April 26, 1960 S. W. SHEPHERD 2,934,341

PASSENGER AMUSEMENT RIDE

Filed March 29, 1957 2 Sheets-Sheet 1

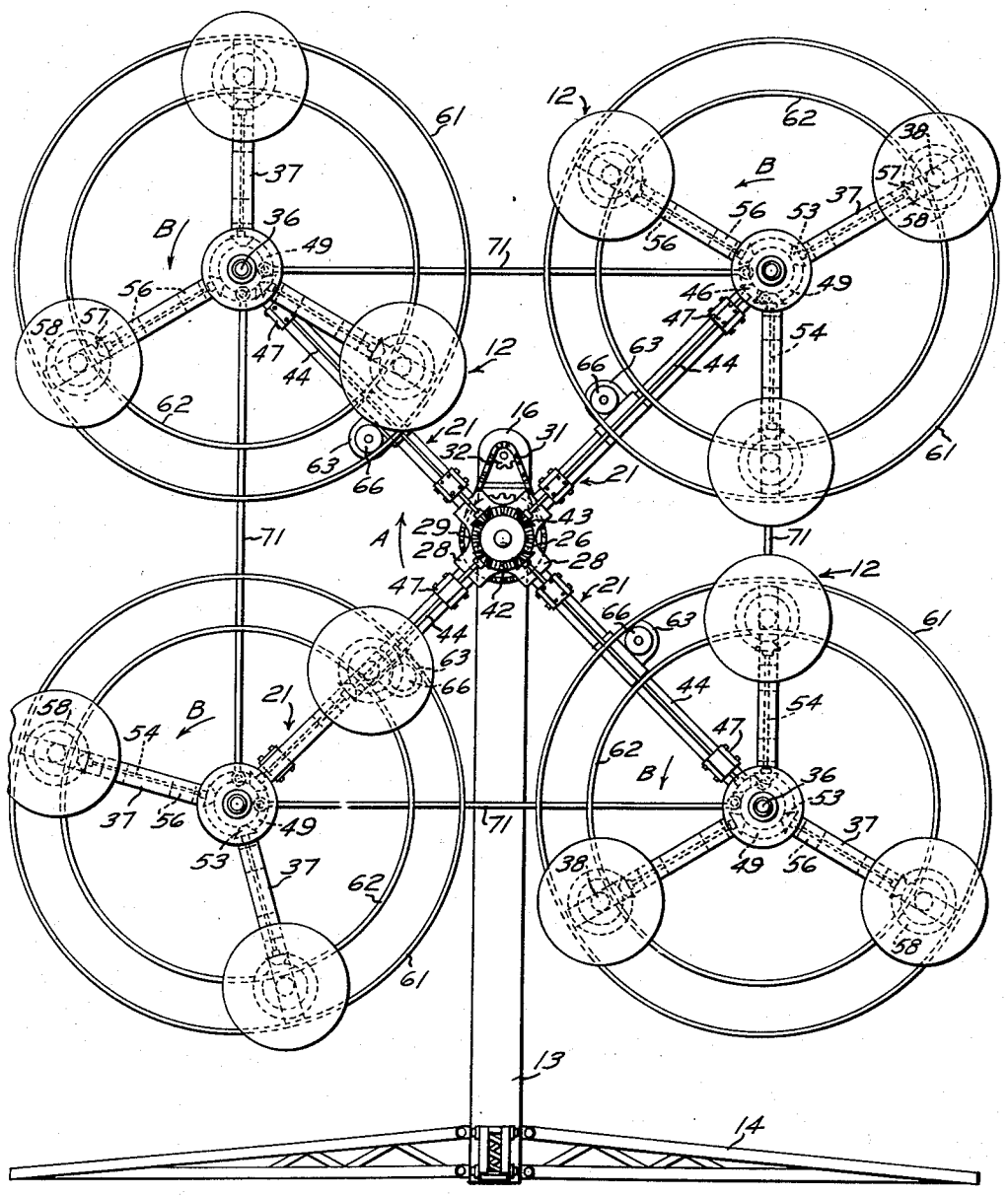

Fig. 1.

