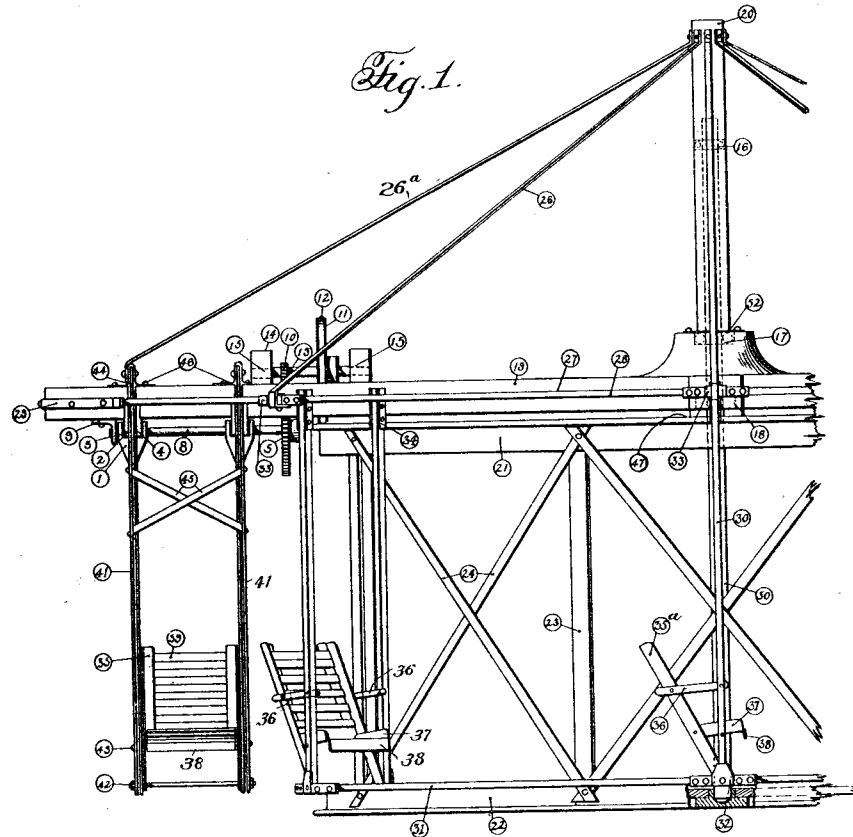
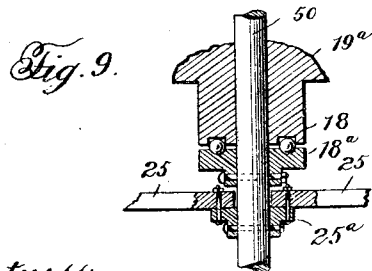
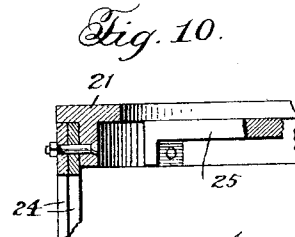


E. E. CLARK.
 POWER TRANSMITTING MECHANISM FOR USE IN CONNECTION WITH SWINGING SEATS.
 APPLICATION FILED SEPT. 20, 1915.

1,193,237.

Patented Aug. 1, 1916.
 5 SHEETS—SHEET 1.



