

No. 843,406.

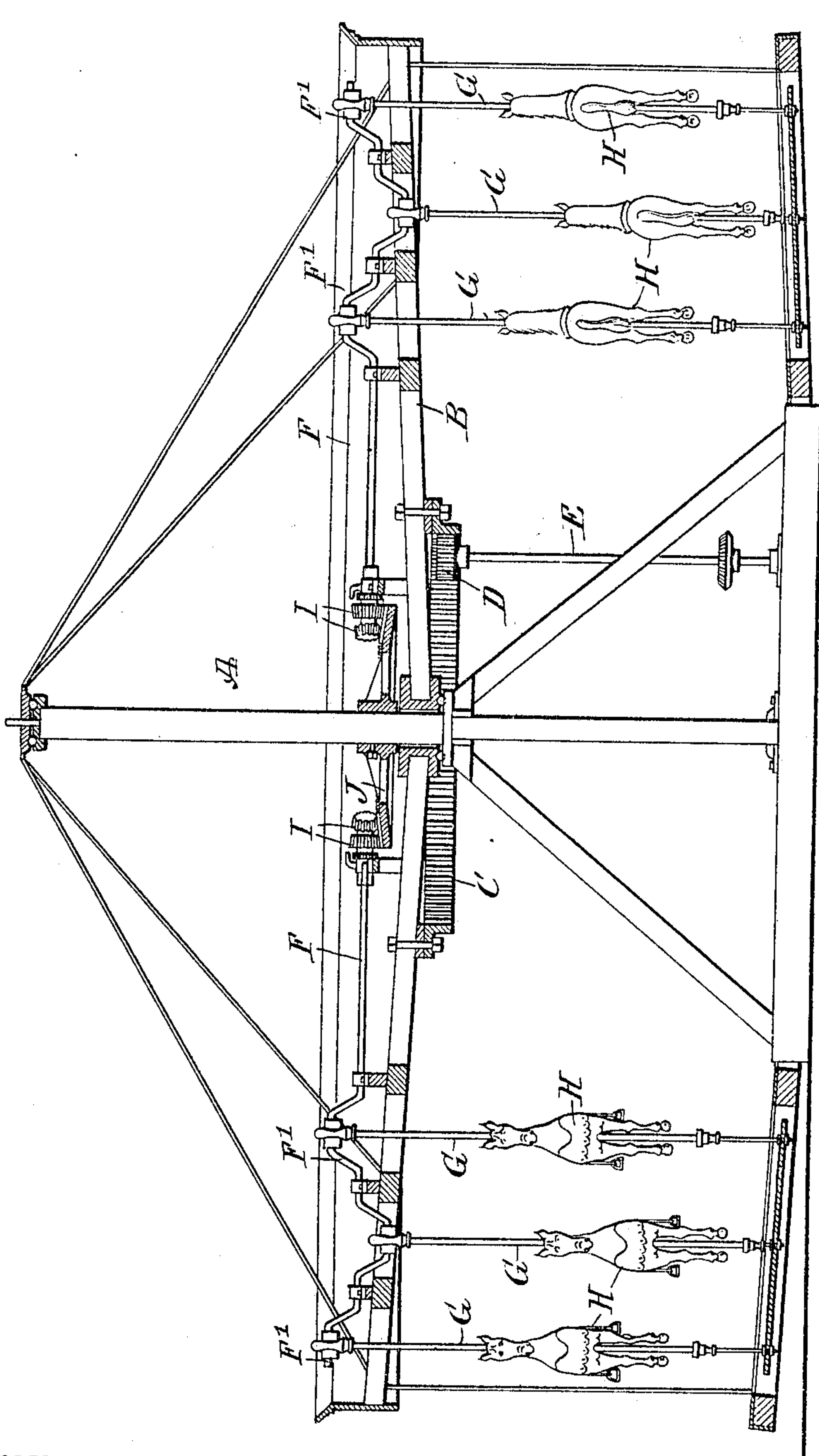
PATENTED FEB. 5, 1907.

