Dec. 17, 1935. A. T. GOETTER 2,024,855

POWER DRIVEN SWING

Original Filed June 22, 1931 2 Sheets-Sheet 1

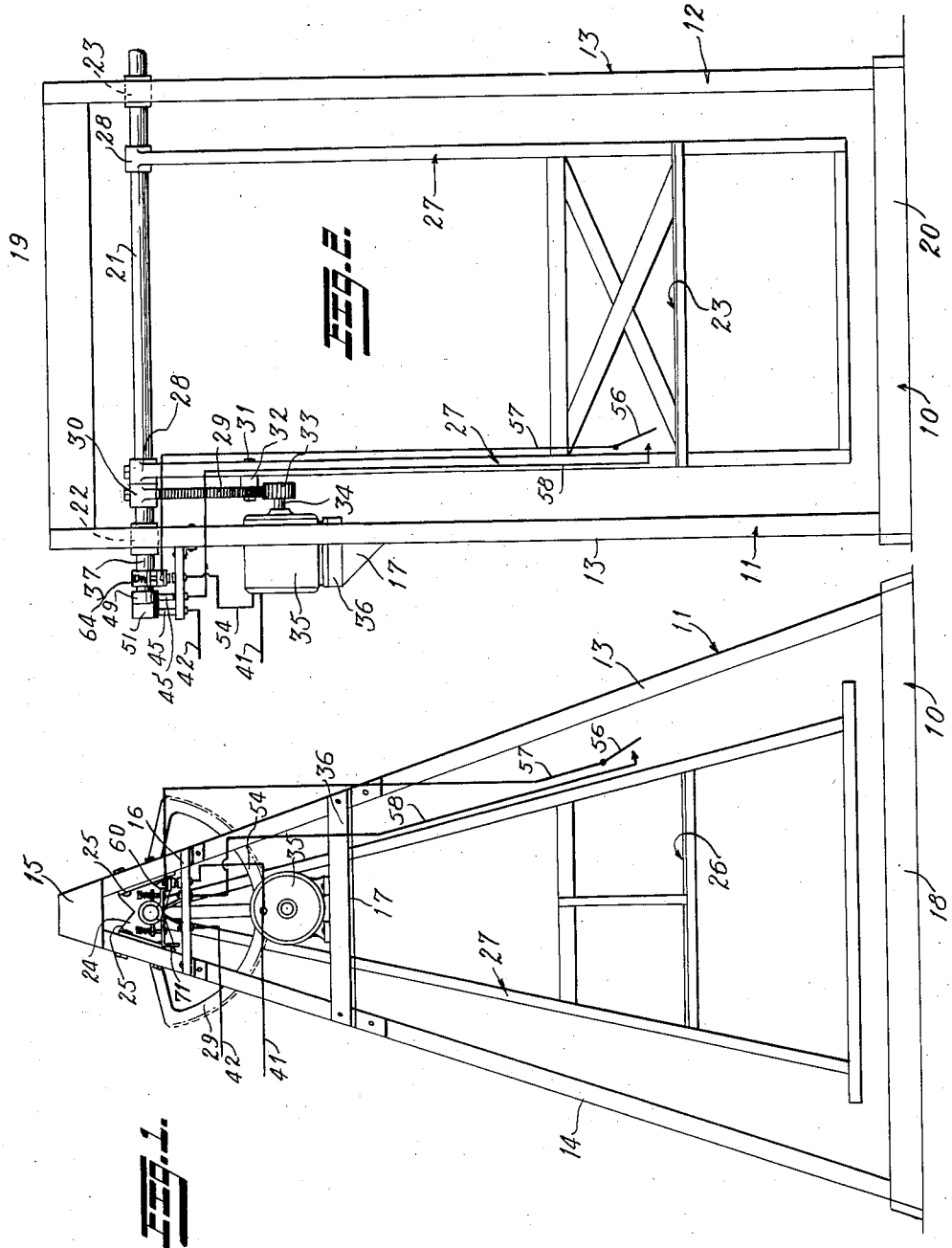


Fig. 2.

Fig. 1.

