

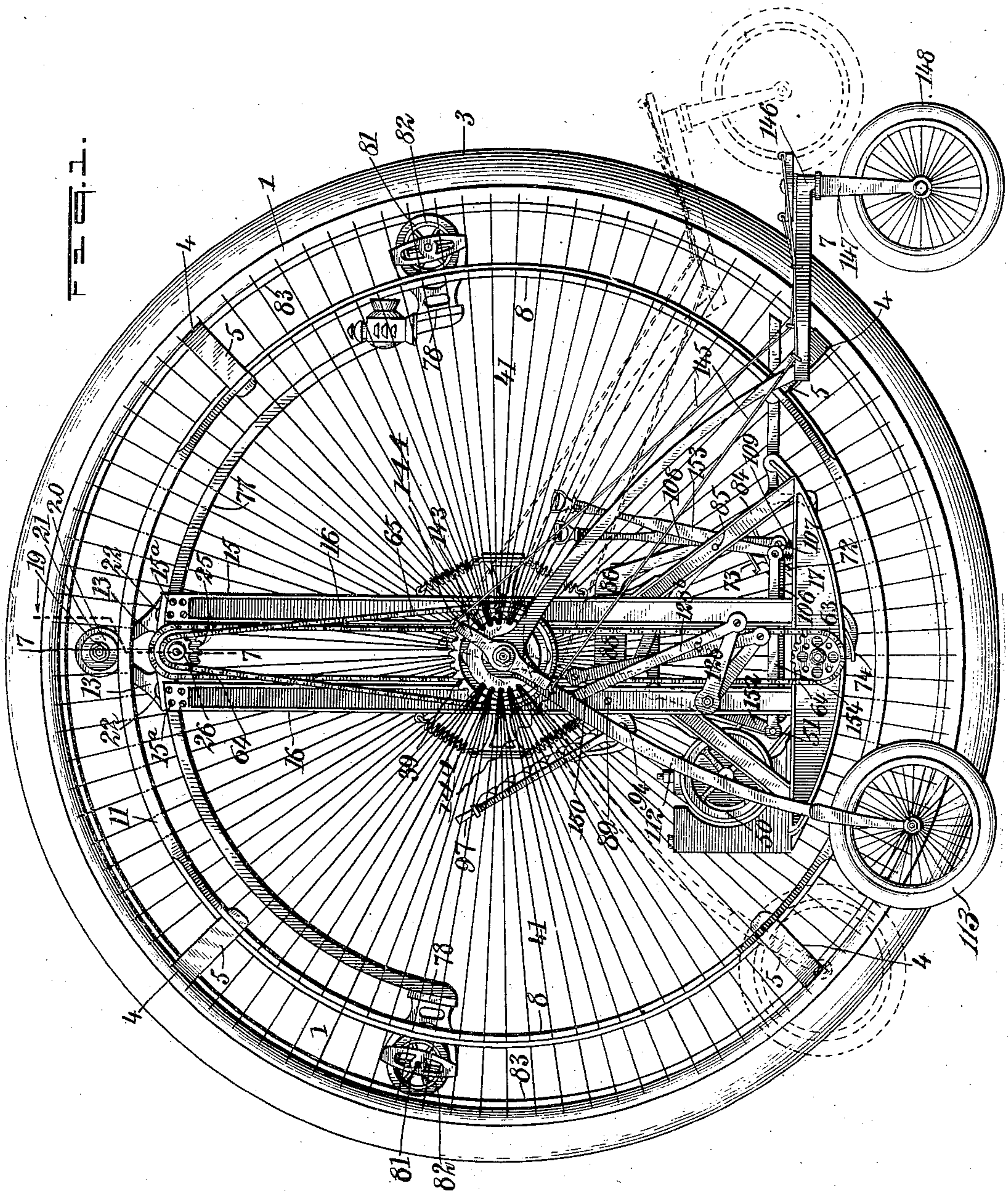
No. 799,396.

PATENTED SEPT. 12, 1905.

J. MATTSON.
UNICYCLE.

APPLICATION FILED MAY 11, 1905.

5 SHEETS—SHEET 1.



WITNESSES:

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E. C. Ellis

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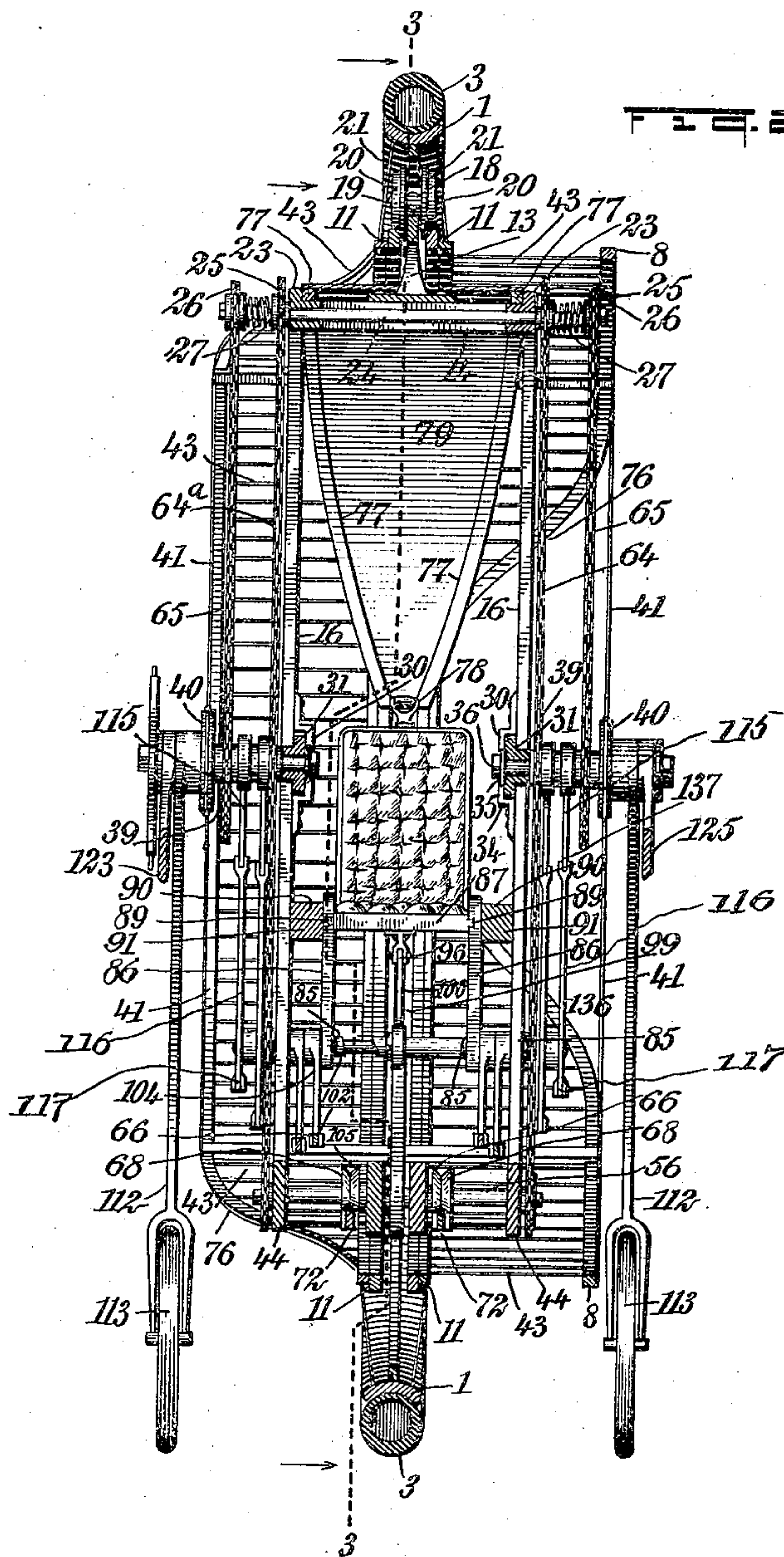
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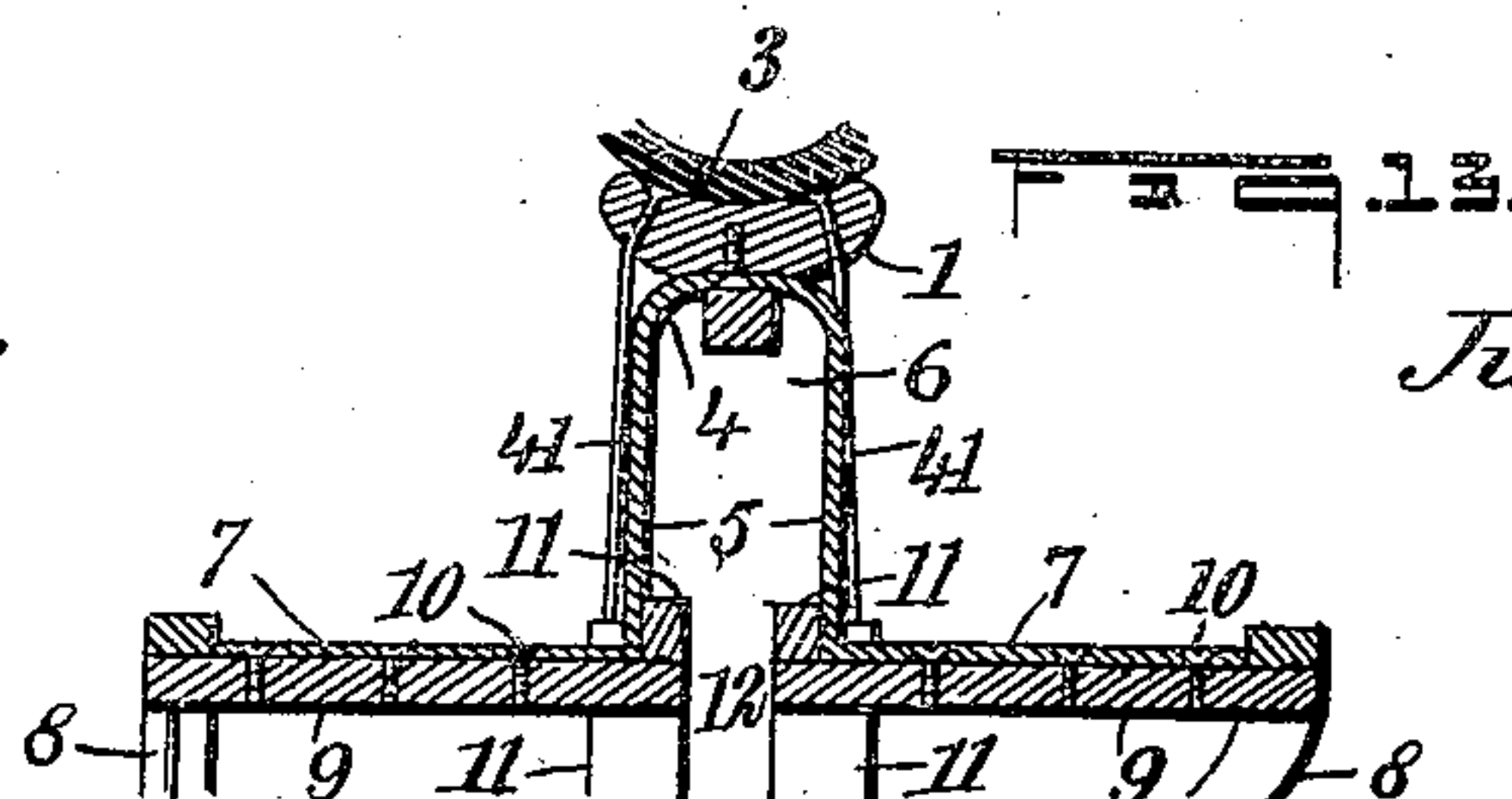
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5 SHEETS—SHEET 2.



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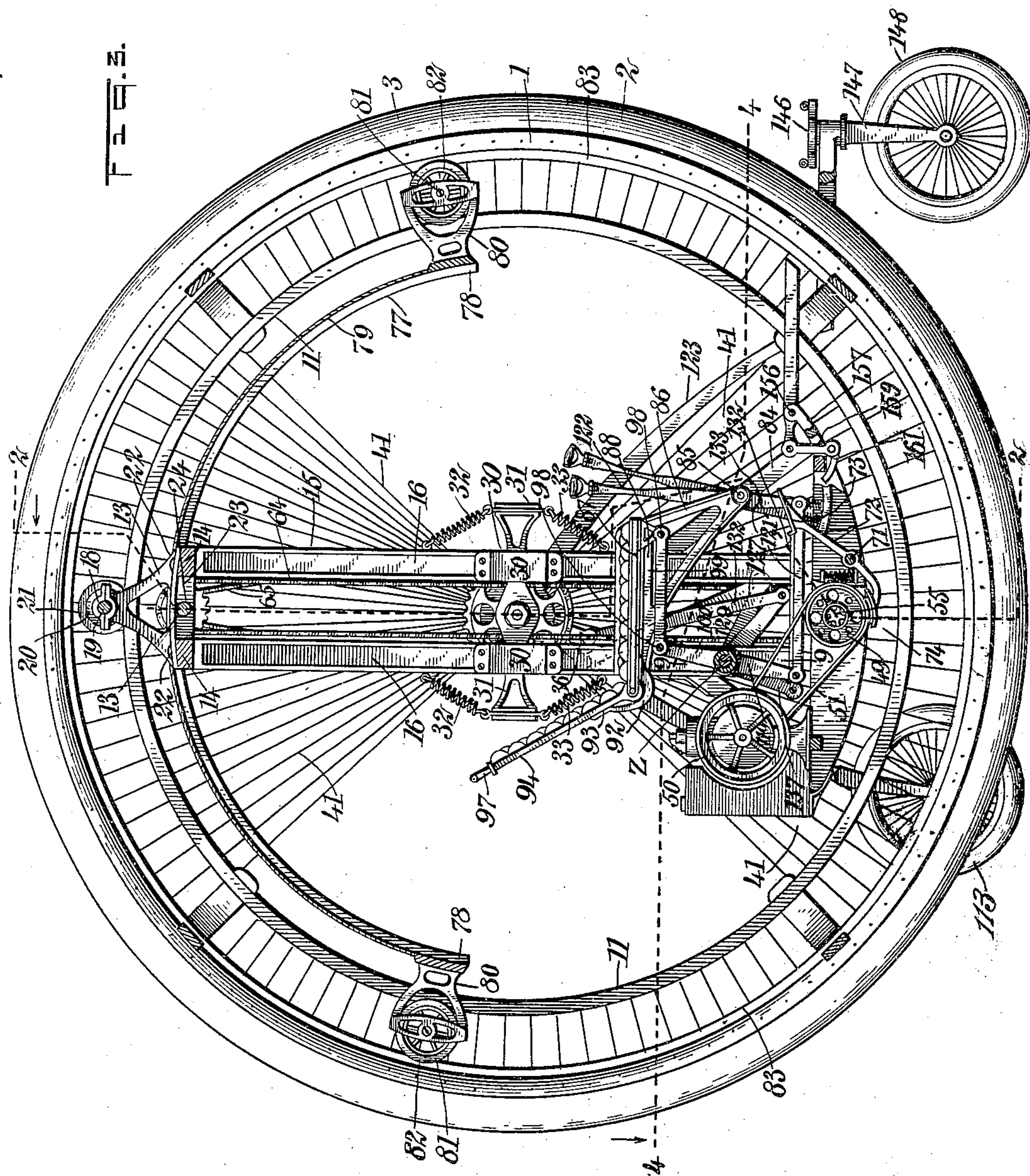
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5 SHEETS—SHEET 3.