INVENTOR
SOLOMON W. SHEPHERD
BY
Gardner & Zimmerman
ATTORNEYS

April 26, 1960 S. W. SHEPHERD 2,934,341

PASSENGER AMUSEMENT RIDE

Filed March 29, 1957 2 Sheets-Sheet 2

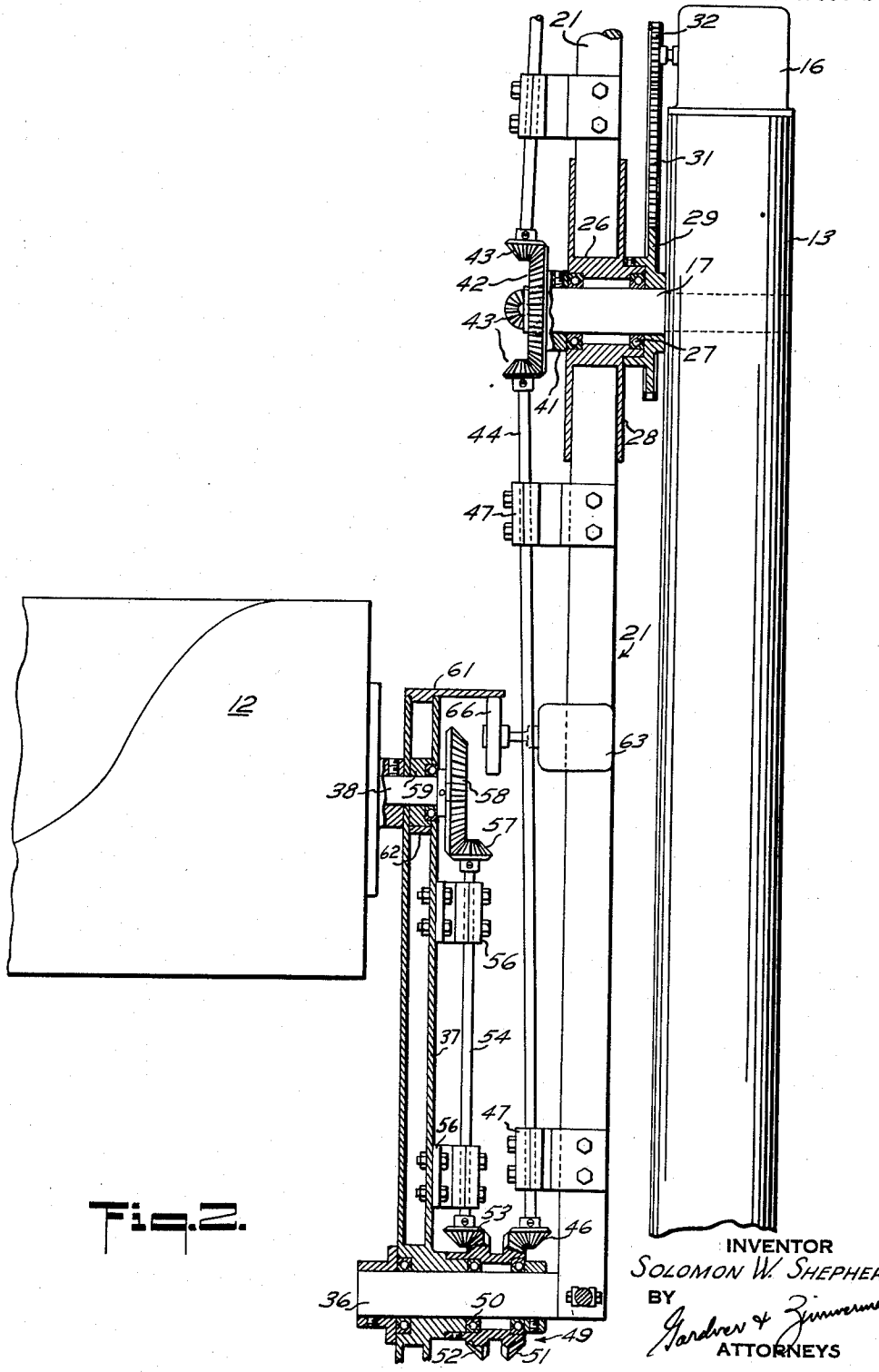

Fig. 2.

INVENTOR
SOLOMON W. SHEPHERD
BY
Gardner & Zimmerman
ATTORNEYS

United States Patent Office 2,934,341 Patented Apr. 26, 1960

2,934,341

PASSENGER AMUSEMENT RIDE

Solomon W. Shepherd, Castro Valley, Calif.

Application March 29, 1957, Serial No. 649,387

3 Claims. (Cl. 272—38)

This invention generally relates to apparatus commonly referred to as amusement rides which are adapted to carry a plurality of riders or passengers.

An object of the present invention is to provide an amusement ride in which the passengers are subjected to movement through a complex orbital path, while at the same time maintaining the passengers in a normal upright position.

Another object of the invention is to provide apparatus of the type described which is constructed so as to permit relatively large forces being applied to the passengers thereby affording psychological thrills without subjecting the passengers to physical discomfort and/or any physical danger.

A further object of my invention is to provide apparatus of the type described in which the passenger carrying cars or baskets are caused to move along a path in a generally vertical plane about a first horizontal axis, while at the same time moving along a contradirectional path in such plane about a second horizontal axis offset from the first axis.