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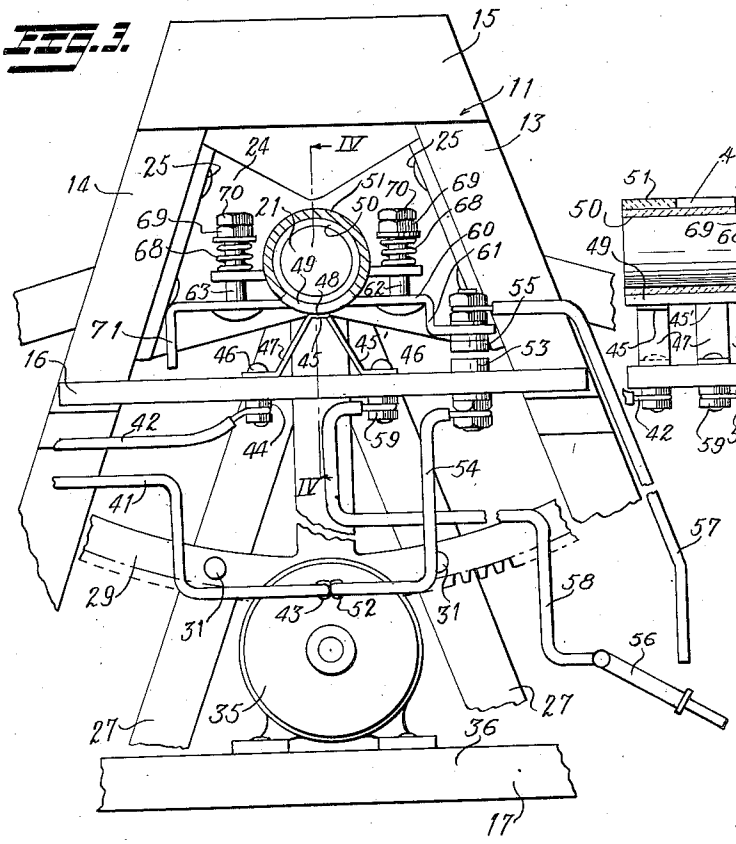
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Fig. 3.



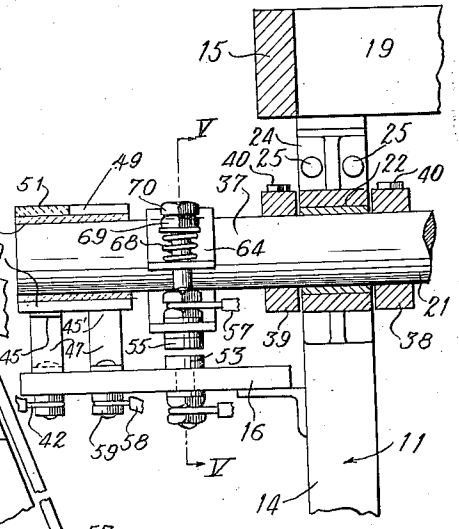


Fig. 4.

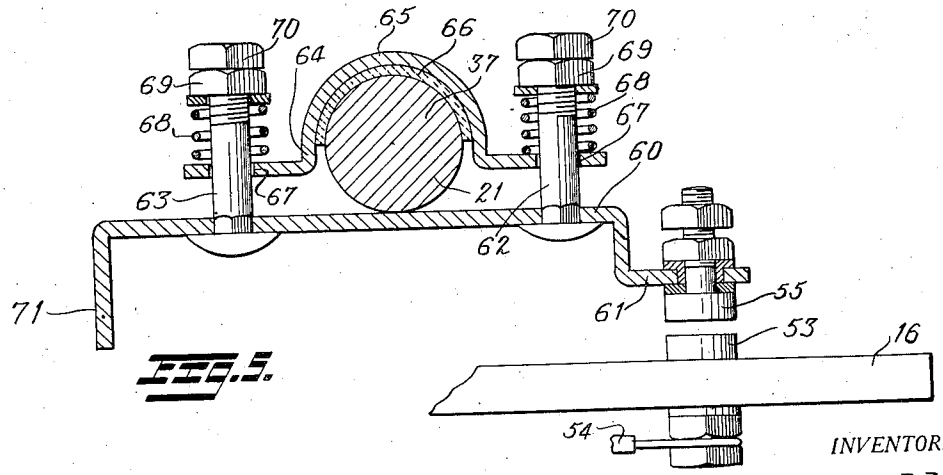


Fig. 5.

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Patented Dec. 17, 1935

2,024,855

UNITED STATES PATENT OFFICE

2,024,855

POWER DRIVEN SWING

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Application June 22, 1931, Serial No. 546,142
Renewed October 29, 1934

4 Claims. (Cl. 155—59)

This invention relates to amusement devices and more particularly to power operated swings, although certain features thereof may be employed with equal advantage for other purposes. It contemplates more especially the provision of means for controlling the power actuation of a swing member in order to impart amusement without the display of any effort at the instance of the rider.