Witness:
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Inventor:
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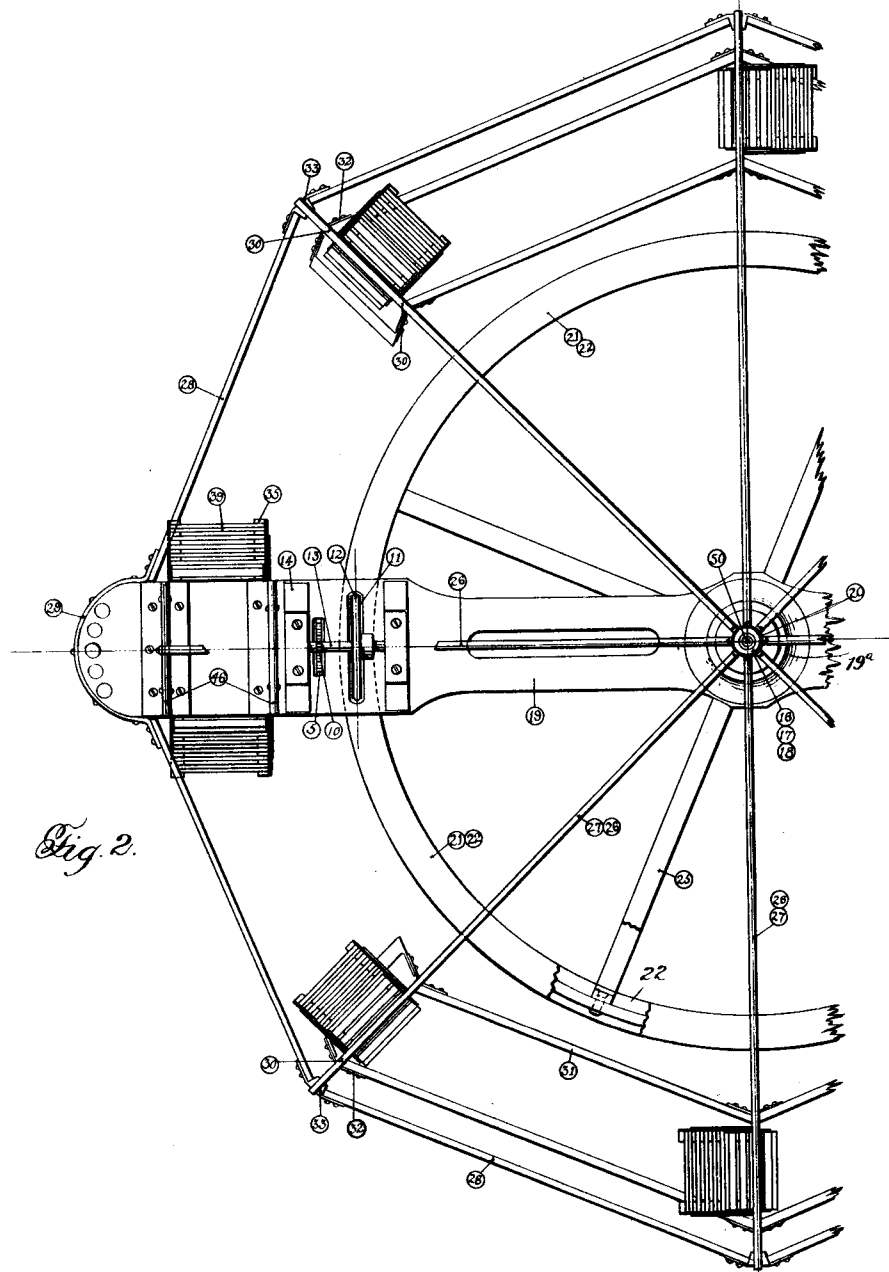


Fig. 2.

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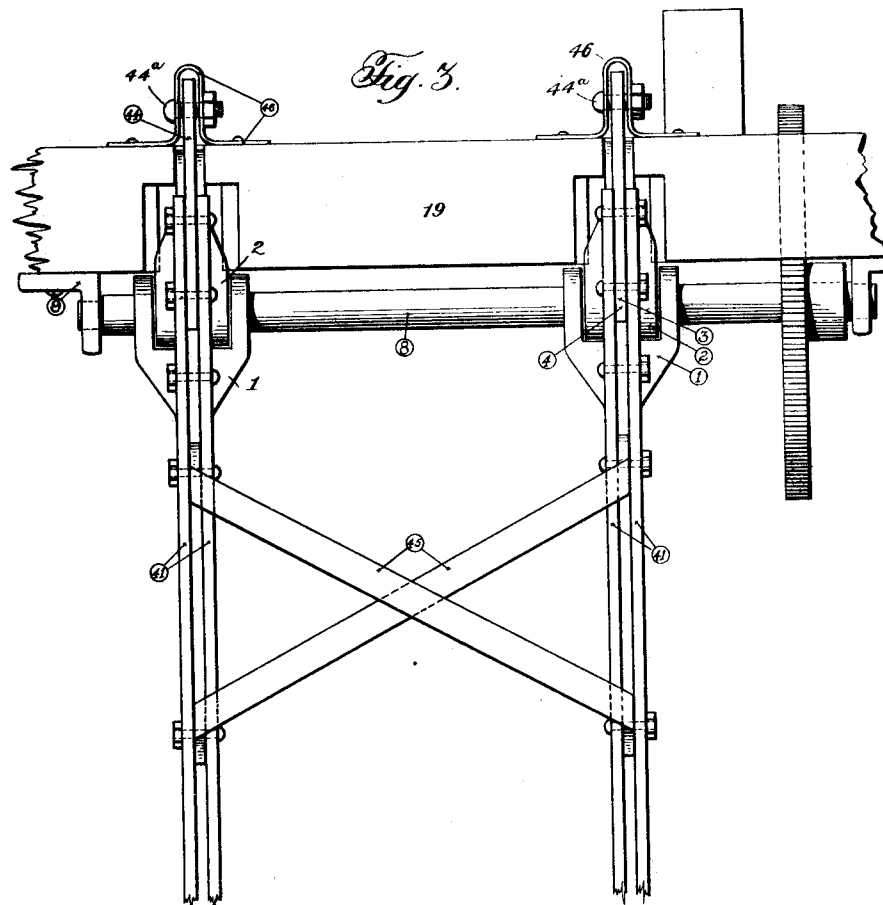
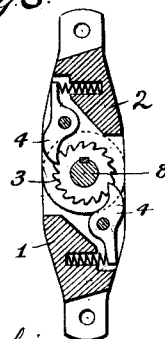


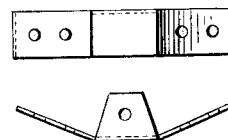
Fig. 8.



