Nov. 8, 1955 J. C. HACKLEMAN 2,723,120

CHILD'S FERRIS WHEEL

Filed July 6, 1953 2 Sheets-Sheet 1

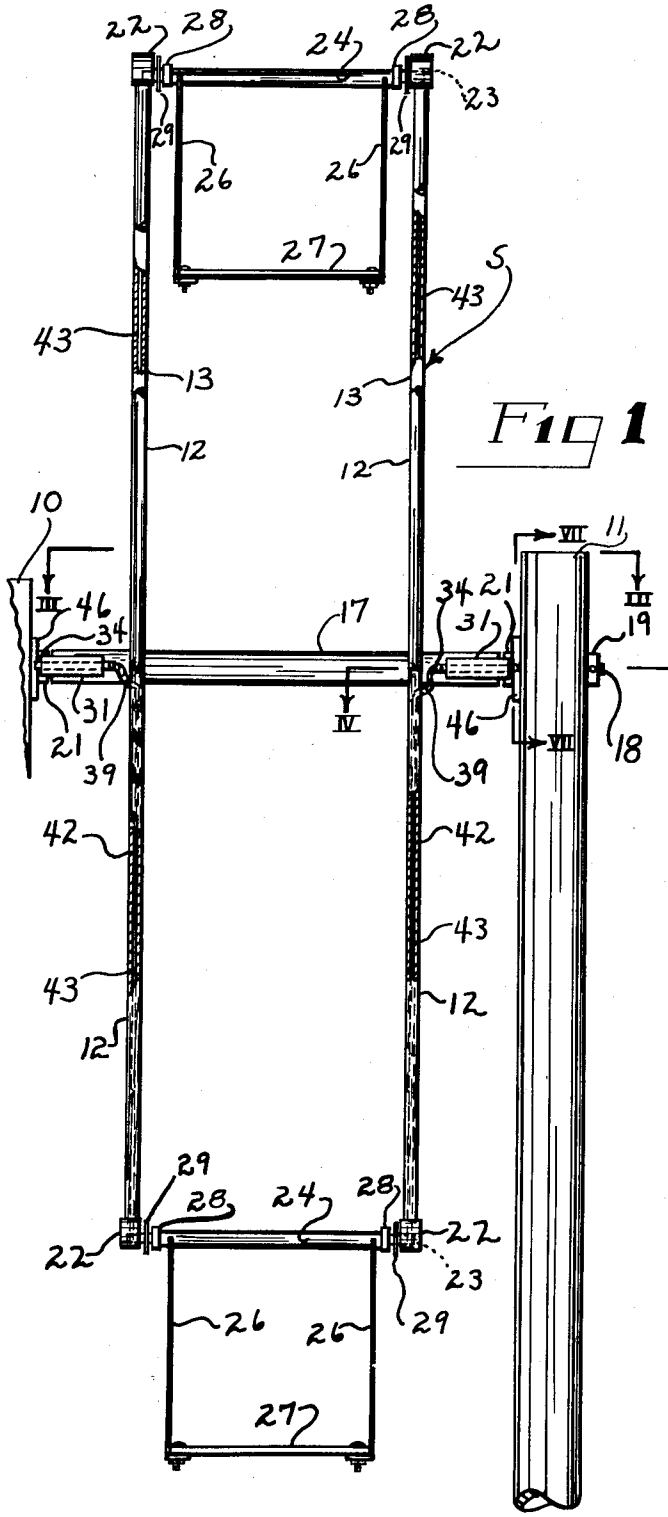


FIG 1

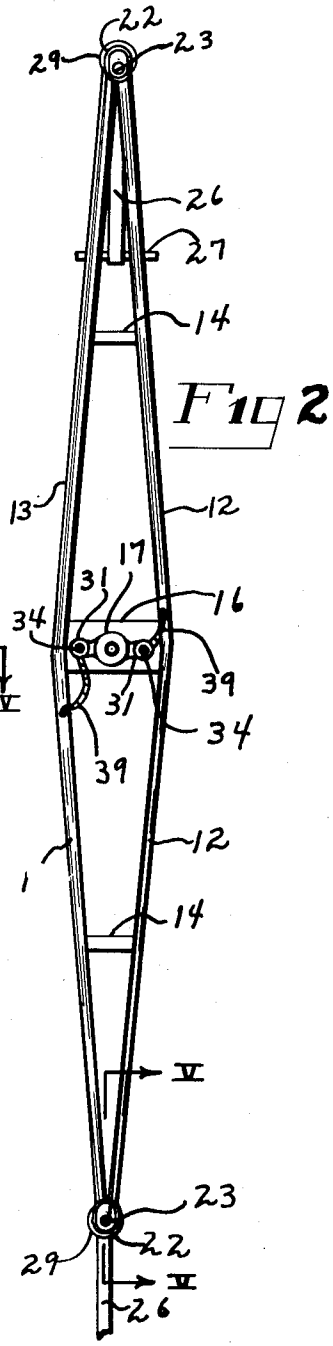


FIG 2

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Filed July 6, 1953 2 Sheets-Sheet 2