Numerous types of amusement devices of the swing type have heretofore been proposed, but these are either manually motivated for the most part or else the power driving thereof is rendered so intricate and uncertain as to preclude the general adoption thereof from a commercial standpoint. In fact, it is manifest that the application of power must be automatically controlled and rendered intermittent at predetermined intervals so that the proper actuation of the swing will be effected with inexpensive, simple and dependable contrivances.

It is desirable that the power should be applied at only predetermined intervals and in a uni-direction so that a uniform impulse and swing characteristic will be imparted thereto with minimum wear on the instrumentalities and the automatic control thereof. Devices of this character are usually very cumbersome and intricate to the extent that the control is very dependable or lacking in the simplicity required of such devices so as to meet the requirements of commercial practice both from the standpoint of construction and operation economy.

One object of the present invention is to simplify the construction and improve the operation of devices of the character mentioned.

Another object is to provide simple and dependable power device for actuating a swing in a predetermined direction and along a selected range to effect the uniform movement thereof.

Still another object is to provide a power driving device for a swing member to control the actuation thereof within predetermined limits of movement.

A further object is the provision of electric contact control means for a power swing device which is rendered responsive to the swing member.

A still further object is to provide electrical means for controlling the actuation of the swing member responsive to the movement thereof.

Still a further object is to provide a simple and dependable electrical control for a swing power driving device so as to govern the movement of a swing member to assume predetermined amusement characteristics.

Other objects and advantages will appear from the following description of an illustrated embodiment of the present invention.

In the drawings:

Figure 1 is a front view in elevation of a swing embodying features of the present invention.

Figure 2 is a side view in elevation of the device shown in Figure 1.

Figure 3 is an enlarged fragmentary front view of the operating mechanism employed in connection with the device shown in Figure 1.

Figure 4 is a sectional view taken substantially along line IV—IV of Figure 3.

Figure 5 is a sectional view taken substantially along line V—V of Figure 4.

The structure selected for illustration comprises a frame 10 of any suitable construction, in this instance comprising a pair of vertically spaced standards 11 and 12. Each of the standards 11 and 12 are composed of inclined bars 13 and 14 which are connected at their upper extremities by means of any suitable plate or bracket 15 for reinforcement by a plurality of cross members 16, 17 and 18, in this instance three, which are bolted or otherwise secured thereto in any suitable or approved manner. The cross members 18 are attached to the base of the inclined bars 13 and 14, and the standards 11 and 12 are maintained in vertical spaced relation by means of bars 19 and 20 attached to the extremities thereof. It is thus apparent that a rigid frame 10 is provided to sustain swing instrumentalities thereon of the character to be hereinafter described.

In order to support a swing and render such oscillatory, a shaft 21 is disposed in parallel spaced relation with the uppermost cross member 19 for vertical alignment therewith, it being journalled for support in bearings 22 and 23 carried in brackets 24 fixed to the inclined frame support bars 13 and 14 by means of any suitable fasteners such as the carriage bolts 25. As shown, a swing member comprising a seat 26 is supported by any suitable hangers 27 which terminate in bosses 28 for fixed attachment to the shaft 21, thereby sustaining the seat member 26 for oscillatory movement with the shaft 21. The rider is thus supported in any comfortable posture upon the seat member 26 for swinging conveyance along an oscillatory path about the shaft 21. The seat member 26 together with its hangers 27 may be of any suitable construction

and configuration depending upon the dictates of commercial practice, and the swinging movement thereof is occasioned by power driven instrumentalities as will appear more fully hereinafter.

In order to oscillate the seat member 26 a gear segment 29 is attached about the axial hub 30 thereof to the shaft 21 immediately in front of a hanger 27. A carriage bolt 31 extends between the periphery of the gear segment 29 and the swing hanger 27 to insure the movement therewith in unison, there being a spacer collar 32 enveloping the carriage bolt 31 between the gear segment 29 and swing hanger 27 to maintain the relative position thereof without any possible displacement or excessive strain thereon. Movement is imparted to the gear segment 29 through the medium of a pinion 33 which meshes therewith for support by an armature shaft 34 of an electric motor 35 which, in this instance, constitutes the power source. The motor 35 is preferably supported upon a base board 36 fixed to the cross member 17 of the forward frame standard 11, thereby establishing an operative connection between the seat members 26 and the driving or motion producing mechanism 35.