WITNESS

James Hutchinson

Fig. 11.



INVENTOR.

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By Record Milne ATTORNEYS.

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5 SHEETS—SHEET 4.

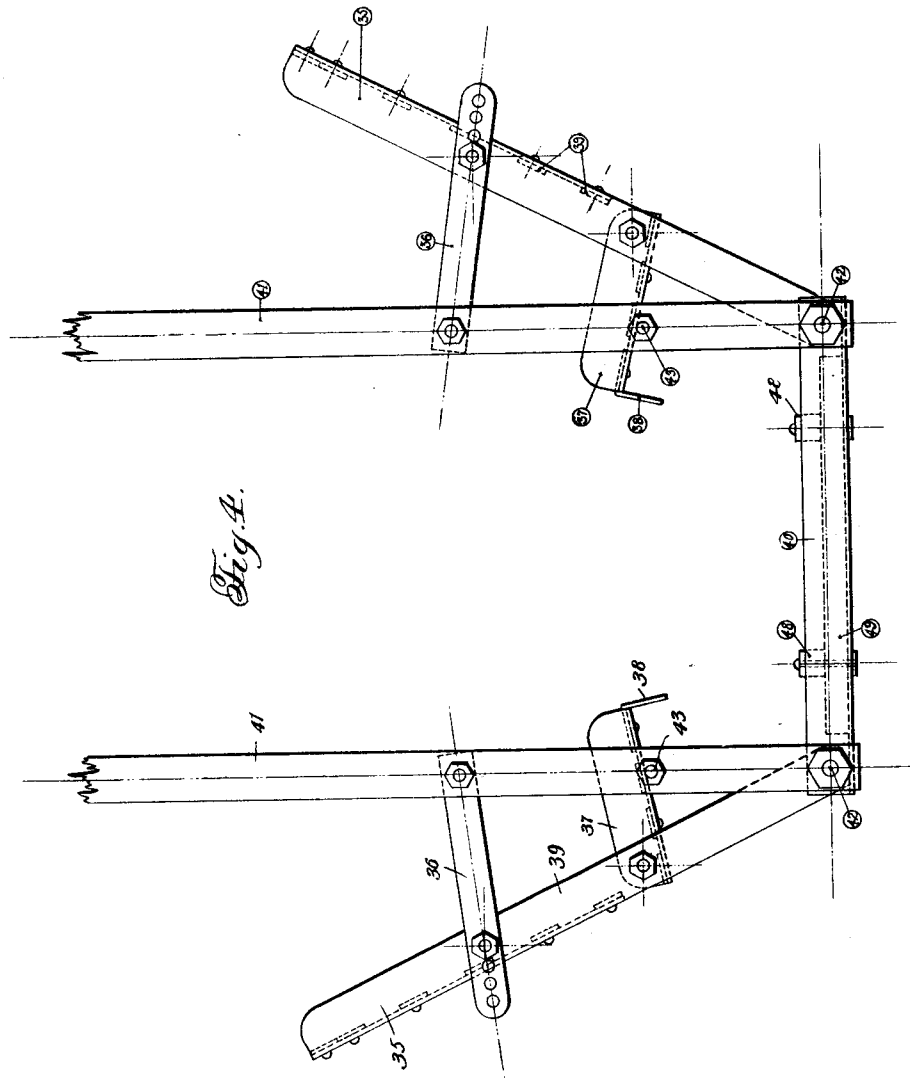


Fig. 4.

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 5 SHEETS—SHEET 5.

Fig. 5.

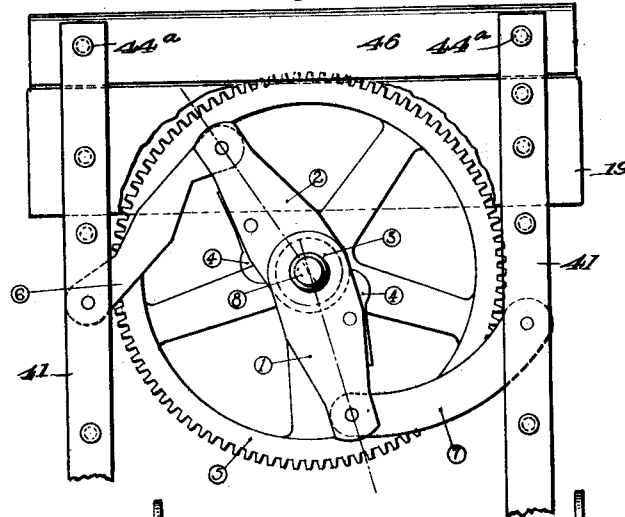


Fig. 6.