WITNESSES:

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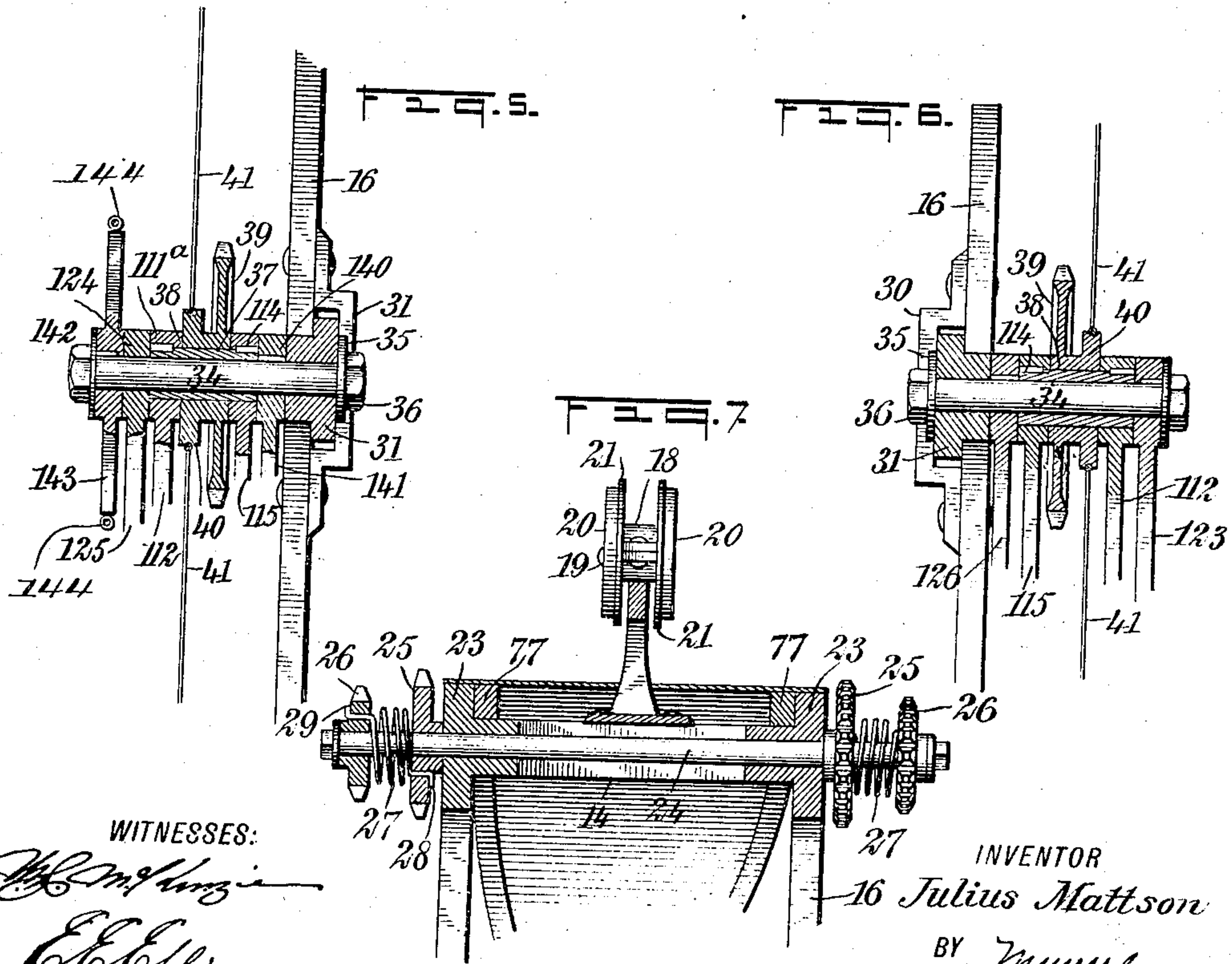
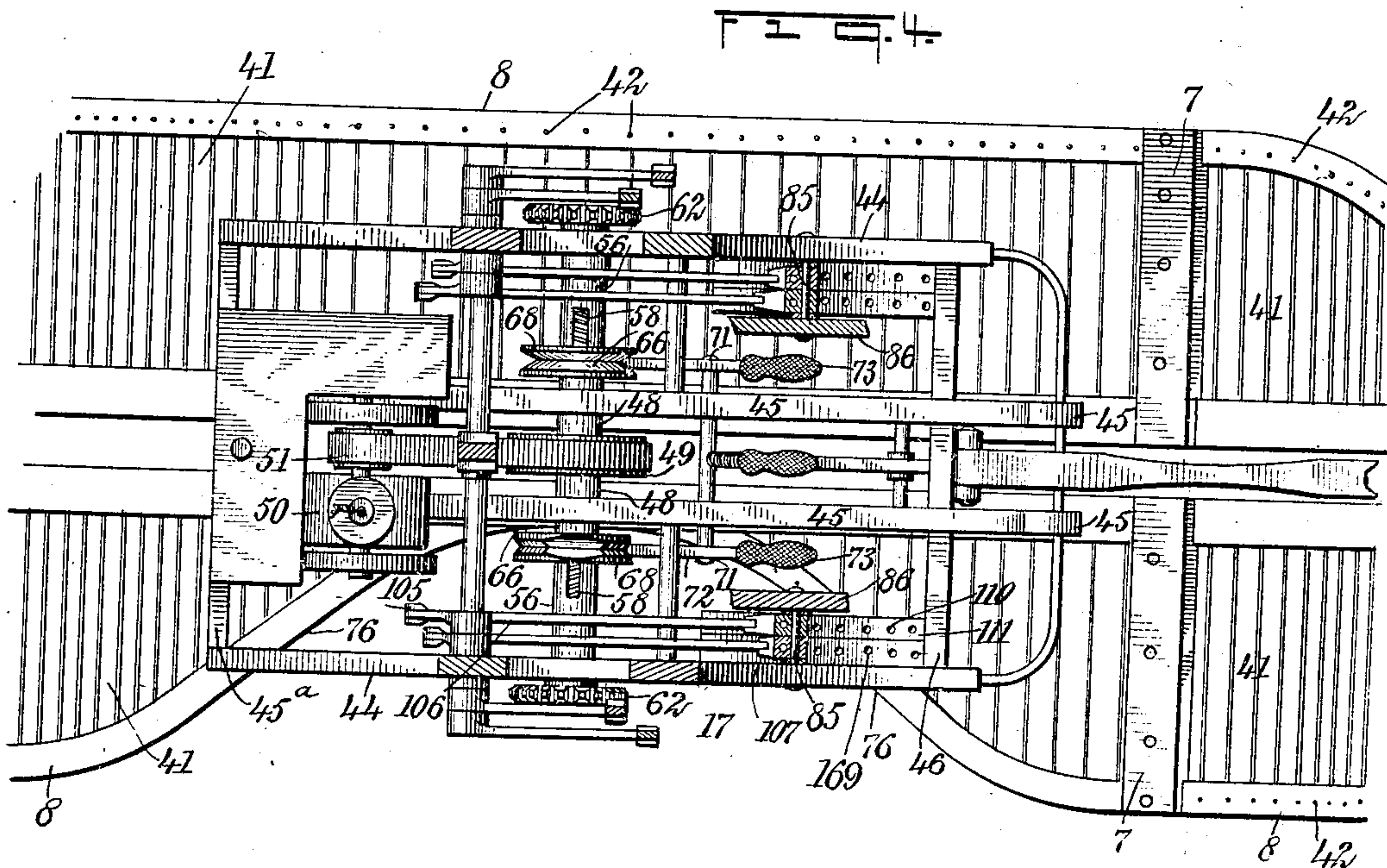
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6 SHEETS—SHEET 4.