W. F. MANGELS.
GEAR FOR MERRY-GO-ROUNDS.

APPLICATION FILED APR. 10, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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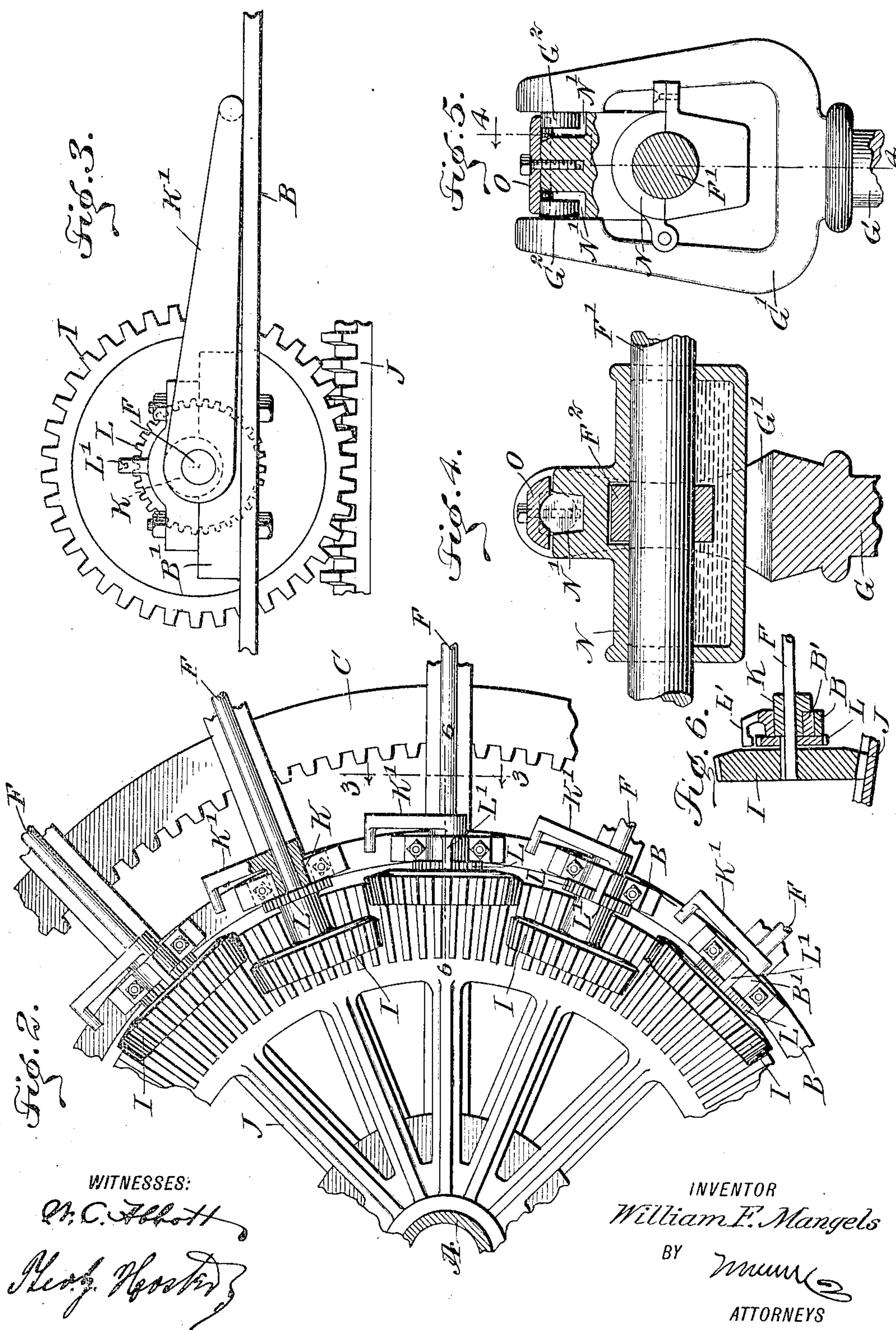
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

WILLIAM F. MANGELS, OF NEW YORK, N. Y.

GEAR FOR MERRY-GO-ROUNDS.

No. 843,406.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed April 10, 1905. Serial No. 254,689.

To all whom it may concern:

Be it known that I, WILLIAM F. MANGELS, a citizen of the United States, and a resident of the city of New York, Coney Island, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Gear for Merry-Go-Rounds, of which the following is a full, clear, and exact description.

The invention relates to merry-go-rounds in which crank-shafts are employed for imparting an up-and-down movement to the horses or other seats.

The object of the invention is to provide a new and improved gear for merry-go-rounds arranged to accommodate any desired number of crank-shafts and to drive the same directly and at the same speed from the main gear-wheel, thus obviating all compounding of the gear and rendering the merry-go-round simpler and more durable in construction and more effective in operation.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is an enlarged plan view of part of the same. Fig. 3 is a cross-section of the same on the line 3 3 of Fig. 2. Fig. 4 is a section on the line 4 4 of Fig. 5. Fig. 5 is an end view of the head of one of the seat-supports in position on the crank-arm of the crank-shaft, the crank-shaft being shown in section; and Fig. 6 is a section on the line 6 6 of Fig. 2.