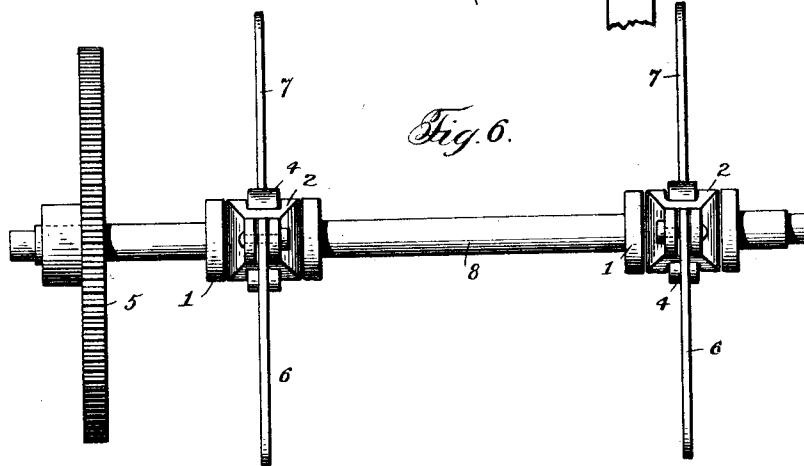
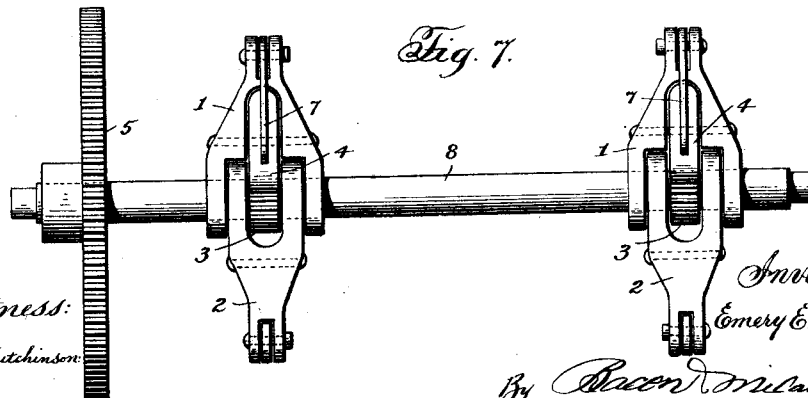


Fig. 7.



Witness:
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Inventor:
 Emory E. Clark,
 By *Robert Williams Attys*

UNITED STATES PATENT OFFICE.

EMERY E. CLARK, OF OSKALOOSA, KANSAS.

POWER-TRANSMITTING MECHANISM FOR USE IN CONNECTION WITH SWINGING SEATS.

1,193,237.

Specification of Letters Patent.

Patented Aug. 1, 1916.

Application filed September 20, 1915. Serial No. 51,732.

To all whom it may concern:

Be it known that I, EMERY E. CLARK, a citizen of the United States, residing at Oskaloosa, in the county of Jefferson and State of Kansas, have invented certain new and useful Improvements in Power-Transmitting Mechanism for Use in Connection with Swinging Seats, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improved power transmitting mechanism for use in connection with swinging seats.

While the invention relates broadly to a mechanism whereby the oscillating or swinging movement of a seat may be employed for power purposes and especially for the purpose of causing the seat to travel during oscillation, such mechanism may be usefully employed for various other purposes.

In the selected embodiment of the invention presented to be described and as illustrated in the drawings, the mechanism is shown as associated with what is known as a parallel bar swing and its useful application in that connection is shown in the further association of the swing and the advancing or power mechanism with a circular track and a structure which will enable the occupant of the swing to cause the same to move forward through a circular path, simply by the backward and forward movement of the swing.

In swings of the parallel bar type, the seats are supported at the lower ends of the upright bars, which bars are held in parallelism or substantially so by connections below or at the lower ends while the upper ends of the bars are fixedly pivoted with relation to each other. Upon the oscillation of the supporting bars and the seats, the bars will approach each other and it is this approaching and receding action which I have taken advantage of as a means for transmitting power through suitable mechanism for causing the travel of the support and its occupant.

While the invention is illustrated in connection with a "merry-go-round" structure which is depicted in detail in the accompanying drawings, it is to be understood that the principles involved may be applied in many different ways and various changes in the associations of parts and the construction of the mechanism may be made and sub-

stituted for those shown and described without in the least departing from the general principle and nature of the invention.

