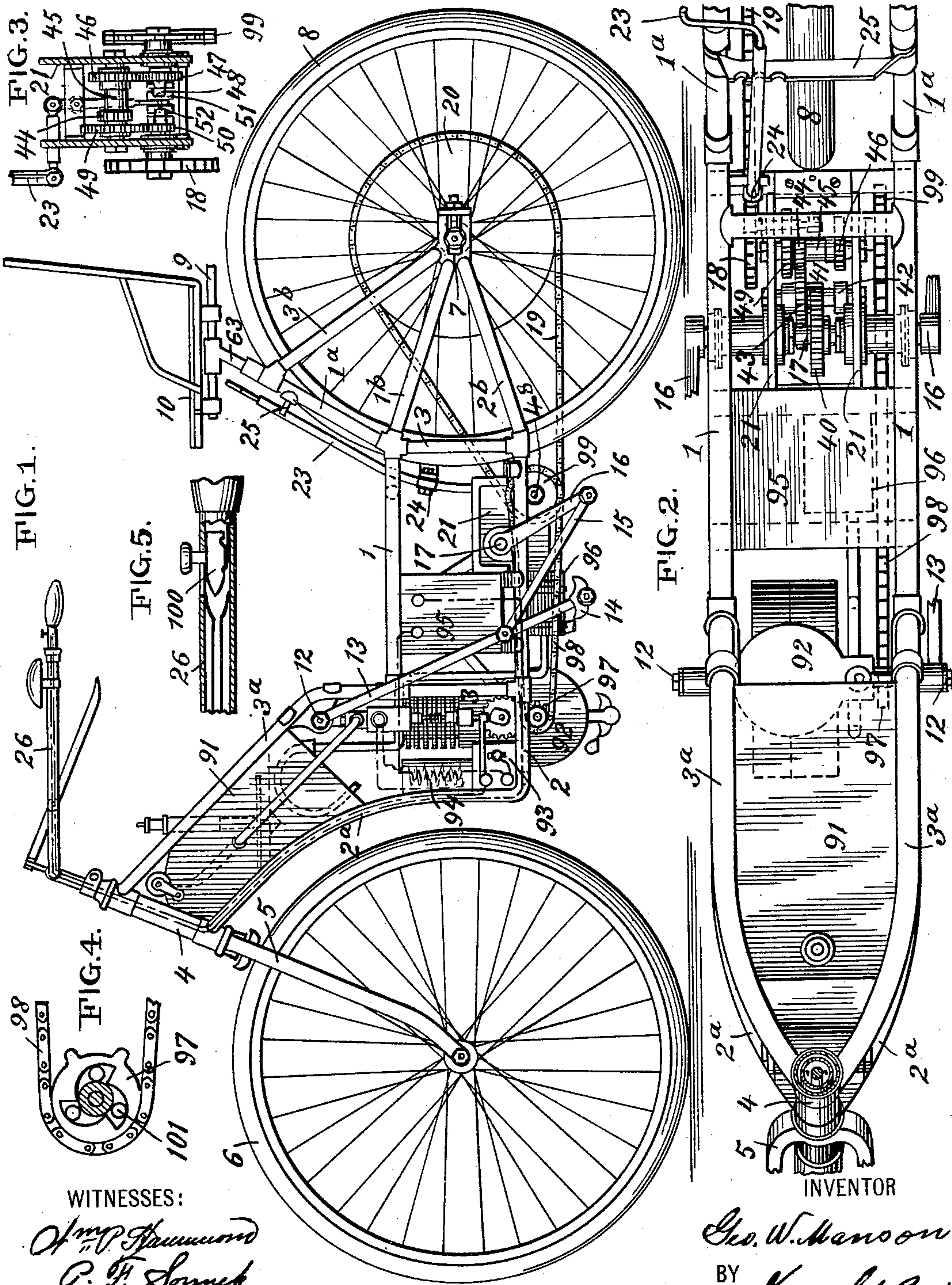
No. 678,963.

Patented July 23, 1901.

G. W. MANSON.
MOTOR CYCLE.

(Application filed Nov. 17, 1900.)

(No Model.)



WITNESSES:

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GEORGE W. MANSON, OF NEW YORK, N. Y.

MOTOR-CYCLE.

SPECIFICATION forming part of Letters Patent No. 678,963, dated July 23, 1901.

Application filed November 17, 1900. Serial No. 36,848. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MANSON, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Motor-Cycles, of which the following is a specification.

The subject of my invention is a motor-cycle in which the motor is especially designed and adapted for application and use in a bicycle with a frame constructed as described in Letters Patent No. 616,421, granted to me the 20th of December, 1898, and in an application of even date with the present for Letters Patent for an improved construction of bicycle-frame.

In the accompanying drawings, Figure 1 is a side view of the bicycle with the motor in position. Fig. 2 is a partial plan view of the same on a larger scale. Fig. 3 is a transverse sectional elevation of the gearing-case and gearing. Fig. 4 is a sectional side view of a sprocket driving-wheel with friction-clutch for driving the same and permitting it to run free in coasting. Fig. 5 is a detail sectional view, on a larger scale, of a portion of the handle-bar, showing an electric-circuit breaker for controlling the motor.

The bicycle-frame to which my improved motor is particularly adapted consists of two side frames, each constructed with a central part in approximately the form of a parallelogram, having top and bottom horizontal tubular bars 1 2 and vertical end bars 3, from the respective front corners of which tubular bars 3^a and 2^a extend forward and upward, converging from each side to the tubular head 4, in which the steering-head of the fork 5 is mounted.

6 represents the front or steering wheel, and 26 the handle-bar.