WITNESSES:

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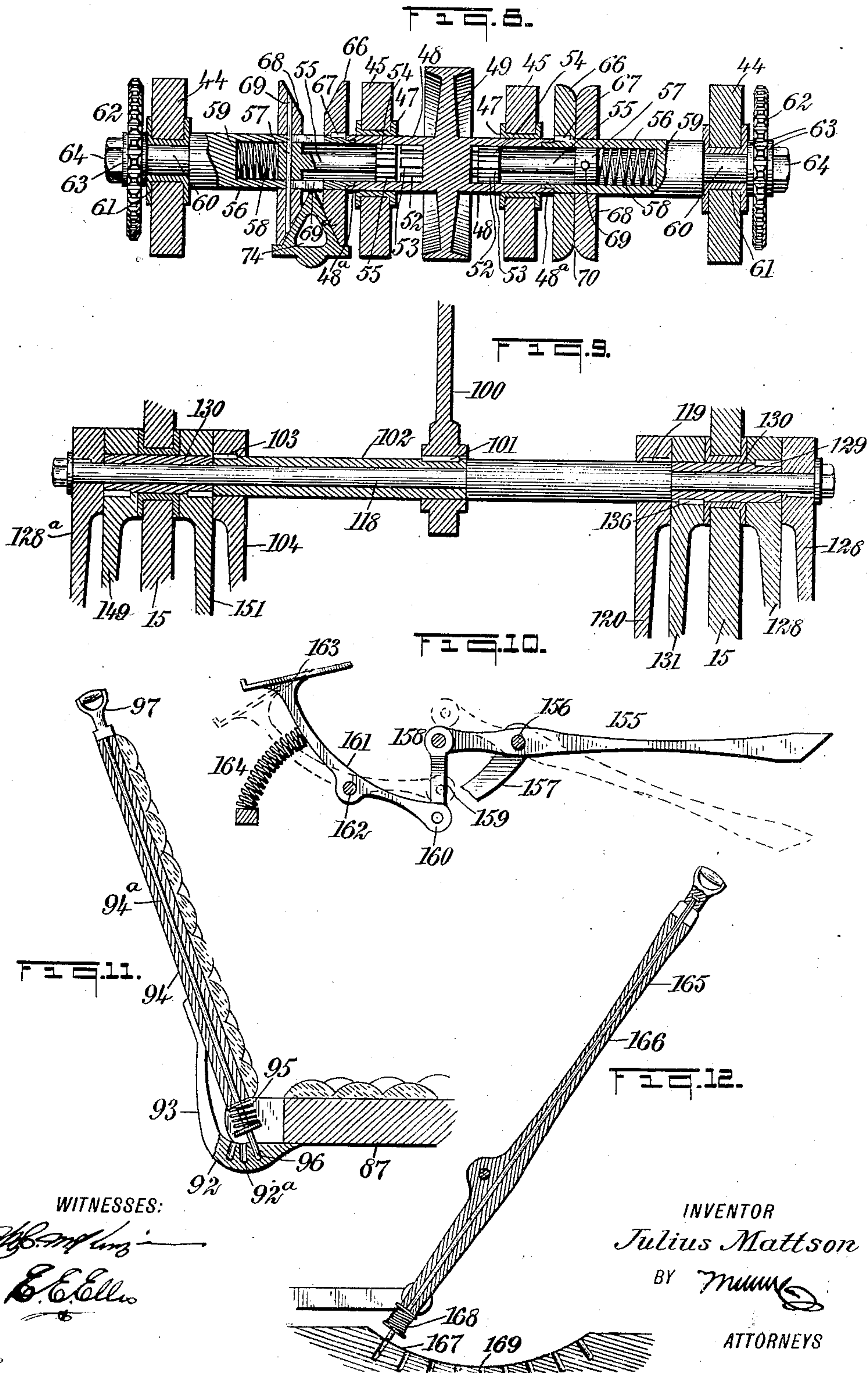
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UNICYCLE.

APPLICATION FILED MAY 11, 1905.

5 SHEETS—SHEET 5.



UNITED STATES PATENT OFFICE.

JULIUS MATTSON, OF ANACONDA, MONTANA, ASSIGNOR OF ONE-HALF
TO HENRY BENSON, OF ANACONDA, MONTANA.

UNICYCLE.

No. 799,396.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed May 11, 1905. Serial No. 259,922.

To all whom it may concern:

Be it known that I, JULIUS MATTSON, a citizen of the United States, and a resident of Anaconda, in the county of Deerlodge and State of Montana, have invented a new and Improved Unicycle, of which the following is a full, clear, and exact description.

This invention relates to unicycles; and it consists, substantially, in the details of construction and combinations of parts hereinafter more particularly described, and pointed out in the claims.

One of the principal objects of the invention is to provide a unicycle of such embodiment as to overcome numerous disadvantages and objections encountered in the use of many other structures of the kind hitherto devised.

A further object is to provide a unicycle which may be driven either by mechanical or electrical power and which is also easily controlled and manipulated, besides being comparatively simple in construction and inexpensive to manufacture and possessing the capacity for long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 represents a side view of a unicycle embodying my improvements, the raised or elevated positions of both the lateral wheel devices and the steering devices being indicated in dotted lines. Fig. 2 is a vertical sectional elevation taken on the line 2 2 of Fig. 3, some of the elements or parts of the structure being omitted for clearness of illustration.

Fig. 3 is a vertical sectional elevation of the machine, taken on the line 3 3 of Fig. 2. Fig. 4 is a horizontal sectional top plan view on the line 4 4 of Fig. 3. Figs. 5 and 6 are enlarged sectional detail views of the rotatable shafts located at each side of the machine at the center, together with independently-rotatable devices carried by said shafts, through the medium of which the fastening of the inner ends of the spokes of the main-wheel structure is effected, as well as other devices, partly through the medium of which both the lateral wheel devices and steering devices are operated. Fig. 7 is an enlarged vertical sectional view in detail, taken on the line 7 7 of Fig. 1. Fig. 8 is an enlarged longitudinal sectional

view in detail, showing more clearly the driving-shafts for the main wheel of the machine, as well as the clutch mechanism by which said shafts (separately or together) may be thrown into and out of engagement with the driver therefor, receiving its motion from a suitable motor supported on the machine. Fig. 9 is also an enlarged longitudinal sectional view in detail, taken substantially in the plane of the line 9 9 of Fig. 3. Fig. 10 is a part-sectional side view in detail, showing a brake device employed in connection with the main wheel of the machine. Fig. 11 is also a part-sectional view in detail, showing the seat for the occupant of the machine, together with the means employed for locking the back of the seat in different positions. Fig. 12 is a further sectional view in detail of certain parts, and Fig. 13 is a transverse sectional view taken through the rim of the main wheel and the duplicate rails therein to show the form of rigid connection between the two.