In the drawings:—Figure 1 represents an elevation of one side of a revolving structure embodying the invention. Fig. 2 is a plan view thereof, the remaining portion of the structure being omitted as it is a duplicate of other parts. Fig. 3 is a detail enlarged view of the upper ends of the parallel supports and their associated connections. Fig. 4 is a detail of the seat part of the structure. Fig. 5 is a detail side elevation of the ratchet mechanism and its immediately associated parts. Fig. 6 is a top view of the same. Fig. 7 is a side view of the shaft and the ratchet and pawls carried thereby. Fig. 8 is a sectional view through a ratchet mechanism showing the link portions in elevation. Fig. 9 is a detail of the supporting bearing for the rotating frame. Fig. 10 is a detail enlarged section through the track member of the frame. Fig. 11 is a detail view in plan and side elevation of the tie plate member.

In the drawings, there is shown conveniently a fixed or stationary frame structure comprising a base member 22 of circular formation, an upright centrally positioned supporting standard united with the base by suitable radially positioned connecting bars, the lower end of the standard may be supported stationarily on a base block or other means. From the circular frame 22 extend uprights 23 and diagonals 24 shown in Fig. 1, these may be of any convenient form of rolled metal bars or other material. The upper ends of the uprights 23 support a track member 21, this is conveniently of T-formation in cross section, having the flat or head part uppermost. This flat or head part of the T member represents a track for purposes presently to be described. To add rigidity to the frame structure and to maintain the track 21 in proper position suitable radiating connecting bars 25 are employed, fixedly secured at their outer ends to the track part and at their inner ends to a plate 25^a, fixed on the vertical supporting standard as shown in Fig. 1. The base, track member, diagonals, uprights and standards constitute the supporting or stationary part of the machine. The standard at its medial line is provided with an offset bearing shoulder part 18 which is designed primarily to

carry the load. The upper portion of the standard is extended well above the plane of the track.

Mounted for rotation on the standard, and extending radially in opposite directions therefrom is a carrying beam member 19, this beam is provided with a central hub part 19^a and through the same passes the supporting standard 50. The beam is provided at its hub part or directly therebelow with a race-way 18, between which and a complementary fixed shouldered part 18^a are positioned suitable anti-friction members. This bearing constitutes the bearing for the load. At the upper part of the hub there is provided a ball bearing 17 fashioned to embrace the sides of the supporting standards 50 to take up in part, the tendency of laterally displacing or tilting of the beam. To further stabilize the structure and prevent lateral deflection of the same and also to provide means for properly trussing the outer end of the beam and of the seat members, there is extended upward from the hub part a hollow post member 20, conveniently in the form of a metal tube, the lower end being properly joined rigidly to the upper face of the hub as shown in Fig. 1. Through this hollow post member, the upper end of the supporting standard 50 passes, the upper end of the standard being braced by a suitable anti-friction bearing member 16. By this construction, a long bearing of the anti-friction type is provided for the superstructure, which will hold the same in its proper position against wobbling, while at the same time permitting a free rotary movement thereof around the supporting standard 50. Owing to the fact that the structure as represented by the hollow post member and the hub part of the beam member is positioned through their associated bearings in the manner described, the beam may be vertically adjusted by adjusting the supporting plate 18^a vertically on the standard 50, such adjustments may under certain conditions be desirable.

At the outer end of the beam member 19, beyond the track member 21 is the operating swing, comprising the parallel bars 41 each formed conveniently of a plurality of spaced bars as shown in Fig. 3, embracing at their upper end a pivot bar extension 44. The respective members of the uprights of the swing members 41 are coupled by diagonals 45 as shown in Fig. 3 so that all movement between the two associated bars is prevented. As shown by the dotted lines in Fig. 5, the bars 41 are arranged on each side of the transmitting shaft H and spaced therefrom so that any movement of these bars is transmitted to the shaft through the medium of the links 7 which are connected therewith and the pawl and ratchet mechanism which will be later described. A convenient man-

ner of pivotally supporting the uprights or side bars of the swing on the outer end of the beam 19 is that shown which consists in forming recesses in the beam at the edges thereof and carrying the upper ends 44 through the recesses, mounting the said ends on the pivot bolts 44^a. Spanning the recessed portion of the beam are U-shaped cap plates 46, suitably secured to the upper face of the beam as shown in Fig. 2, extending the width thereof. Between the branches of the U-shaped plate, the ends 44 of the uprights 41 of the swing are placed and allowed a slight lateral movement. By these means the side flexing of the swing structure as a whole is largely prevented.

As shown in Fig. 4, the seat or lower end of the swing part comprises a platform 40 secured at its ends to the lower ends of the uprights 41 by bolts 42. The side bars of the base 40 are conveniently fashioned so as to receive and maintain in position, a foot rest 49 shown in dotted lines in Fig. 4. This foot rest is provided with cleats 48 for bracing the feet against in operating the swing. The seats proper comprise conveniently, a slatted structure having sides 37 and the depending front 38, the seat is supported conveniently by the bolts 43 which extend from the vertical upright on one side to that of the opposite side, the seat resting on the bolts 43. An adjustable brace 36 may be employed to vary the angle position of the back 35 of the seat. The swing, as a whole, is known as the parallel bar type comprising four vertical supports united at the bottom and pivotally supported thereabove. The structure described has the characteristic of rigidity and is held or maintained against side swaying movement, which is desirable.