Fig 7

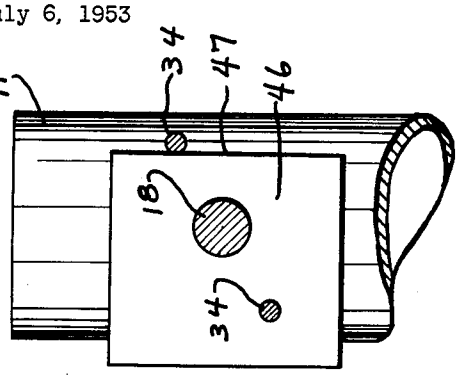


Fig 3

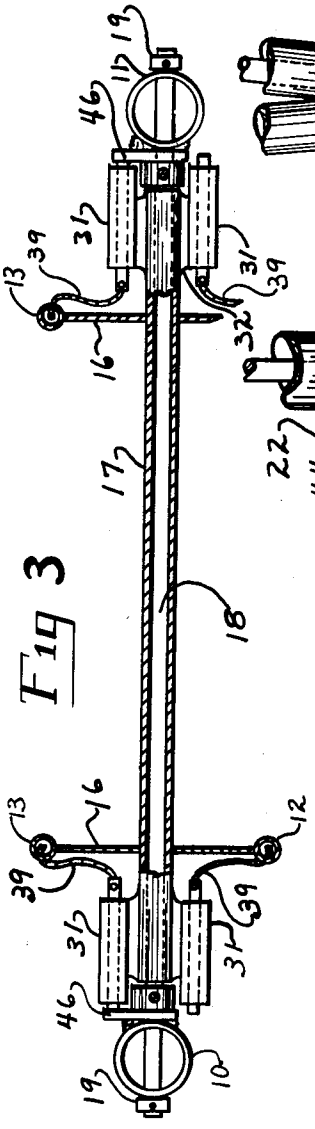


Fig 5

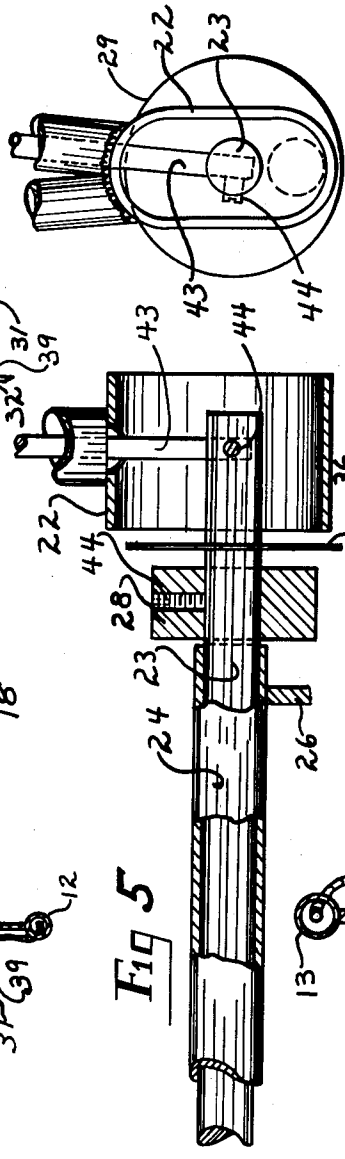


Fig 6

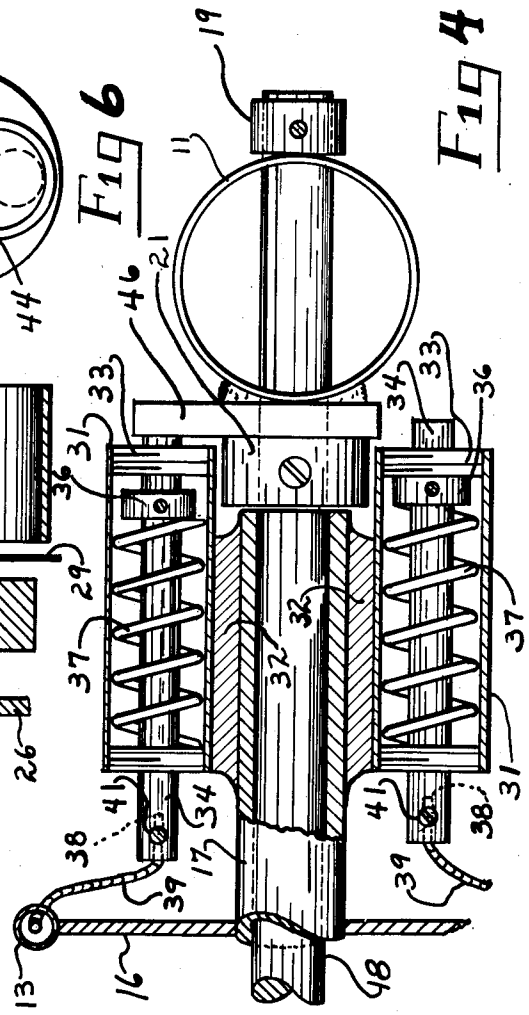


Fig 4

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CHILD'S FERRIS WHEEL

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4 Claims. (Cl. 272—38)

My invention relates to a swing of the Ferris wheel type and more particularly to means for locking the device against rotation when one of the passengers leaves a seat thereof, thus preventing injury to the users of the device.

In the art to which this invention relates one of the main difficulties heretofore encountered with swings of the vertical rotating type has been in providing safety lock means to prevent the elevated passenger from falling when the lower passenger left the lower seat. In a child's swing it is particularly dangerous to omit such locking devices because children often times jump suddenly from the lower seat without warning. The resultant sudden rotation of the swing is very dangerous both to the remaining passenger or passengers and to the one who has left the seat inasmuch as the remaining passengers will likely be thrown off and injured while the other may be struck by the fast moving swing.

In view of the above the prime object of my invention is to provide a child's Ferris wheel or like type of a swing provided with lock mechanisms automatically effective, when the weight of the passenger is removed from the lower seat, to lock the swing against rotation.

A more specific object is to provide a swing of the character designated in which there are sets of locking pins for each seat together with means effective to withdraw the pins from locking position so long as the seats are occupied in normal manner by the passengers, but effective automatically to permit the pins to move to locking position whenever either of the passengers leaves his respective seat.

Another object is to provide a device of the kind indicated in which the seats are mounted for slight radial movement about the axis of the swing and in which the seats are connected through tension members to the pins, whereby when the seats are near the low point in the swinging cycle they move radially outwardly of the swing so long as the passenger remains on the seat, thereby holding the pins out of locking position. If the lower passenger leaves the seat, the pins associated therewith move to locking position.

A further and more general object of my invention is to provide apparatus of the character indicated which shall be simple of construction but which nevertheless shall be positive in operation and fully effective to eliminate from a child's Ferris wheel or the like the hazards mentioned.