In order to control the power operation of the swing member 26, it is preferred to impart power movement thereto in a single direction for power drive along a predetermined range. As a consequence, controlled movement of the swing member 26 is rendered possible and the idling thereof during the inactivity of the motor 35 will present sufficient flexibility to derive amusement therefrom. Then, too, the power mechanism 35 will impart the desired movement thereto without excessive maintenance costs or intricate control apparatus, and this is accomplished in the present embodiment with simple timing means including an electric contact switch which responds to the swing of the seat hangers 27. To this end, the shaft 21 projects beyond the forward standard 11 to provide an extension 37, and longitudinal movement thereof is rendered impossible by thrust collars 38 and 39 fastened to the shaft 21 on both sides of the forward bearing bracket 24 through the medium of set screws 40.

The energy for operating the motor 35 is derived from any suitable power source through wires 41 and 42 which are connected to the motor terminal 43 and frame terminal 44, respectively. The frame terminal 44 is, in this instance, mounted on the cross member 16 to energize a metallic shaft contacting brush 45 fixed thereto in any suitable manner by fasteners 46. The metallic brush 45 is preferably sustained by springs 47 so as to resiliently project the contact face 48 thereof in the path of the shaft extension 37 having a contact ring sector 49 attached thereto.

The contact ring sector 49 is secured to the shaft extension 37 in any suitable manner and is insulated therefrom by means of a fiber shaft sleeve 50. The peripheral path of the brush contact 48 is rendered uniform owing to an insulator band 51 which completes and constitutes the circumferential extension of the ring sector 49, thereby closing and opening the circuit responsive to the rotation of the shaft extension 37 without any appreciable variation in peripheral contact of the brush 45. The other terminal 52 of the motor 35 is connected to a switch contact 53 fixed to the cross member 16 for electrical connection through a wire 54. It is understood that the contact brush 45 and switch contact 53 are insulated from the cross member 16 in the usual manner and that the circuit is completed through a contact 55 mounted in confronting relation with the contact 53 for manual control through a switch 56 connected thereto through wires 57 and 58. The wire 57 is secured to the switch contact 55 while the wire 58 connects the other terminal of the switch to the contact brush 45 owing to the terminal nut 59 threadedly engaged therewith.

In order to control the power actuation of the swing member 26 after the manual switch 56 is closed, the automatic switch contact 55 is mounted on a bracket 60 for insulated attachment to the extremity 61 thereof. The bracket 60 is provided with studs 62 and 63 which extend vertically upward therefrom on both sides of the shaft extension 37 for frictional engagement therewith by virtue of a confronting clamp 64. The confronting clamp 64 has an arcuate intermediate section 65 which envelops or embraces the shaft extension 37 having a brake band 66 fixed to the periphery thereof for frictional grasp by the clamp section 65. The arms of the clamp 64 are provided with apertures 67 for the reception of the bracket studs 62 and 63 and a resilient urge is imparted thereto by means of spiral springs 68.

The spiral springs 68 envelop the bracket studs 62 and 63 between the clamp arms 64 and the heads 69 thereof, thereby effecting a constant frictional engagement between the bracket 60 and shaft extension 37. The frictional engagement of the bracket 60 with the shaft extension 37 is maintained effective and any adjustment thereof rendered possible by means of the stud heads 69 which are in threaded engagement therewith for this purpose. Lock nuts 70 engage the studs 62 and 63 for contact with the stud heads 69 so as to preclude any accidental displacement or movement thereof which would have the slightest influence on the frictional reaction of the clamp 60 with the shaft extension 37. As a result the bracket 60 with its switch contact 55 will tend to move in unison with the shaft extension 37 to make or break the circuit by the movement thereof relative to the other terminal contact 53. The swing member 26 is thus propelled responsive to the motor 35 controlled by the shaft extension 37 which serves as a support for the seat hangers oscillated in unison therewith.