Mounted on the upper part of the beam is a power shaft 13, the same being journaled in suitable bearings in the bearing blocks 15. This shaft carries at its outer end a pinion 10 and at its inner end a relatively large driving wheel 11 having a yielding tread surface 12. This driving wheel is positioned directly above the track member 21 and travels thereover with a frictional contact.

Mounted on the underside of the beam at a point beyond the track member, is an operating shaft 8, the same being supported in bearings 9, depending from and properly secured to the end of the beam. The shaft is positioned centrally between the upper ends of the swing uprights, as shown in Fig. 5, and carries on its inner end a gear 5, which meshes with the pinion 10 on the shaft 13. Any rotary movement of the shaft 8 will be transmitted through its gear 5 to the pinion 10, shaft 13, and driving wheel 11 thus tending to move the driving wheel along the track surface. The gear wheel 5 and the driving wheel 11 project

through suitable openings in the beam 19. A convenient means for operating the shaft 8 for transmitting the movement and consequent power of the oscillating swing is that shown in the drawings and comprises a ratchet mechanism (two being shown but obviously one could be employed). It is desirable in this type of apparatus to maintain a constant forward movement as distinguished from an intermittent movement, therefore to accomplish this result, the ratchet mechanism referred to comprises two levers or blocks 1 and 2. These parts are in the form of castings or metal blocks, each being pivoted on the shaft 8. The block 1 is bifurcated at its lower end and through the arms thereof the shaft 8 passes. Above the bifurcated portion there is formed a chambered part in which the pawl 4 is pivoted by a suitable pivot member extending through the block or casting. The tooth of the pawl is properly fashioned to engage the teeth of a ratchet wheel 3 keyed to the shaft 8 and lying centrally between the arms of the bifurcated portion of the block. To normally force the operating end or tooth of the pawl into engagement with the teeth of the ratchet any suitable means may be employed, I have however shown a small spiral spring 4^a seated in a cavity at the rear of the heel of the block or lever as shown in Fig. 8. By these means, the pawl will move readily over the inclined surfaces of the ratchet teeth and will, as usual in such structures, engage the tooth when moved in the opposite direction. The upper end of the block or lever 1 is bifurcated and within the groove is positioned the end of a link member 7, the same being pivotally held in the groove. This link 7 is carried outward and is pivotally secured to an upright of the swing frame as shown in Fig. 5. The link 7 is conveniently curved for the purpose of permitting a wide arranging of movement of the part 1 around its axis, during the operation of the swing. The member 2 of the pawl mechanism is similar to that of the member 1 with the exception that the arms at the sides of the bifurcated portions are fashioned to fit between the arms on the part 1 as clearly shown in Fig. 7.

The pawl 4 of the member 2 operates on the opposite side of the ratchet and the outer end of the part 2 has pivotally connected therewith a link 6 which in turn has its outer end connected pivotally to the oppositely disposed supporting bar of the swing as shown in Fig. 5. Normally when the swing is stationary, the parts are in substantially the position shown in Fig. 5, but any deflection from the vertical of the bars 41 will cause the blocks 1 and 2 to have a relative movement around their axes 8. A movement to the left as shown in Fig. 5 will cause the pawl pivoted in the part 2, to ro-

tate the ratchet wheel and the shaft 8. The part 2 will be drawn downward or approach part 1 until it assumes a position approximately at a right angle to the part 1. The pawl of part 1 in the meantime moves freely over the teeth of the ratchet wheel. Upon the movement of the swing in the opposite direction, the pawl of part 1 will engage the teeth of the ratchet and this action takes place immediately upon the recession of the swing, thus momentarily transmitting a continued rotation of the shaft 8 and this will continue until the parts 1 and 2 assume substantially a right angle at the opposite side of the shaft 8 when the action is repeated. This continued rotation of the ratchet and shaft 8 is taken advantage of to drive the gear 5 continuously in one direction and this movement is imparted to the pinion 10 and the driving wheel 11. The beam and the swing carried thereby will thus be moved forward continuously and owing to the manner of mounting the same, the movement is in the circular path, as stated, two sets of pawl mechanisms are shown in the drawings, one being opposite each supporting upright of the swing, but obviously a single set of members can be employed.

It will be observed that by fixedly mounting the shaft 8 with relation to the supporting bars of the swing, this ratchet and pawl mechanism will act effectively at all times and that the device will be moved forward continuously and proportionately to the extent of movement of the swing member. The parts are so fashioned that the full swing or movement will operate on a larger number of teeth on the ratchet than a partial movement. Of course the operator in moving the swing operates as usual by thrust power.