From the rear upper corner of the quadrangular central part of each side frame a seat-post 1^a extends upward with rearward inclination, and in order to provide an efficient vertical truss for the rear end of the frame tubular bars 1^b 2^b 3^b are mounted at their forward ends in the quadrangular body-frames 1 2 3 and seat-post 1^a and converge toward their rear ends, where they are secured to the boxes 7 of the drive-wheel 8, as

described in my accompanying application, already referred to.

10 represents the seat, mounted adjustably on the seat-posts 1^a through the medium of rails 9 and extension-posts 63, as I have also described in another application of even date herewith.

The motor which I have adopted and adapted for application to my improved construction of cycle is the well-known De Dion-Bouton motor, which operates by explosion of a mixture of hydrocarbon vapor and atmospheric air ignited at each stroke by an electric spark produced by a dry battery and induction-coil, so that the motor can be stopped or started by a circuit-breaker readily manipulated by the operator. These motors being well known in their internal structure and mechanism need only be described in sufficient detail to explain the manner of their adaptation and application to the bicycle.

The vaporizer 91 is mounted just at the rear of the tubular head 4, between the two pairs of standards 2^a 3^a of the side frames which extend down to the rear of the front wheel 6. At this point the motor 92, trembler 93, and induction-coil 94 are placed between the side frames. The foot-levers 13, having pedals 14, are hung from fulcrums 12 on the outside of each standard 3^a. The side frames 1 2 extend horizontally backward, and between the said side frames are mounted the battery 95, muffler 96, case 21 of the changeable gearing, the motor sprocket-wheel 97, connected by sprocket-chain 98 with the sprocket-wheel 99, and the sprocket-wheel 18 on same shaft 48, connected by the sprocket-chain 19 with sprocket-wheel 20 of the drive-wheel 8. Rods 15 connect the pedal-levers 13 with cranks 16, mounted on the main shaft 17 on the outside of each of the vertical side frames 1 2.

The main crank-shaft 17 carries a gear-wheel 40, meshing with a small gear-wheel 41, secured to a tubular shaft 42, carrying a larger gear-wheel 43, meshing with a small gear-wheel 44, secured to a second tubular shaft 45, carrying a large gear-wheel 46, which meshes with a similar wheel 47, which turns loose upon the shaft 48 of the sprocket-wheels 18 and 99. Another larger gear-wheel 49 is

secured to the tubular shaft 45, which meshes with a small gear-wheel 50, turning loose upon sprocket-wheel shaft 48.

The gear-wheels 47 and 50 are provided with clutch-teeth, as shown in Fig. 3, to engage with corresponding clutch-teeth formed on a sliding sleeve 51, which is held from turning on the sprocket-wheel shaft 48 by a tongue 52 thereon.

When the teeth of sliding clutch-sleeves 51 engage the clutch-teeth of the gear-wheel 47, the sprocket-wheel shaft 48 will be driven at moderate speed. When the collar clutch-sleeve 51 engages the gear-wheel 50, the sprocket-wheel shaft 48 will be driven at higher speed. When the sliding clutch-sleeve 51 is in intermediate position out of engagement with the clutch-teeth of both wheels 47 and 50, the sprocket-wheel shaft 48 is free to be turned either from the rear wheel 8 in coasting or by means of the motor mechanism without affecting the gearing and permitting the rider to rest his feet upon the pedals 14, which thus remain at rest while coasting or while the motor is propelling the bicycle, the rider at the same time having the option of adding his own energy either for high or moderate gear—as, for example, in climbing hills.

The sliding collar clutch-sleeve 51 is shifted by a lever 23, pivoted at 24 and the upper end held in place by notches formed in a cross-bar 25, secured to the seat-posts 1^a of the respective side frames. This changeable gearing I have fully shown and described in another application of even date herewith.

The handle-bar 26 is provided with a sliding circuit-breaker 100 for stopping the motor, operating to make and break the circuit through positive and negative wires (shown in dotted lines) passing through the handle-bar 26 and down through the steering-head, one connected with one pole of the battery and the other reaching the other pole through the trembler or automatic current-breaker for producing the spark. The motor sprocket-wheel 97 is provided with roller-clutches 101, which permit it to run free, while the motor remains stationary. When the motor is running, the clutch-rollers engage against the cam-surfaces of sprocket-wheel, carrying it forward.

Having thus described my invention, the

following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of a bicycle, having a frame constructed in two connected sides, each consisting of longitudinal bars one above another, inclined upward and forward in front and converging to the tubular head; and a motor mounted between the said side frames, substantially as herein shown and described.

2. In a cycle, the combination of a frame consisting of two vertical sides, approximately parallel in the central or body portion, inclined upward and forward in front and converging to the tubular head; a motor mounted between the said side frames; driving connections between the motor and the drive-wheel of the cycle, and an automatic friction-clutch interposed in the said driving connections, serving to transmit power from the motor to the drive-wheel in one direction and permit the drive-wheel to run independently of the motor when the latter is at rest.

3. In a cycle, the combination of a frame consisting of two vertical sides, each formed of tubular bars one above another; a motor and a drive-wheel mounted in said frame; driving connections between the motor and drive-wheel; a friction-clutch forming part of such driving connections, serving to transmit power from the motor to the drive-wheel in one direction, and to permit the free movement of the drive-wheel independently of the motor, when the latter is at rest; pedal-levers mounted in the frame and driving connections between the pedal-levers and drive-wheel, adapted for optional use, either in conjunction with or independently of the motor, as described.

4. In a cycle, the combination of a frame constructed with two vertical sides each consisting of tubular bars one above another; a motor and a drive-wheel mounted in said frame; driving connections between said motor and drive-wheel; pedal-levers; connections between said pedal-levers and drive-wheel, including changeable gearing for high and low speed; and a shifting-bar for changing the gearing; substantially as described.

GEORGE W. MANSON.

Witnesses:

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