Apparatus illustrating the features of my invention is shown in the accompanying drawings forming a part of this application in which:

Fig. 1 is a front elevational view of a Ferris wheel embodying features of my invention, most of the supporting stand being omitted and certain of the parts of the apparatus being broken away and in section;

Fig. 2 is a side elevational view of the swing proper entirely removed from the supporting frame work, the lower seat being broken away;

Fig. 3 is an enlarged detail sectional view taken generally along line III—III of Fig. 1 with certain parts broken away and in section;

Fig. 4 is an enlarged detail sectional view taken generally along line IV—IV of Fig. 1;

Fig. 5 is an enlarged fragmentary detail sectional view taken generally along line V—V of Fig. 2;

Fig. 6 is an end elevational view of the detail shown in Fig. 5; and,

Fig. 7 is an enlarged fragmental detail sectional view taken generally along line VII—VII of Fig. 1 and illustrating the relative position of one of the locking plates and associated locking pins.

Referring now to the drawings for a better understanding of my invention I show my improved swing indicated generally by the letter S as being supported upon a stand which may comprise vertical tubular upright members **10** and **11**, portions of which are indicated in Fig. 1. As will be appreciated, the device may be supported on a portable stand or the uprights **10** and **11** may be permanently embedded in the ground. However, for the usual child's Ferris wheel type of swing I prefer that the supporting means be of such height that the distance from the lower seat to the ground is approximately 18 inches when the swing S is in the vertical position illustrated in Figs. 1 and 2.

The swing proper may comprise side frames each of which includes tubes **12** and **13**. The tubes may be bent to form double V-shaped members as illustrated in Fig. 2. The tubes on each side are braced by suitable cross braces **14**. At the longitudinal center there is a cross plate **16** for each side frame.

Passing through suitable holes in the plates **16** is a cross tube **17**. The cross tube **17** is rotatably supported on a main axle **18** which in turn is supported substantially horizontally in the upright frame members **10** and **11** in the manner illustrated more particularly in Figs. 1 and 3. The outer ends of the axle **18** may be provided with set collars **19**. Also, set collars **21** may be provided inwardly of the supports **10** and **11** as illustrated.

The side frames for the swing S are welded at their ends to a somewhat axially elongated oval member **22**. Projecting loosely into the member **22** are seat axles **23**. Loosely surrounding the axles **23** are seat supporting tubes **24**. Seat straps **26** are secured to the tubes **24** and at their lower ends carry the seat **27**. Set collars **28** hold the tube **24** against axial movement on the axles **23**. Large diameter washers **29** are provided to prevent the collars **28** from binding against the members **22**.

Referring more particularly to Fig. 4 it will be seen that the outer ends of the tube **17** are provided with diametrically opposite, parallel spring and locking pin housings indicated at **31**. Since each of the housings and pins are identical the description of one will suffice for all. The housings may be welded to the sides of the axle tube **17** as indicated at **32**. The housings may be closed at each end by means of threaded plugs **33** or by any other suitable means. Slidably fitting into suitable openings in the plugs **33** is a locking pin **34**. Secured to the locking pin near the outer end thereof, in the housing, is a set collar **36**. Loosely surrounding the pin **34** is a compression spring **37** which bears at one end against the inner side of the collar **36** and at the other end against the opposite plug **33**. It will thus be apparent that the pins **34** are biased outwardly, that is, toward the adjacent supporting member as shown in Fig. 4, to the limit permitted by the set collar **36**.

The locking pins **34** operate in pairs. That is to say, the pins **34** which are located in axial alignment with each other are controlled by one of the seats **27** whereas the opposite axially aligned pair are controlled by the other seat. As best shown in Figs. 1 and 4 the inner ends of the pins **34** are drilled as indicated at **38** to receive the

end of a cable 39. A set screw 41 serves to lock the end of the cable in the drilled opening. The cables 39 from the axially aligned pairs of locking pins pass through suitable holes in the tubes 12 and 13 and connect as at 42 to rods 43 which are freely slidable in the tubes. The rods 43 pass through the ends of the respective tubes 12 or 13 and are secured to the ends of the seat axles 23 by means of set screws 44 as more particularly illustrated in Figs. 5 and 6. It will be seen that when a passenger is in the lowermost seat, pull is applied to the rods 43, in turn pulling on the respective cables 39. This moves the pins 34 inwardly against the force of their associated spring 37. At the same time, due to the movement of the ends of the axles 23 in the oval members 22, the uppermost seat has moved downwardly, whereupon no tension is applied to the then upper sets of rods 43 and the associated pair of pins 34 are biased outwardly under the action of their associated springs 37.