On the central post A of the merry-go-round is mounted to turn a frame B, provided with the usual pin or lantern wheel C, in which meshes a pinion D, secured on the vertically-disposed shaft E, connected with and driven by an engine or other motor for rotating the frame B in the usual manner. On the frame B are arranged radially-disposed crank-shafts F, having at or near their outer ends the usual cranks F', on which are hung supports G for the horses or other seats H. On the inner ends of the crank-shafts F are secured bevel-pinions I in mesh with a large bevel gear-wheel J, secured at its hub to the central post A, so that when the frame B

is turned the crank-shafts F are carried bodily along and are rotated by their pinions I meshing with the fixed gear-wheel J. The rotary motion of the crank-shafts F causes an up-and-down or rocking movement of the seats H.

In order to permit of driving each crank-shaft F directly from the fixed bevel gear-wheel J without the use of intermediate cumbersome gearing, it is necessary to make the face of the fixed bevel gear-wheel J sufficiently wide to accommodate adjacent pinions I, the latter being arranged in staggered form and overlapping each other more or less, according to the number of crank-shafts F employed.

It is understood that for large-sized merry-go-rounds a large number of radial crank-arms F are necessary, and in order to drive all these crank-shafts directly from the gear-wheel J by the pinion I it is necessary to overlap adjacent pinions considerably more than is required for smaller-sized merry-go-rounds having a less number of crank-shafts F. The innermost pinions I are less in diameter than the outermost pinions to insure a proper meshing of the pinions with the fixed gear-wheel J and to maintain a uniform speed of all the crank-shafts F. Thus by reference to Fig. 2 it will be seen that the largest pitch diameter of an innermost pinion I is less than the smallest pitch diameter of the adjacent outermost pinion I; but the same ratio of speed between the fixed gear-wheel J and the pinions I is maintained.

Any one of the crank-shafts F can be thrown out of action, and for this purpose the inner end of each crank-shaft is mounted to turn in an eccentric bushing K, journaled in a suitable bearing B', secured to the frame B, and on the said bushing K is secured an arm or handle K', adapted to be taken hold of by the operator to swing the same from a normal position over to a diametrically opposite position, so as to cause the bushing K to turn in its bearing B', and consequently lift the inner end of the crank-shaft F to move the corresponding pinion I out of mesh with the large gear-wheel J.

On the crank-shaft F, adjacent to the bearing B', is secured a toothed wheel L, adapted to move in engagement with a locking-pin L', secured to or forming part of the bearing B'. Normally the toothed wheel L is out of engagement with the locking-pin L'—that is, at the time the pinion I is in mesh with the

gear-wheel J; but when the shaft F is raised by the action of the bushing K, as above explained, then the toothed gear-wheel L moves in engagement with the locking-pin L', and consequently the crank-shaft F is locked against turning at the time its pinion I is out of mesh with the gear-wheel J.

By the arrangement described the crank-shaft F can be rendered inactive whenever it is desired to do so, so that the seats carried by the crank-shaft do not move up and down, but travel around with the frame B.

If desired, every other crank-shaft may be thrown out of action, so that an up-and-down moving seat is followed by a stationary seat and the latter followed by an up-and-down moving seat, and so on throughout the series.

In order to permit a convenient connecting and disconnecting of the supports G with or from their crank-arms F', the following device is provided, special reference being had to Figs. 4 and 5: The head G' of a support G is in the shape of a fork, provided at its forked members with inwardly-extending lugs G², adapted to engage recesses N', formed in the top of a box N, through which extends the crank-arm F' of a crank-shaft F. The box N is preferably made in two parts, hinged together at one end and having their opposite ends fastened together by a bolt, screw, or like means, as plainly indicated in Fig. 5. A button O is fulcrumed on top of the box N and is adapted to swing with its free ends over the lugs G², so as to hold the same against accidental displacement in the recesses N' of the box N.

On the crank-shaft F', within the box N, is secured or formed a collar F², fitting a correspondingly-shaped recess in the upper part of the box N, so as to hold the latter from sliding on the crank-arm F' in the direction of the length of the crank-shaft F. The lower portion of the box N is made hollow to form a well for the lubricant, which by the construction described is not liable to work out of the box and drop down on the occupant of a seat.