Before proceeding with a more detailed description it may be stated that in the form of my improvements herein shown I employ a main wheel of special construction, in rigid connection with which are duplicate parallel concentric rails which are less in diameter than the rim of the main wheel and are disposed within the latter to be rotated therewith. Special means are employed for driving said main wheel and rails from any suitable form of motor supported by a frame of special construction suspended from the upper part of said rails by means of a special device carrying antifriction guide-rollers, against which the rotatable movements of the rails take place. Special means are also employed from the operating-motor to drive the main-wheel structure, while other special means are employed by which the said main wheel may be thrown into or out of operative connection with the motor at either or both sides of the wheel, the purpose of which will be better understood hereinafter. The sets of component devices of the structure are distributed throughout in such manner as to derive an equal balancing of all the operative parts employed, (a desideratum in this class of machines,) and special lateral or side-wheel devices are resorted to which may be raised out of contact with the ground when the main wheel is operated to be driven at high speed

and lowered to the ground when the speed of said wheel is low. Other special means are employed for steering the machine when all the wheels thereof are traveling upon the ground, besides special controlling-brakes which may be thrown into and out of action at will, and while I have herein represented my improvements in a certain preferred embodiment it will be understood, of course, that I am not limited thereto in precise detail, since immaterial changes therein may be made coming within the scope of my invention.

Reference being had to the drawings by the designating characters thereon, 1 represents the rim of the main wheel, which is of suitable diameter or height and which is preferably provided with any suitable form of cushioning or pneumatic tire 3. Secured to the rim at suitable points of the inner part thereof, and preferably equidistant from each other, are the transversely-curved brackets 4, each having duplicate members 5, spaced apart at 6 and terminating inwardly with lateral branches 7, extending beyond the said rim 1 of the main wheel on either side thereof. (See Fig. 1.) Connecting the lateral branches 7 in pairs on either side of the rim 1 are duplicate concentric segmental members 8, which are provided with inwardly-extending strips 9, each of which is secured to its appropriate branch 7 in any suitable manner—as by screws 10, for instance—attention being called to the fact that the said segmental members 8 on each side of the rim 1 are disposed opposite to each other, while those on the one side of the rim alternate in position with those on the other side thereof. Secured to the inner ends of said strips 9 in any suitable way are duplicate parallel concentric rails 11, which are less in diameter than the rim 1 of the main-wheel structure, said rails being spaced from each other at 12. (See Fig. 13.) Suspended from the upper part of said structure by means of duplicate forwardly and rearwardly disposed integral hangers 13 are the upper transverse strips 14 of the supporting-frame 15 for the several operative parts or elements of the machine, said frame being provided beyond either side of the rim 1 with duplicate side members 16, disposed a suitable distance apart and having the upper ends thereof secured to the ends of said transverse strips 14 at 15^a, the lower ends of the two sets of said side members having secured between them centrally of the machine a cradle 17, (see Figs. 1 and 3,) the construction of which will be explained farther on. The said integral hangers 13 support in bearings 18, at the upper ends thereof, a rotatable shaft 19, at the ends of which are carried duplicate rollers 20, against which the duplicate rails 11 move when the machine is in motion, said rollers having inner flanges 21, (see Fig. 7,) which serve to guide said rails, as will be apparent. The said transverse strips 14 of the frame 15 are secured rigidly to the under sides of the ends

of the said hangers 13 by means of screws 22 or in any other suitable way and supported by connecting-strips 23. At the ends of said transverse strips 14 is a stationary shaft 24, each end of which extends beyond the outer faces of the corresponding side members 16 of the frame 15, as shown, and is provided with independent rotatable sprocket-wheels 25 and 26, which are held yieldingly apart by a motion-transmitting spring 27, encircling the end portion of said shaft and having its ends connected at 28 and 29 to the inner faces of said pulleys. (See Fig. 7.)

The inner faces of the duplicate hanging members 16 of the frame 15 are provided at a suitable height with duplicate guides 30, passing longitudinally, through each pair of which is a yoke 31, which is practically suspended in position by means of cushioning-springs 32 and 33, connecting the upper and lower corners, respectively, of each end thereof with the adjacent member 16 of the frame. (See Fig. 3.) Supported centrally of each of said yokes and intermediate of the duplicate members 16 belonging thereto is the inner end of a rotatable shaft 34, provided with a washer 35 and a nut 36 for holding the same in position endwise, said shaft extending laterally and passing through and working within a hollow shaft 37 thereon. (See Figs. 5 and 6.) Mounted to turn on said hollow shafts are the hubs 38 of sprocket-wheels 39, having rigid therewith outwardly beyond said sprocket-wheels the disks 40, as shown, and secured to the peripheries of said disks are the inner ends of the spokes 41 of the main-wheel structure, those on either side of the machine radiating in opposite directions from the disk 40, as indicated in Fig. 3, whence they are passed through openings 42 in the corresponding oppositely-disposed segmental member 8. After being passed through said openings the spokes on either side are carried inwardly at 43, Figs. 2 and 3, across the spaces separating the segmental members 8 from the adjacent one of the duplicate rails 11, whence they are carried outwardly through corresponding openings therefor in the rail, thence across the space between the latter and the rim 1, to which the ends thereof are fastened or secured in any suitable way. As will be seen, later on, the spokes serve to transmit to the said rim 1 the motion imparted to the sprocket-wheels 39 from the motive-power connections from the motor, the construction and organization of parts being such that a stable main-wheel structure is derived capable of carrying out all the intended purposes thereof.

The cradle 17 is constructed with longitudinal side members 44, Figs. 4 and 8, and inner longitudinal members 45, all of which members are connected together transversely by strips 45^a and 46, Fig. 4. Supported in suitable bearings 47 therefor in the said inner

longitudinal members 45 are the hollow journal members 48 of a centrally-disposed rotatable clutch element 49, that is driven from a suitable motor 50, (supported in any preferred manner upon the said cradle 17,) by means of a connecting belt or chain 51. Each of the said hollow journals of the said rotatable clutch element 49 is formed interiorly with a series of laterally-extending concentrically-disposed teeth 52, separated from each other by spaces 53, said teeth and spaces alternating with corresponding teeth 54 and separating-spaces 55 therefor disposed at the inner end of a transversely-slidable clutch element 55, working in a hollow shaft 56, and the outer end of which is provided with a head 57, against which presses the inner end of a spring 58, the outer end of which has its bearing at the closed end 59 of said hollow shaft, it being noted that the hollow shafts have operative connections with the journal members 48 at 48^a, Fig. 8. The outer extremities 60 of these hollow shafts 56 are solid and project beyond the sides 44 of the cradle 17, in which they are supported in suitable bearings 61 and beyond which they are provided with sprocket-wheels 62, held in place thereon by suitable washers 63 and nuts 64. (See Fig. 8.) Connecting said sprocket-wheels 62 with the sprocket-wheels 25 on the upper transverse shaft 24 are sprocket-chains 64^a, which communicate the driving motion to said sprocket-wheels 25, which in turn transmit such motion to the adjacent outer sprocket-wheels 26 through the intermediacy of the springs 27, as will be apparent. The sprocket-wheels 26 connect with the corresponding sprocket-wheels 39, (turning on the hollow shafts 37 at the center of the wheel structure,) by means of sprocket-chains 65, and it will be seen that in this way the entire wheel structure may be rotated or driven. The hollow shafts 56 are each provided with a circular concentric member 66, rigid with the shaft by being keyed thereto at 67, and another member 68 cooperating therewith and similar in form thereto, but slidable on the shaft in virtue of a pin 69 passing therethrough and through the head 57 of the corresponding slidable element 55 of the clutch devices, said pin working in slots 69^a in the hollow shaft. (See Fig. 8.)

