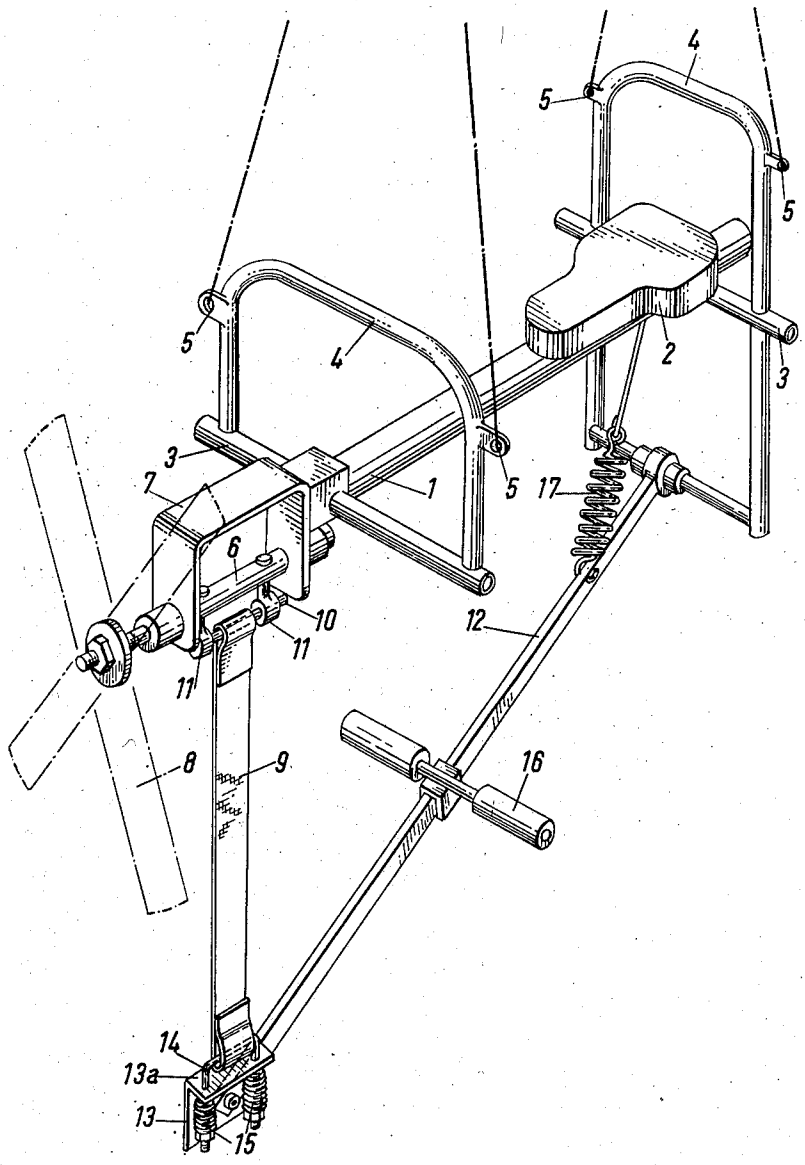
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SWING

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SWING

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This invention concerns swings, and has for its object the provision of a swing which may be actuated by a person seated therein or thereon, without the necessity for assistance from a second person.

A further object of the invention is to provide a swing having a driving mechanism which is adapted to arouse a substantial degree of interest in observers as well as on the part of persons in the swing.

According to the present invention a swing has a pivotally suspended framework carrying a seat, a propeller mounted at least at one end of said framework, and means for positively driving said propeller intermittently in alternate directions of rotation to propel said framework successively in one direction and then in the other direction.

The framework may, for example, have a bar pivotally secured thereto, and the propeller, suitably supported on a spindle journalled in bearings at one end of the framework, may be driven by a cord or strap wound at one end around said spindle, by fastening the other end of said cord or strap to the or a freely movable end of the bar. A person seated in the swing may thus move the bar downwardly about its pivotal point, when the cord or strap will be similarly moved downwardly and will unwind from and consequently rotate the spindle and hence also the propeller. A swinging movement in one direction is thus imparted to the framework by the rotating propeller, and when the strap becomes completely unwound from the spindle carrying said propeller, the momentum of the latter will cause the cord or strap to be wound up upon said spindle, but in the opposite direction to that in which it was previously wound. The pivotally mounted bar will thus clearly itself be raised during this winding up of the cord or strap around the spindle, so that when the framework finishes the movement imparted to it by the propeller and commences to swing back in the opposite direction, a succeeding pivotal movement given to the bar by the person seated in the swing will rotate the propeller in the opposite direction to that in which it rotated previously, the propeller then in turn driving the swing in the reverse direction which it has just commenced.