With the arrangement above described and starting from a position of rest which brings the seat member 26 vertically beneath the shaft 21, the manual switch 56 may be closed to the end that the swing is still inactive owing to the separation of the automatic switch terminals 53 and 55. It will be necessary, therefore, to manually propel the seat member 26 with its hangers 27 in a counterclockwise direction (viewed from Figures 1 and 3) for a predetermined distance to the end that the bracket 60 will swing therewith until stopped by the bent extremity 71 thereof which engages the cross member 16 serving as an obstacle to any continued movement with the shaft 21. The rider then releases the hanger 27 and rests upon the seat member 26 to the end that oscillatory movement in an opposite or clockwise direction will be effected responsive to the urge of gravity and the bracket 60 will be displaced to a similar extent with the shaft extension 37 to the end of bringing the

automatic switch terminal contacts 53 and 55 together.

The motor 35 will then be energized, and the swing driven for continued movement in the same direction until the metallic contact brush 48 rides off of the shaft sector ring 49 and on the insulator portion 51 thereof, thereby breaking the circuit and de-energizing the motor 35 which will idle for movement responsive to the swing members 27 which continue owing to the inertia effect thereon. Upon reaching the extreme position of oscillatory movement controlled by the opposed influence of gravity thereon, the seat member 26 with its hangers 27 will reverse the directional movement to the end of separating the automatic switch terminal contacts 53 and 55 so that the motor 35 is rendered inactive until the opposite extreme position of movement is reached. Thus, the motor 35 is energized in a predetermined directional range of pivotal movement of the swing members 27.

Thereupon the swing members 27 will be urged in the opposite direction (clockwise) responsive to the urge of gravity and the switch terminal contact 55 will be moved to again contact the terminal 53 to the end of again energizing the motor 35 for continuing the power actuation of the swing 27 until the contact brush 48 similarly rides off of the shaft sector ring 49. This cycle of power actuation of the seat member 26 with its hangers 27 continues for an indefinite period until it is desired to bring the mechanism to a stop by opening the switch 56. The manual switch 56 may be fixed to the forward standards 11 within reach of the rider resting in the seat 26, thereby enabling the manual control of the swinging movement responsive to the motor 35. Obviously, the manual switch 56 may be positioned on the seat 26 or adjacent thereto for support on the hangers 27, and this depends entirely upon the dictates of commercial practice.

Various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages thereof as defined in the appended claims.

I claim:

1. In a power swing, the combination with a frame, of a shaft supported by said frame, hanger members mounted for swinging movement with said shaft, a seat member carried by said hanger members, motion producing mechanism operatively connected to said hanger members, said motion producing mechanism including an electric motor, and electric timing means including a contact member frictionally associated with said shaft, said contact member being responsive to the swinging movement of said hanger members during a predetermined range of seat movement to energize said motor and thereby impart unidirectional impulses to said hanger members within said predetermined range of seat movement.

2. In a power swing, the combination with a support of a shaft journaled in said support, hanger members mounted upon said shaft for swinging movement therewith, a seat carried upon said hanger members, electric driving means operatively connected with said hanger members to effect swinging movement thereof and rocking movement of said shaft, and contact means operated by the rocking of said shaft in one direction to energize said driving means and operated by the rocking of said shaft in the opposite direction to deenergize said driving means, thereby imparting swinging impulses to said hanger members when said hanger members are moving in one direction.

3. In a power swing, the combination with a frame, of a shaft journalled in said frame, hanger members mounted upon said shaft for swinging movement therewith, a seat member carried by said hanger members, electric driving means operatively connected with said hanger members to effect swinging movement thereof and rocking movement of said shaft, and contact members operated by the rocking of said shaft in one direction to make contact and energize said driving means for a predetermined range of seat movement and operated by the continued displacement of said shaft beyond said predetermined range of seat movement in the same direction to break contact and de-energize said electric driving means whereby to impart swinging impulses to said hanger members in a given direction during said predetermined range of swinging movement thereof.

4. In a power swing, the combination with a frame, of a shaft journalled in said frame, hanger members mounted upon said shaft for swinging movement therewith, a seat member carried by said hanger members, electric driving means operatively connected with said hanger members to effect swinging movement thereof and rocking movement of said shaft, and pairs of confronting contact members operated by the rocking movement of said shaft, both pairs of said contact members being closed responsive to the rocking movement of said shaft during a predetermined range of seat movement in one direction to energize said driving means for imparting unidirectional impulses to said hanger members within said predetermined range of seat movement and one pair of contact members being operated by the continued rocking movement of said hanger members in the same direction for separation after displacement of said shaft beyond said predetermined range of seat movement to break contact and de-energize said electric driving means to allow said hanger members to swing in the opposite direction under the influence of gravity.

ALLAN T. GOETTER.