The outward movement of the pins 34 is used to lock the swing by the means now to be described. Welded to the upper ends of the supporting columns 10 and 11 are plates 46. The plates are eccentrically disposed relative to the main axle 18 so that the vertical side edge 47 thereof lies closer to the center line of the opening for the axle 18 than the opposite vertical edge as clearly illustrated in Fig. 7. Except for the offset relation of edge 47, plate 46 is wide enough and long enough to be engaged by the pins 34 as they rotate in their paths about the main axle 18. The object in this construction is that whenever the pins 34 controlled by the lowermost seat are permitted to move outwardly, as when the passenger leaves the lowermost seat, these pins project outwardly in the path of the vertical edges 47 and engage said edges 47 after a relatively small angle of rotation from the true vertical position, thus locking the swing S against further rotation. However, if the passenger remains in the lower seat the pins controlled thereby will be held retracted so that they pass over the edges 47 without contacting the same. When the seats reach the uppermost position and move downwardly relative to the members 22, thus releasing the pull on the cables 39, springs 37 move the pins 34 outwardly. These pins, however, merely slide on the surface of the plates 46 and are ineffective to lock the swing. Therefore, so long as the passengers remain in the seats the swing S is free to rotate. However, whenever the lower passenger leaves his seat the pins 34 controlled by the said lower seat move outwardly, automatically locking the swing. It will be noted that since the pins work in pairs and since there are two of the plates 46, when he swing is locked there is no appreciable twisting of the frame of the swing.

From the foregoing the construction and operation of my improved swing will be readily understood. It will be apparent that I have devised a means which is effective to cause the Ferris wheel to lock when the lowermost passenger leaves the seat. In actual practice I have found my invention to be rugged and practical in every way. In use the passengers seat themselves in the seats, holding to the cross tubes 24. The swing is propelled around the axle 18 by the lowermost passenger pushing upwardly on the ground, causing the swing to rotate.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a swing, a frame supported for rotation in a vertical plane about a substantially horizontal axis, passenger carrying seats adjacent each end of said frame and mounted for rotation in vertical planes relative to said frame, means mounting each of said seats for independent movement toward and from the axis of rotation of the frame, releasable locking means operatively connected to each of said seats and effective to lock the frame against rotation, and means responsive to movement of said seats away from the axis of rotation of said frame to release the locking means.

2. In a swing, a supporting frame, a passenger carrying frame supported for rotation in said supporting frame in a substantially vertical plane, locking pins carried by the rotatable frame, springs urging said pins outwardly into engagement with stationary elements on the supporting frame, passenger carrying seats adjacent the ends of the rotatable frame mounted for movement toward and from the axis of rotation of the frame, and tension members connecting the locking pins to the seats, whereby during rotation of the frame the lowermost seat carrying a passenger withdraws its associated pin from locking position against the force of the associated spring.

3. A swing as defined in claim 2 in which there are two of said pins controlled by each seat, and in which there are two of said stationary elements with which said pins cooperate to lock the frame against rotation.

4. In a child's swing of the type embodying supporting stand members, a rotatable frame pivoted near its longitudinal center on a horizontal axle in turn supported in the stand, and passenger carrying seats supported on cross axles adjacent each end of the frame, the improvements comprising means mounting the seats for movement relative to the frame toward and from the axis of rotation thereof, pairs of axially aligned diametrically disposed locking pins on the frame adjacent the outer ends of the axle inwardly of the associated supporting stand members, tension members connecting the ends of the respective seat axles to aligned pairs of the pins, a stop member on the supporting stand members in the path of said pins when in outward position, and spring means urging the pins outwardly into the path of the stops, said springs being of insufficient strength to hold the pins in outward position when the weight of the passenger is on the lowermost seat of the swing.

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