Alternatively, the propeller spindle may carry a sprocket around which is passed a chain extending on both sides of said spindle and movable transversely thereacross in any convenient manner to rotate the sprocket and hence the propeller. Instead of a chain, a cord or strap may be used, wrapped two or three times around the spindle and similarly movable transversely thereof. As in the previous embodiment, movement of the chain or cord in opposite transverse directions will impart opposite rotational movement to the propeller which hence will drive the swing in one direction or the other.

In either embodiment the drive to the propeller from the cord, strap or chain may be connected to a gear

adapted to increase the speed of rotation imparted to the propeller.

In order to increase the driving force given to the swing, the framework may be fitted with a propeller or with several propellers at each end thereof, the propellers at opposite ends rotating simultaneously but in opposite directions or being of opposite pitch so that the force which each imparts to the framework combines with that imparted by the other to move the swing in the same direction at any given time.

The invention will be described further, by way of example, with reference to the accompanying drawing, which is a diagrammatic perspective view of one swing constructed in accordance with the invention.

In the swing shown in the drawing, the framework includes an elongated beam **1**, adjacent one end region of which is fitted a seat **2** for one or more persons, dependent upon whether the swing is for use by a child or whether it is intended for more robust use, as in a fairground. Transversely across each end of the elongated beam, there extend spars **3**, to each end of which are fastened inverted U-shaped members **4** formed with lugs **5** for securing the swing to an upper pivotal mounting (not shown). Arranged beneath and parallel to but spaced from the elongated beam **1** is a spindle **6** journalled in a bearing frame **7** fitting over the beam **1** and secured to it by means of the forward transverse spar **3**, and at the forward end of said spindle **6** is secured a propeller **8** adapted for rotation with said spindle. To the spindle **6** there is secured one end of a strap **9** fastened around a rod **10** carried by split keys **11** passed through apertures in the spindle, the strap being adapted to hang downwardly and at its other end to be secured to one end of a bar **12** disposed beneath and in line with the elongated beam **1**. This bar **12**, at its other end, is pivotally mounted between downwardly extended portions of the arms of the rearmost U-shaped bracket **4**, and said bar, which may be termed a driving bar, is pivotally secured at its forward end region, to a flanged plate **13** having a flange **13***a*. This flange **13***a* has two spaced apertures therein for receiving the legs of a U-shaped terminal **14** to the crown of which the strap **9** is fastened. Each leg of the terminal **14** carries a spring **15** compressed between the undersurface of the flange **13***a* and a nut on said leg. These legs being displaceable in the flange **13***a*, the springs serve as shock-absorbing means as the strap **9** is wound around and unwound from the spindle **6**. At a position on the driving bar **12** just forwardly of the seat **2** carried on the elongated beam **1**, the driving bar is provided with a footrest **16** for receiving the feet of the person sitting on the seat. In order to balance or compensate a portion of the weight of the driving bar and hence to allow for free movement thereof, there may be fastened to the rear end region of said bar, a resilient support such as a spring **17**, which at its other end is secured to the rear end region of the elongated beam.

In use, the propeller **8** is given a few turns in one direction to wind a few turns of the strap **9** around the rear end of the propeller spindle **6**, the driving bar **12** thus at the same time being raised at the forward end, whereby the footrests **16** on said driving bar are likewise raised. The person seated on the swing then depresses the footrests and consequently depresses the bar **12** to positively unwind the strap **9** from the propeller shaft and hence to rotate the propeller. This rotation of the propeller **8** impels the swing in one direction and at the end of the downward movement of the bar, the foot pressure on the footrests **16** is released to allow the momentum of the propeller **8** to continue turning the spindle **6** and thereby to wind the strap **9** around its

spindle again, but in the opposite direction to that in which it was previously wound. As the movement of the swing in its initial direction comes to an end, and said swing commences, under the action of gravity, to move in the opposite direction, the driving bar **12** is again depressed by way of its footrests to unwind the strap **9** once again from the propeller spindle **6**, but during this movement the propeller is rotated in the opposite direction to that in which it rotated initially, due to the fact that the strip **9** has been wound round said spindle in the opposite direction to that in which it was initially wound. Consequently during this second swinging movement of the swing, the propeller imparts a driving force to the swing which is directed in the same direction of movement as that which the swing has now adopted under the action of gravity. Due to the above-described automatic reversal of the direction in which the strap **9** is wound on the propeller spindle **6** at the end of each depression of the driving bar **12**, and to the automatic raising of the driving bar during re-winding of the strap on said propeller spindle, each actuation of the propeller **8** thus automatically ensures that it is set for a subsequent rotation in the correct direction, that is to assist the new direction of movement of the swing on each reversal of movement of said swing.