To add additional support to the outer end of the beam 19, a truss rod 26^a is employed, the same extending from the top of the post member 20 and being suitably connected preferably to the arched U-shaped member 46 as shown in Fig. 1.

It is desirable to equip the apparatus with a series of seats and for that purpose, a suitable seat supporting frame is employed comprising a series of connected rods 28 coupled together at their ends by a tie plate 33 as shown in Fig. 11 which is so formed as to constitute a connecting means, not only for the bars 28, but also to connect the end of the diagonal supporting truss 26 by lapping the lower end of the latter around the tie plate as shown in Fig. 1. The trusses 26 are carried out to the top of the post 20 and there secured in any convenient manner. To maintain the circular frame formed by the united bars 28 in their proper position, radial braces 27 are employed which are united to the parts at their outer end at the tie plate 33 and at their inner end to a suit-

able projection on the hub part of the beam 19. These radial bars 27 constitute stays and maintain the entire circular formation of bars in their proper position as stated.

8 Depending from the radial bars 27 are the seat members 35^a constructed in a manner similar to the said members heretofore described. The vertical supports for these seats 35^a are represented by the bars 30.
10 These said members are not employed for swinging purposes and in as much as there are a plurality employed, it has been found expedient to unite the lower ends of the supporting standards thereof by the connecting bars 31. This is effected conveniently by tie plates 32. In uniting the radial stays and the diagonal truss to the ends of the bars 26, I have found that a single bolt may be employed passing through the ear or tongue 20 33^a of the tie plate, the lapped end of the truss 26 and the end of the stay 27, but by any other suitable means can be employed. To connect the ends of the bars 28 adjacent the ends of the beam 19, a circular plate 29 is employed fastened or secured properly to the ends of the beam and riveted or bolted to the ends of the bars 28 as shown in Fig. 2.

I have shown and described somewhat in detail, the various features of the device as a whole but obviously the mechanism operated by the swinging seat may be employed for widely different purposes from that of the circular travel. I have also in mind that the transmitting mechanism may be employed for purposes other than traveling purposes without departing from the general principles involved.

In use, the device as shown when assembled, will be appreciated from the foregoing description, briefly however the occupant of the swing, oscillating the same, transmits this oscillating power through the approaching and receding movements of the parallel bars and this movement transmits the power derived including momentive power to the driving mechanism and thereby causes the movement to the apparatus. Owing to the mounting of the parts unequal loads will not effect the proper contact of the driving wheel or the positioning of the parts.

The device may be provided with any desired number of seats or other supporting devices as may be found desirable or expedient.

55 Having thus described the invention, what is claimed as new and desired to be secured by Letters-Patent is:—

1. A power transmitting mechanism comprising a swinging member having opposed parallel bars, a support therefor, a transmitting shaft disposed between the upper ends of the bars, and means operated by the swinging of the bars for rotating the transmitting shaft.

65 2. The combination with a swinging

member having parallel swinging bars, of a power transmitting mechanism comprising a shaft arranged between the bars, a ratchet wheel on the shaft, pawls for engaging the ratchet wheel and independent connections 70 between the pawls and the swinging bars.

3. A power transmitting mechanism comprising opposed swinging bars, a transmitting shaft, in combination with a ratchet mechanism for driving the shaft comprising 75 a plurality of pawls, a ratchet wheel on the shaft with which the pawls engage, and connections between each of the bars and the pawls for rotating the shaft upon a swinging movement of the bars.

4. In a swinging structure, the combination with parallel supporting bars, of a power transmitting mechanism comprising a shaft interposed between the upper ends of the bars, a ratchet on the shaft, pawls for engaging the ratchets and independent 85 link connections between the pawls and the bars for continuously rotating the shaft upon a swinging movement of the bars.

5. The combination with a swing comprising parallel bars and a seat member, of a power transmitting mechanism comprising an operating shaft located between the bars, pawls for operating the shafts, connections between the pawls and the bars, 95 and a driving member operated by the shaft.

6. In a swing structure, the combination with a circular track, of a pivotally mounted support, a traction wheel engaging the track and carried by the support, a swing mounted 100 on the support, a shaft carried by the support and having a pinion thereon, a shaft positioned adjacent the swing members and having a gear engaging said pinion, and a pawl and ratchet mechanism operated by 105 the swing for driving the last mentioned shaft.

7. In a swing, the combination with a frame having a track member thereon, a central supporting standard, a beam mounted for rotation on the standard, a swing 110 mounted on the end of the beam, a shaft mounted on the beam adjacent the swing, a pawl and ratchet mechanism for operating the shaft, and means operated by the shaft 115 engaging the said track for moving the swing forward.

8. In a swing, the combination with parallel bars suitably connected together and a seat, of a rotary support for the bars, 120 means for pivoting the bars to the support, a ratchet and pawl mechanism positioned between the bars, one pawl being connected with each bar, and means operated by the ratchet and pawl mechanism for transmitting 125 power to move the swing bodily upon the swinging of the bars, substantially as described.