Normally the springs 58 of the clutch devices hold the slidable members 68 in close contact with the members 66, each of said members being beveled so as to form between them an annular groove 70, and pivoted at 71, Fig. 3, on the outer side of each of the inner longitudinal members 45 of the cradle 17 is a curved treadle-lever 72, having at its forward end a foot-piece 73 and at its rearward end a tapered shoe 74, adapted to enter the groove 70 between the members 66 and 68 belonging thereto, and thus move the latter member outwardly, carrying with it the slidable clutch

element 55 and causing disengagement thereof from the centrally-disposed driven-clutch element 49. By operating both treadle-levers 72 at the same time the wheel structure may be thrown entirely out of operative connection with the motor devices, and by operating either one of them alone the driving power will then be applied to the wheel structure at one side only, which will cause the structure to turn in that direction, it being in this way that the machine is steered in either direction when the same is traveling or moving on the main wheel only. By operating either one or both of said treadle-levers 72, so as to carry the shoes 74 into the groove 70 between the members 66 and 68 only far enough, (without releasing the clutch engagement of the clutch element 55,) a braking effect will be produced tending to check or regulate the speed of the machine, as will be apparent.

As better shown in Figs. 2 and 4, the extremities of each of the lateral segmental members 8 of the main-wheel structure are curved inwardly at 76, whence they extend to the side of the rail 11 adjacent thereto and are secured thereto in any suitable way, this furnishing a very strong and desirable embodiment.

Centrally secured to the upper transverse members 14 of the frame 15 in any suitable way and disposed forwardly and rearwardly of the machine are duplicate arched members 77, which converge toward each other at the ends, (see Fig. 2,) where they are secured together in any suitable way at 78, the space between said members being closed by a strip of canvas or other suitable material 79 to thus provide a protecting-roof or shed above the operator of the machine. Secured to the connected extremities of said arched members 77 are brackets 80, extending through the space between the parallel rails 11, and each of which supports at 81 a roller 82, against which moves a single rail 83, carried on the inner surface of the main-wheel rim 1, said roller being flanged to fit the sides of said single rail, and thus assist in guiding the main wheel in its movements, as will be apparent.

Located between the inner sides of the duplicate hanging members 16 of the frame 15 and cooperating with forwardly-extending braces 84 in the support of short transverse shafts 85, (see Figs. 1 and 3,) are duplicate parallel supports 86 for a seat 87, the longitudinal members 88 of said supports being slidably engaged by said seat at 89, Fig. 2, and the rearward ends of said members being secured in any suitable way to blocks 91, Fig. 2, which serve to space the said seat-supports from the inner sides of said frame members 16, as shown, as well as to brace the same laterally. Said seat is provided with a rear under projection 92, to which is secured a brace 93 for the back 94 of the seat, said back being capable of being

tilted forwardly or rearwardly upon its pivotal support 94, Fig. 1. The projection 92 is provided with a series of holes 92^a, and working through an opening therefor down through the back 94 is a rod 94^a, controlled by a spring 95, and the lower end of which has a bolt 96, adapted to enter said holes 92^a to hold the back of the seat in its different positions. The upper end of this rod 94^a is provided with a grip 97, and any suitable means may be employed for holding the rod upwardly whenever desired. Pivoted at 98 to an under projection on the forward part of the seat is the forward end of a connecting-rod 99, the rearward end of which is pivoted to an upright arm 100, rigidly keyed at 101 to the inner end of a hollow rock-shaft 102, keyed to the outer end of which at 103 is a downwardly-extending arm 104, Fig. 9, having pivotal connection at 105, Fig. 2, with the rearward end of a connecting-link 106, the forward end of which is in pivotal connection at 107 with a hand-lever 108, working on the corresponding short transverse shaft 85. It will thus be seen that by moving this hand-lever back or forth the seat will be moved accordingly. Said lever is provided with a rod (not shown) passing down through the same from end to end (same as rod 94^a passes through the back 94 of the seat) and provided at its lower end with a spring-controlled bolt 109 for entering holes 110 in a block 111, Fig. 4, on the cradle 17 for securing the seat in different positions.

Keyed at 111^a to the hollow shafts 37 are hangers 112, provided at the lower ends thereof with lateral or side wheels 113, and also keyed at 114 to said hollow shafts 37 are arms 115, connected by links 116, and arms 117 (these being in duplicate, one on either side of the machine) with a corresponding end of a solid rock-shaft 118 passing through said hollow rock-shaft 102, the said solid shaft 118 having keyed thereto at 119 a hanging arm 120, connected to a link 121, Fig. 3, having at its forward end an operating-lever 122, working on the short shaft 85 corresponding thereto. By moving said lever back and forth it is apparent that the lateral or side wheel hangers 112 may be elevated or lowered at will, carrying the side wheels with them.

Keyed to the shaft 34 at the left-hand side of the machine is an arm 123, while loosely mounted at 124 on the shaft 34 at the right-hand side of the machine is a corresponding arm 125. Also keyed to this shaft 34 on the left is an arm 126, which is in movable connection by a link 127 with an arm 128, keyed at 129 to an independent hollow rock-shaft 130, carried on a reduced portion of the solid shaft 118, Fig. 9, passing through the before-mentioned hollow shaft 102. At the end of the opposite reduced portion of the shaft 118 is another arm 128^a, connected by a link 128^b with the arm 115 on the rock-shaft 37. Keyed

to this hollow shaft 130 is an arm 131, which is connected, by means of a link 132, to a lever 133, by the working of which in a forwardly or rearwardly direction the steering devices may be raised or lowered.

Keyed at 140 to the solid shaft 34 on the right-hand side of the machine is an arm 141, and also keyed at 142 to the same shaft 34 is a yoke 143, to the ends 144 of which are fastened one of the ends of steering-cords 145, the other ends of which are connected to a swivel 146, carrying a yoke 147, which supports a steering-wheel 148, said yoke being in rigid relation with the arms 125 and 126 referred to. The arm 141 is connected to an arm 149, keyed near the outer end of the hollow shaft 130 at the right-hand side of the machine, by means of a link 150, and keyed to the inner end of said hollow shaft 130 is an arm 151, which is connected to a link 152, that connects with an operating-lever 153 by means of a connecting-rod 154. By operating the lever 153 in one direction or the other the steering-wheel may be operated to turn in one direction or the other accordingly, as will be apparent.