If desired a hand grip may be provided on the elongated beam **1** forwardly of the seat, in order to provide a steady hold for a person occupying said seat and in fact, in the swing shown in the drawing, the bracket **4** itself serves this purposes. The degree of swinging movement of the framework may clearly be governed by the force with which the driving bar **12** is pressed downwardly by the person occupying the seat, and the extent of angular movement of said driving bar may, if desired, be restricted both at the upper and at the lower limits by the provision of suitable stops. It will be appreciated that when the momentum of the propeller **8** winds the strap around the propeller spindle **6**, when the driving bar **12** reaches its upper limit of movement, there can be a considerable pull exerted on said strap, and it is for this reason that the springs **15** are arranged between the lower end of the strap and its effective point of fastening to the forward end region of the driving bar.

The framework of the swing may, if desired, be covered by or form a part of any desired outer body, such as a vehicle, ship or aircraft body, and for added realisation the body may include ground wheels, wings or the like details.

A smoother operation of the propeller may be obtained by providing on the spindle **6**, a flat allowing the rod **10** to be received therein by carrying said rod on appropriately shortened split keys **11**. This enables the strap **9** to be wound on the spindle **6** in a more balanced manner.

I claim:

1. A swing comprising a pivotally suspended framework, a rotatable spindle carried by said framework, a propeller carried by said spindle, a driving bar pivotally connected to said framework, and a flexible strap connected at one end to said spindle and connected at its opposite end to said driving bar, the connection between said one end of said strap and said spindle permitting said strap to wind around said spindle and to unwind from said spindle and said spindle being rotatable in response to unwinding movement of said strap whereby, when said strap is moved in response to movement of said driving bar, said strap may unwind from and rotate said spindle to thereby rotate said propeller.

2. A swing comprising an elongated beam having a forward end and a rear end, a pair of spaced-apart transverse spars carried by said beam, there being a spar adjacent each end of said beam, an inverted U-shaped bracket carried by each spar, the bracket adjacent the rear end of said beam having legs extending downwardly below said beam, a shaft connected to and extending horizontally between said downwardly extending legs, an elongated driving bar having one end pivotally connected to said shaft, a rotatable spindle carried by said beam at the forward end of said beam, a propeller carried by and rotatable with said spindle, and an elongated flexible strap having one end connected to said rotatable spindle and its opposite end connected to said driving bar, the connection between said one end of said strap and said spindle permitting said strap to wind around said spindle and unwind from said spindle, and downward movement of said driving bar with respect to said beam causing said strap to unwind from and rotate said spindle to thereby rotate said propeller.

3. A swing comprising an elongated beam, an elongated driving bar, means carried by said beam pivotally connecting one end of said driving bar adjacent one end of said beam, the other end of said driving bar being free to move in an arcuate path of movement, means connected to the opposite end of said beam rotatably supporting an elongated spindle, a propeller carried by said spindle, a flexible strap having one end connected to said spindle to permit said strap to wind around said spindle and unwind from said spindle, said spindle being rotatable in response to movement of said strap when said strap is unwound from said spindle, and resilient means connecting the other end of said strap to said free end of said driving bar, said resilient means providing a shock-absorbing connection between said other end of said strap and said driving bar.

4. A swing comprising an elongated framework, an elongated driving bar pivotally connected at one end to said framework adjacent one end of said framework, said driving bar extending downwardly with respect to said framework and having a lower end positioned beneath the forward end of said framework, said framework including a U-shaped bearing bracket at the forward end of said framework, a spindle journalled in said bracket, a propeller carried by said spindle, said framework also including a pair of spaced-apart transverse spars providing suspension means for the swing, and a flexible strap having one end connected to said spindle and its other end connected to said driving bar lower end, the connection between said spindle and one end of said strap permitting said strap to wind around said spindle and unwind from said spindle, and said spindle being rotated by said strap when said strap moves in response to downward movement of said driving bar.

5. A swing according to claim 4 including a rod positioned adjacent to and parallel to said spindle, and a pair of keys connecting said rod to said spindle, said strap having an upper end connected to said rod and said rod being rotatable with said spindle to wind said strap around said spindle and said rod.

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