Yet another object of the invention is to provide an amusement ride as above defined in which the individual cars are caused to rotate about their own horizontal supporting axes so as to maintain the cars in an uppermost position while rotating about the previously mentioned first and second horizontal axes.

A still further object of the invention is to provide an amusement ride as hereinabove described in which means are provided for facilitating the positioning of the respective baskets whereby loading and unloading of the passengers will be greatly facilitated.

The invention possesses other objects and features of advantage, some of which, with the foregoing will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

Figure 1 is a front elevational view of the apparatus of the present invention.

Figure 2 is a vertical side elevational view, partly in cross section, of a portion of the apparatus disclosed in Figure 1.

As hereinabove explained, the amusement ride of the present invention is adapted to support a plurality of passengers in a plurality of passenger carrying cars or carriers, generally indicated by the numeral 12. Also, as will be presently described in detail, these cars are supported for movement in a generally vertical plane in such a manner that a complex orbital path is defined since each car is first generally rotatable about its own horizontal mounting axis, is secondly rotatable about another horizontal axis, and finally rotates in an orbital path about still another horizontal axis. By suitable gearing,

the cars will maintain a horizontally upright position notwithstanding the combination of paths of movement and resulting components of motion.

In more detail, the apparatus will be seen to include a heavy vertical supporting column 13 adapted to be mounted on the ground or similar surface by means of a plurality of braces 14 which may be bolted or otherwise secured to the ground. The braces 14 preferably extend radially from the lower end of the column 13 and may be detachably secured thereto for ease in erecting and dismantling the entire apparatus.

The column 13 may be formed of any suitable material and is provided at its upper end with a suitable drive mechanism, here shown as a motor 16, such motor providing the driving power for the unit as will be hereinafter explained in detail. Adjacent the upper end of the column or post 13 is a horizontally extending stub shaft 17 which is fixedly secured to the post and extends outwardly therefrom a sufficient distance to support a plurality of arms 21. While four of such arms are indicated in the drawings, it will be appreciated that a lesser or greater number of such arms may be utilized without departing from the scope of the present invention. However, it will be noted that the arms are generally equally circumferentially spaced about the shaft 17 so that the distal ends of the arms define a circle in a vertical plane having the stub shaft as its center. It will be appreciated that if the arms are mounted for rotation with or about the shaft 17, any objects carried by the arms would be subjected to rotation in a vertical plane about the shaft 17 and actually, the present apparatus provides such movement of the cars. However, it will also be later explained that this is only one of the motions imparted to the cars since the latter are only indirectly connected to and actuated by the movement of the arms.

As will be evident from the drawings, a collar 26 is mounted on the shaft 17 for rotation thereabout through the use of suitable bearings 27 interposed between the inner peripheral surface of the collar and the outer surface of the shaft. Also it will be seen that the collar 26 is provided with a plurality of radially extending tubular extensions 28 whereby one of the arms 21 may be operatively positioned in and secured to the respective extensions in any suitable manner. To provide for rotation of the sleeve 26 and consequently of the arms, a portion of the collar is secured to a sprocket 29, the latter being driven by a chain 31 which engages a sprocket 32 which is driven by the motor 16. In this manner, actuation of the driving motor 16 will effect a rotation of the arms about the stub shaft 17 as an axis of rotation.

The distal end of each of the respective arms 21 is provided with a cylindrical stub shaft or extension 36 disposed generally normal to the longitudinal axis of the arm and then, disposed in parallel relationship to the respective arms and rotatably journalled on the shaft 36 in a manner to be hereinafter described, are auxiliary or secondary arms, generally designated by the numeral 37. As here illustrated, each of the main arms 21 is provided with three auxiliary arms 37 equally circumferentially spaced about the shaft 36, and since such auxiliary arms 37 are rotatable about the shaft 36, the latter comprises a secondary axis of rotation for the cars 12. As will be best seen in Figure 2 of the drawings, the cars 12 are mounted on horizontal shafts 38 which are carried by the respective auxiliary arms 37.

Means are provided for transmitting power from the main drive motor 16 to the auxiliary arms 37 so as to permit their rotation about the second rotational axis 36. As here shown, an extension 41 of shaft 17 is provided with a stationary main bevel drive gear 42. This

drive gear 42 is operatively engaged with four bevel gears 43, one of the latter being operatively associated with each of the main arms 21. With reference to each of the arm 21 assemblies, its driven bevel gear 43 is mounted at the innermost end of a rod 44 whose outermost end is provided with a similar gear 46. Suitable bearing supports 47 are provided at convenient locations around the rod 44 and may be attached to the respective main arms 21. The gear 46 is in operative engagement with a bevel gear member 49 which is journalled on the member 36 through means of suitable bearings 50. The member 49 is actually provided with a pair of oppositely directed bevel gears 51 and 52 respectively, the former being in engagement with the gear 46 and the latter being in engagement with another bevel gear 53 carried at the outer end of a rod 54 which is suitably journalled relative to the auxiliary arms 37 by bearing brackets 56. The rod 54 is disposed generally parallel to the drive rod 44 and at the upper end thereof is provided with a bevel gear 57 which is in engagement with a gear 58 carried on a collar 59 rotatably journalled on the basket shaft 38.