In Fig. 10 is represented a brake-lever 155, pivoted at 156 to a suitable bearing extension 157 therefor from the forward part of the cradle of the frame of the machine, and connecting at 158 with said brake-lever is a link 159, in turn connected at 160 with a treadle-lever 161, pivoted at 162 and formed or provided with a foot-piece 163, said treadle-lever being controlled by a spring 164, suitably supported at any part of the frame of the machine. The operator by pressing with his foot upon said foot-piece may operate the brake-lever 155 to bear with more or less force against the inner surface of the rim of the main wheel, thus to regulate the speed of the structure.

In Fig. 12 is shown a construction which may be employed for either one of the hand-levers hereinbefore referred to, comprising a lever 165, having an opening all the way through the same longitudinally, in which works a rod 166, having at its lower end a bolt 167, actuated or controlled by a spring 168, said bolt being adapted to enter any one of a series of openings 169, provided therefor in a suitable part of the framework of the structure, by which to secure any of the adjustable elements hereinbefore referred to in any desired position.

From the foregoing it will be seen that I have provided a unicycle which is thoroughly effective and reliable for its purposes and one also to which the operator may have ready access from either side thereof. The steering devices referred to are used only when the lateral wheels are upon the ground, as will be understood, and it will be noted that parts are so distributed relatively to each other as to effect a thorough balancing thereof, thus

tending to equilibrium thereof in operation. By operating either one of the particular hand-levers referred to the operator may readily control any part of the machine, and it is
 5 thought that the construction and organization of the parts contributing toward the machine will be fully understood without further description.

Having thus described my invention, I claim
 10 as new and desire to secure by Letters Patent—

1. A unicycle comprising a main wheel, means mounted laterally thereof provided with auxiliary wheels, means for elevating or lowering the auxiliary wheels to the ground
 15 at will, devices carrying a steering-wheel, and means for also elevating and lowering said devices at will.

2. A unicycle comprising a main wheel, means mounted laterally thereof provided with auxiliary wheels, means for elevating or lowering the auxiliary wheels to the ground
 20 at will, devices carrying a steering-wheel, and means for also elevating and lowering said devices at will, the latter embodying forwardly-converging frame members.

3. A unicycle comprising a main wheel, means mounted laterally thereof provided with auxiliary wheels, means for elevating or lowering the auxiliary wheels to the ground
 30 at will, and means for securing the same in either position thereof embodying an operating hand-lever provided with a spring-controlled bolt adapted to be received in any one of a plurality of openings formed in a suitable part of the structure.

4. A unicycle comprising a main wheel, a frame supported therein having, at its lower part, a cradle provided with a block having openings therein, means mounted laterally of
 40 the main wheel provided with auxiliary wheels, a hand-lever and connections therefrom for elevating or lowering the auxiliary wheels to the ground at will, and a rod carried by the hand-lever and provided with a
 45 bolt for entering any one of the openings in the block.

5. A unicycle comprising a main wheel, a frame supported therein having, at its lower part, a cradle provided with a block having
 50 openings therein, means mounted laterally of the main wheel provided with auxiliary wheels, a hand-lever and connections therefrom for elevating or lowering the auxiliary wheels to the ground at will, and a rod carried by the hand-lever and provided with a
 55 bolt for entering any one of the openings in the block, said hand-lever and rod having cooperative means at the upper ends thereof for holding the bolt in elevated position respecting the entrances to said openings.

6. A unicycle comprising a main wheel, a frame rigidly supported therein, duplicate supports for a seat supported by said frame,
 65 a seat slidable in said supports, said frame having at its lower end a cradle constructed

with a block having a series of holes therein, a hand-lever and movable connections therefrom to the seat for adjusting the latter forwardly or rearwardly of the structure at will, and a spring-controlled bolt carried by the
 70 hand-lever for entering any one of said openings.

7. A unicycle comprising a main wheel, a frame rigidly supported therein, duplicate supports for a seat supported by said frame,
 75 a seat slidable in said supports, said frame having at its lower end a cradle constructed with a block having a series of holes therein, a hand-lever and movable connections therefrom to the seat for adjusting the latter forwardly or rearwardly of the structure at will,
 80 and a spring-controlled bolt carried by the hand-lever for entering any one of said openings, said seat being provided with a pivoted forwardly and rearwardly movable back, and
 85 provided with spring-controlled means for holding the back in different positions.

8. A unicycle comprising a main wheel, a frame rigidly supported therein, duplicate supports for a seat supported by said frame,
 90 a seat slidable in said supports, said frame having at its lower end a cradle constructed with a block having a series of holes therein, a hand-lever and movable connections therefrom to the seat for adjusting the latter forwardly or rearwardly of the structure at will,
 95 and a spring-controlled bolt carried by the hand-lever for entering any one of said openings, said seat being provided with a forwardly and rearwardly adjustable back, together with an under projection and brace,
 100 combined with means for securing the back in different positions.

9. A unicycle comprising a main wheel, auxiliary wheels mounted laterally thereof, means
 105 for elevating or lowering the auxiliary wheels at will, forwardly-disposed devices supporting a rotatable yoke carrying a steering-wheel, means for elevating or lowering the said devices at will, another rotatable yoke mounted
 110 at the axis of the main wheel, steering-cords leading from the yoke last named to the first, and means for operating said last-named yoke to turn said first-named yoke in either direction.

10. A unicycle comprising a main wheel, auxiliary wheels mounted laterally thereof, means for elevating or lowering the auxiliary wheels at will, forwardly-disposed devices supporting a rotatable yoke carrying a steering-wheel, means for elevating or lowering
 120 the said devices at will, another rotatable yoke mounted at the axis of the main wheel, steering-cords leading from the yoke last named to the first, and a hand-lever and connections therefrom for operating said last-named yoke to turn said first-named yoke in either direction.

11. A unicycle comprising a main wheel, a frame suspended therein provided with a seat
 130

for the operator of the machine, and a shed for the operator supported by said frame, said seat being provided with an adjustable back.

12. A unicycle comprising a main wheel provided on the rim thereof with an inner rail, a frame suspended within the wheel provided with a seat for the operator of the machine, and duplicate curved members supported by the upper part of the frame and converging at the ends thereof and provided at each end with a flanged roller upon which said inner rail moves, said seat being provided with an adjustable back.

13. A unicycle comprising a main wheel provided on the rim thereof with an inner rail, a frame suspended within the wheel provided with a seat for the operator of the machine, and duplicate curved members supported by the upper part of the frame and converging at the ends thereof and provided at each end with a flanged roller upon which said inner rail moves, the space between said members being closed to form a protecting-shed for the operator.

14. A unicycle comprising a main wheel, duplicate circular rails within the same spaced from each other, segmental members beyond the rails disposed opposite to each other in pairs on either side of the wheel, means for securing said rails in parallelism and both the rails and said segmental members in concentric relation to each other and to the rim of the wheel, and spokes on either side of the wheel fastened at one of their ends about the axis of the wheel, thence radiating and passing through one of said segmental members, thence extending across the space between this member and the adjacent rail and passing through the latter and finally fastened to the rim of the wheel.

15. A unicycle comprising a main wheel, duplicate circular rails within the same spaced from each other, said wheel having shafts on either side thereof at the center provided with sprocket-wheels and disks rigid therewith, segmental members beyond the rails disposed opposite to each other in pairs on either side of the wheel diametrically beyond the sprocket-wheels, means for securing said rails in parallelism, and both the rails and said segmental members in concentric relation to each other and to the rim of the wheel, spokes on either side of the wheel fastened at one of their ends about the periphery of one of said disks, thence radiating and passing through one of said segmental members, thence extending across the space between this member and the adjacent rail and passing through the latter and fastened to the rim of the wheel, a motor, and connections between the same and said sprocket-wheels for propelling the structure.