9. In a swing, the combination with a central supporting standard, a beam carried 130

thereby, a circular track fixed in relation to the beam, a traction wheel mounted on the beam and engaging the track, a swing member on the beam, and mechanism operated by the swinging movement of the swing to rotate the said traction wheel.

10. In a swing having opposed bars, the combination with supporting instrumentalities adapted to permit an advancing movement of the swing, a propelling shaft located between the opposed bars of the swing, and means operated by the swing for imparting a continuous movement to the propelling shaft to advance the swing bodily.

11. In a device of the character described, the combination with a stationary frame, a track supported thereon, a supporting standard, means for uniting the standard to the frame, a beam pivotally mounted on the standard, a tubular extension on the beam surrounding the standard, anti-friction bearings between the beam members and standards, a swing member supported on the end of the beam, a ratchet and pawl mechanism operatively associated with the swing, means operated by the ratchet and pawl mechanism and engaging the track member for causing the beam to move, a series of seats positioned adjacent the frame, means for supporting the seats from the standard, and means for connecting the said seats to the beam.

12. In a swinging device having opposed bars, the combination with supporting instrumentalities adapted to permit an advancing movement of the swinging device, a propelling shaft, independent means connected with each of said bars for operating the propelling shaft upon the swinging movement of the bars to impart a rotary movement to the propelling shaft to advance the swinging device bodily, substantially as described.

13. In a swing structure, the combination with a track, of a support therefor, a swinging member having parallel bars, means for supporting the bars, a shaft carried by the support and driving a traction wheel engaging the track, and a plurality of driving means cooperating with the shaft, one being connected to each of the bars for rotating the shaft upon a swinging movement of the bars to advance the swing bodily.

14. In a swing structure, the combination with a track, of a support therefor, a swinging member comprising a seat having parallel bars, a support for said bars, a shaft carried by the support and driving a traction wheel engaging the track, pawl and ratchet mechanism for driving the shaft, comprising a plurality of pawls, one connected to each of the swinging bars whereby the shaft is continuously rotated upon a swinging movement of the bars to advance the swing bodily.

15. A power transmitting mechanism, comprising spaced pivotal bars, a support therefor, a transmitting shaft between said bars, a plurality of independent driving devices having a driving connection with the shaft, one of said driving devices being connected to each movable bar for imparting a rotary movement to the shaft upon the swinging of the bars.

16. In a swing the combination with a frame having a track member thereon, a central supporting standard, a horizontally extending beam mounted for rotation on said standard, a swinging member pivotally attached to one end of the beam, a shaft carried by the frame, a traction wheel engaging the track and having a driving connection with the shaft, and means for rotating the shaft upon a swinging movement of the swing to advance the swing in a forward direction, comprising a pawl and ratchet connection with one of the bars and the shaft, and a pawl and ratchet connection with the other of said bars and shaft.

17. A power transmitting mechanism, comprising a swinging seat having parallel swinging bars, a support therefor, a shaft between said bars, an independent actuating device connected with each parallel bar and cooperating with the shaft, one of said actuating devices when the bars are moved in one direction adapted to have a driving connection with the shaft while the other remains inactive, the said last mentioned actuating device having a driving connection with the shaft when the bars are moved in an opposite direction while the first mentioned actuating device remains inactive.

18. A power transmitting mechanism comprising a support, opposed pivotal operating bars carried thereby, a transmitting shaft located between the upper ends of the opposed bars, a plurality of independent driving devices having an operative connection with the shaft, one of said driving devices being connected with each swinging bar for rotating the shaft upon the back and forth swinging movement of the opposed bars, substantially as described.

19. A power transmitting mechanism, comprising a support, opposed pivotal bars carried thereby, a power transmitting shaft, a plurality of independent driving devices cooperating with the shaft, one driving device being connected with each bar for rotating the shaft upon the back and forth swinging movement of the bars.

20. A power transmitting mechanism comprising a support, opposed pivoted bars carried thereby, a transmitting shaft located between the opposed bars near their pivotal point, a pawl and ratchet driving connection between one of the bars and shaft, and a pawl and ratchet driving connection be-

tween the other of said bars and the shaft for rotating the shaft upon the back and forth swinging movement of the bars.

21. In a swing structure, the combination
5 with a track, of a swinging member having
opposed pivotal bars, a support therefor, a
transmitting shaft having a driving connection with a traction wheel located between
the bars, and a plurality of driving devices
10 having operative connections with the shaft,

one of the driving devices being connected with each bar for rotating the shaft upon the swinging movement of the bars to advance the swing bodily, substantially as described.

In testimony whereof I hereunto affix my
signature in the presence of a witness.

EMERY E. CLARK.

Witness:

CALVIN T. MILANS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."