From the foregoing description, it is believed that the operation of the apparatus may be more readily understood. First, assuming the drive motor is operating, the latter will, through the chain drive 31 impart a rotation to the collar 26, causing a rotation of the arms 21 around the stub shaft 17, such as in the direction of the arrow designated A in Figure 1. At the same time, the fixed gear 42 through the gear train carried on the members 44, 46 and 51, will effect a rotation of the arms 37 about the stub shaft 36. This movement of the arms is preferably in a contrary sense of rotation to that of the main arms and is generally indicated by the directional arrows B in Figure 1 of the drawings. Finally, the gears 52, 53, 57 and 58 are so arranged to drive the basket independent of arm rotation so that the car will remain uppermost irrespective of arm rotation. In this manner it will be clear that actually three orbits of rotation are defined. First, a main rotation about the shaft 17, second, a rotation about shaft 36, and finally, a rotation about the shaft 38. The components of these rotational paths results in a compound and rather complex pattern but one which will afford a great psychological thrill to a passenger in the carriers 12.

As an additional feature of the invention, it will be noted that the arms 37 are provided at their distal ends with an outer ring 61 and spaced inwardly therefrom is an inner ring 62. Such rings serve to act as an additional stabilizer to the members and the ring 61 may be utilized in driving the arms 37 independently of the main arms 21 so that an individual passenger carrier may be brought to a lowermost position such as for loading or unloading passengers. This may be accomplished by providing an auxiliary motor 63 on one of the arms 37 in each set, the motor 63 being provided with a friction drive wheel 66 which is in engagement with the inner peripheral surface of ring 61. To further tie the elements together, a plurality of tie rods 71 are utilized, such rods being connected to the arms 21 adjacent the distal ends thereof.

It is believed that the foregoing description of the details of construction and mode of operation will immediately indicate the novel form and arrangement of the apparatus of the instant invention.

What is claimed is:

1. An amusement ride comprising a generally vertically standard, a horizontally disposed member extending generally normal to and mounted on said standard adjacent the upper end thereof, a first arm mounted on said member, means for rotating said first arm about said member as an axis, a second arm substantially parallel to said first arm, means mounting an end of said second arm on said first arm adjacent the distal end of the latter, means for rotating said second arm about said mounting means in a plane generally parallel to and spaced from the plane of rotation of said first arm, a passenger carrying member operatively supported adjacent the other end of said second arm, and drive means operatively connected to said passenger carrying member for rotating the latter about an axis parallel to and spaced from the axes of rotation of said first and second arms to maintain said passenger carrying member in a substantially upright position.

2. A passenger carrying amusement ride apparatus comprising a vertically disposed support standard, a plurality of arms rotatably journalled on said support member as a first horizontal axis for rotation in a generally vertical plane, a drive mechanism, means operatively connecting said drive mechanism to said arms for rotating the latter, each of said arms having a normally disposed extension adjacent the distal end thereof each defining a second horizontal axis, a plurality of secondary arms rotatably journalled on each of said extensions, each of said secondary arms having a horizontally disposed carrier supporting element defining a third horizontal axis, a passenger carrier operatively mounted on each of said elements, means for rotating said secondary arms about said extensions, and means for rotating said carriers about said elements operatively connected to said secondary arms rotating means for synchronized movement therewith.

3. Apparatus of the character described comprising a vertical standard, said standard having a horizontal extension adjacent the upper end thereof, a plurality of arms journalled for rotation on said extension in a generally vertical plane, means for rotating said arms about said extension, each of said arms adjacent the distal end thereof having a secondary arm supporting element, a plurality of secondary arms rotatably journalled on each of said elements for rotation in a generally vertical plane, each of said secondary arms being provided with horizontally disposed carrier support means adjacent the distal ends thereof, a passenger carrier journalled on each of said support means, said arms being provided with a drive gear, gear means interconnecting said drive gear and said secondary arm supporting element for rotation of the latter and said secondary arms, and gear means interconnecting said carrier and said supporting element for effecting rotation of said carrier about a horizontal axis independent of the rotation of said secondary arms.

References Cited in the file of this patent

UNITED STATES PATENTS

853,155	Boardman	May 7, 1907
900,820	Becker	Oct. 13, 1908
2,437,000	McBride	Mar. 2, 1948
2,689,126	Eyerly	Sept. 14, 1954
2,800,328	Courtney	July 23, 1957