16. A unicycle comprising a main wheel, duplicate circular rails within the same spaced from each other, hangers extending through the space between the rails, and flanged guide-

rollers supported by said hangers against which the rails move, a frame rigidly suspended within the wheel from said hangers and supporting a seat for the operator of the machine, said frame supporting hollow shafts on either side thereof at the center of the wheel and provided with sprocket-wheels and disks rigid therewith, segmental members beyond the rails disposed opposite to each other in pairs on either side of the wheel diametrically beyond the sprocket-wheels, means for securing said rails in parallelism and both the rails and said segmental members in concentric relation to each other and to the rim of the wheel, spokes on either side of the wheel fastened at one of their ends about the periphery of one of said disks, thence radiating and passing through one of said segmental members, thence extending across the space between this member and the adjacent rail, and finally passing through the latter and secured to the rim of the wheel, a rigid shaft supported transversely of the upper part of the frame and carrying two rotatable sprocket-wheels at each end thereof, a motor, an element driven therefrom having lateral shaft connections provided with sprocket-wheels, a sprocket-chain connecting each of these wheels with one of the sprocket-wheels at one end of said rigid shaft, and a similar chain connecting the remaining one of the sprocket-wheels at each end of the rigid shaft with the sprocket-wheel of one of the hollow shafts.

17. A unicycle comprising a main wheel, a frame suspended within the same supporting a seat for an operator, a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element, duplicate clutch elements lateral thereto normally engaging therewith, and means whereby either one or both of said lateral elements may be disengaged from said centrally-disposed element, at will.

18. A unicycle comprising a main wheel, a frame suspended within the same supporting a seat for an operator, a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element having hollow journals, each provided interiorly thereof with teeth, alining hollow shafts having slots therein and each provided with a rigid circular member and a slidable circular member, pins passing through each of the latter members and the slots in the hollow shaft therefor, springs in the shafts normally holding the movable circular members in contact with the rigid circular members, each pair of said members being constructed to form a circumferential groove, lateral clutch members in the hollow shafts slidable with the said circular slidable members and provided at one of their ends with teeth for engaging the teeth within said hollow journals,

and foot-levers each having a tapered shoe at one end adapted to be carried into one of said grooves to separate one of the said slidable circular members from its companion member and thereby disengage the slidable clutch element belonging thereto from the centrally-disposed clutch element.

19. A unicycle comprising a main wheel, a frame suspended within the same supporting a seat for an operator, a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element having hollow journals, each provided interiorly thereof with teeth, alining hollow shafts having slots therein and each provided with a rigid circular member and a slidable circular member, pins passing through each of the latter members and the slots in the hollow shaft therefor, springs in the shafts normally holding the movable circular members in contact with the rigid circular members, each pair of said members being constructed to form a circumferential groove, lateral clutch members in the hollow shafts slidable with the said circular slidable members and provided at one of their ends with teeth for engaging the teeth within said hollow journals, foot-levers each having a tapered shoe at one end adapted to be carried into one of said grooves to separate one of the said slidable circular members from its companion member and thereby disengage the slidable clutch element belonging thereto from the centrally-disposed clutch element, yokes and spring-supports thereof on the sides of the frame, solid shafts supported by these yokes and upon which the hollow shafts are carried, lateral wheel devices loosely supported by projecting portions of the solid shafts, steering devices carrying a steering-wheel, also loosely supported thereon, yokes rotatable with the solid shafts and having cord connections with the steering-wheel, and a hand-lever and connections therefrom in part also loosely supported on the solid shafts for operating the steering-wheel.

20. A unicycle comprising a main wheel, a frame suspended within the same supporting a seat for an operator, a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element having hollow journals, each provided interiorly thereof with teeth, alining hollow shafts having slots therein and each provided with a rigid circular member and a slidable circular member, pins passing through each of the latter members and the slots in the hollow shaft therefor, springs in the shafts normally holding the movable circular members in contact with the rigid circular members, each pair of said members being constructed to form a circumferential groove, lateral clutch members in the hollow shafts slidable with the said cir-

cular slidable members and provided at one of their ends with teeth for engaging the teeth within said hollow journals, foot-levers each having a tapered shoe at one end adapted to be carried into one of said grooves to separate one of the said slidable circular members from its companion member and thereby disengage the slidable clutch element belonging thereto from the centrally-disposed clutch element, a brake device operating in connection with the rim of said main wheel, and a foot-lever and connections therefrom for operating said brake device.

21. A unicycle comprising a main wheel, a frame suspended within the same supporting a seat for an operator, a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element having hollow journals, each provided interiorly thereof with teeth, alining hollow shafts having slots therein and each provided with a rigid circular member and a slidable circular member, pins passing through each of the latter members and the slots in the hollow shaft therefor, springs in the shafts normally holding the movable circular members in contact with the rigid circular members, each pair of said members being constructed to form a circumferential groove, lateral clutch members in the hollow shafts slidable with the said circular slidable members and provided at one of their ends with teeth for engaging the teeth within said hollow journals, and foot-levers each having a tapered shoe at one end adapted to be carried into one of said grooves to separate one of the said slidable circular members from its companion member and thereby disengage the slidable clutch element belonging thereto from the centrally-disposed clutch element, each pair of pulleys on the rigid shaft being connected by a spring.

22. A unicycle comprising a main wheel, a frame suspended within the same supporting a seat for an operator, a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element having hollow journals, each provided interiorly thereof with teeth, alining hollow shafts having slots therein and each provided with a rigid circular member and a slidable circular member, pins passing through each of the latter members and the slots in the hollow shaft therefor, springs in the shafts normally holding the movable circular members in contact with the rigid circular members, each pair of said members being constructed to form a circumferential groove, lateral clutch members in the hollow shafts slidable with the said circular slidable members and provided at one of their ends with teeth for engaging the teeth within said hollow journals, foot-levers each having a tapered shoe at one end adapted to be carried into one of said grooves to separate

one of the said slidable circular members from its companion member and thereby disengage the slidable clutch element belonging thereto from the centrally-disposed clutch element, 5 lateral wheel devices, and rock-shafts and operating hand-levers, together with intermediate connections for raising and lowering said devices at will.

23. A unicycle comprising a main wheel, a 10 frame suspended within the same supporting a seat for an operator; a motor also supported by the frame, and means operated therefrom for propelling the machine embodying a centrally-disposed rotatable clutch element having 15 hollow journals, each provided interiorly thereof with teeth, alining hollow shafts having slots therein and each provided with a rigid circular member and a slidable circular member, pins passing through each of the lat- 20 ter members and the slots in the hollow shaft therefor, springs in the shafts normally holding the movable circular member in contact with the rigid circular members, each pair of

said members being constructed to form a circumferential groove, lateral clutch members 25 in the hollow shafts slidable with the said circular slidable members and provided at one of their ends with teeth for engaging the teeth within said hollow journals, foot-levers each having a tapered shoe at one end adapted to 30 be carried into one of said grooves to separate one of the said slidable circular members from its companion member and thereby disengage the slidable clutch element belonging thereto from the centrally-disposed clutch element, 35 steering devices for the structure, and rock-shafts and operating hand-levers and intermediate connections therebetween for raising or lowering said steering devices at will.

In testimony whereof I have signed my name 40 to this specification in the presence of two subscribing witnesses.

JULIUS MATTSON.

Witnesses:

HARRY NEAL,

T. C. DAUDSON.