Whenever it is desired to disengage a support G from its corresponding crank-arm F', then it is only necessary for the operator to swing the button O out of engagement with the lugs G², and then the operator, by lifting the support G a short distance, causes the disengagement of the lugs G² from the recesses N', and then the support G can be dropped downward to disengage the head G' completely from the crank-shaft F, as the distance between the inner ends of the lugs G² is somewhat more than the diameter of the crank-shaft F. If it is desired to disconnect the box N from the crank-arm F', it is only necessary to open the box for the convenient removal of the crank-arm.

From the foregoing it will be seen that each

crank-shaft F is directly driven from the main gear-wheel, and hence it is not necessary to compound the gearing, as is so frequently the case with merry-go-rounds heretofore constructed. It will also be noticed that any one of the crank-shafts can be rendered inactive so as to prevent the seat or seats carried by the crank-shaft from moving up and down, it being understood that such inactive crank-shaft is locked against turning movement by the device above described, and shown in the drawings.

It is understood that instead of having a single fixed gear-wheel J of a wide face to accommodate two adjacent pinions I at the outer and inner face portions the main gear-wheel J may be arranged in two or more concentric sections; but in either case the same speed of the crank-shafts F is maintained.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A merry-go-round provided with a revolving frame, seats associated with the frame, a fixed gear-wheel, and crank-shafts journaled on the frame carrying the seats, each crank-shaft having a pinion in mesh with the said fixed gear-wheel, the alternate crank-shafts being of greater length than the intermediate crank-shafts, whereby to stagger the pinions with respect to the gear-wheel, and the pinions on the alternate shafts being of less diameter than the pinions on the intermediate shafts.

2. A merry-go-round provided with a revolving frame, seats associated with the frame, a fixed gear-wheel, and crank-shafts journaled on the said frame and carrying the seats, each crank-shaft having a pinion in mesh with the said fixed gear-wheel, the face of the gear-wheel being of a breadth sufficient to accommodate adjacent pinions at shorter and longer radii, the pinions nearest the center of the gear-wheel being of less diameter than the pinions near the periphery thereof.

3. A merry-go-round provided with a revolving frame, seats associated with the frame, a fixed gear-wheel, and crank-shafts journaled on the said frame and carrying the seats, each crank-shaft having a pinion in mesh with the said fixed gear-wheel, the largest pitch diameter of one pinion being less than the smallest pitch diameter of an adjacent pinion.

4. A merry-go-round provided with a revoluble frame, a fixed gear-wheel, a crank-shaft for carrying a seat, a pinion on the crank-shaft meshing with the fixed gear-wheel, an eccentric bushing for supporting the crank-shaft, and manually-controlled means for partially rotating the bushing to move the pinion in and out of mesh with the fixed gear-wheel.

5. A merry-go-round provided with a revoluble frame, a fixed gear-wheel, a crank-

shaft for carrying a seat, a pinion on the crank-shaft meshing with the fixed gear-wheel, an eccentric bushing for supporting the shaft, manually-controlled means for manipulating the bushing to move the pinion in and out of mesh with the fixed gear-wheel, and a locking device for the crank-shaft to lock the same against rotation when the pinion is out of mesh with the fixed gear-wheel.

6. A merry-go-round provided with a revoluble frame, a fixed gear-wheel, a crank-shaft for carrying a seat, a pinion on the crank-shaft meshing with the fixed gear-wheel, an eccentric bushing for supporting the crank-shaft, means for manipulating the bushing to move the pinion in and out of mesh with the fixed gear-wheel, a locking gear-wheel on the crank-shaft, and a fixed locking-pin for engaging the locking gear-wheel for locking the crank-shaft against rotation when the pinion is moved out of mesh with the fixed gear-wheel.

7. A merry-go-round provided with a revoluble frame, seats associated with the frame, a fixed gear-wheel, a crank-shaft carrying a seat, a pinion on the crank-shaft, adapted to mesh with the said fixed gear-wheel, an eccentric bushing for the crank-shaft to turn in, a bearing for the said bushing, fixed on the said frame, and an arm on the said bushing, for turning it in the said bearing, to move the pinion in or out of mesh with the fixed gear-wheel.

8. A merry-go-round provided with a revoluble frame, seats associated with the frame, a fixed gear-wheel, a crank-shaft carrying a seat, a pinion on the crank-shaft, adapted to mesh with the said fixed gear-wheel, an eccentric bushing for the crank-shaft to turn in, a bearing for the said bushing, fixed on the said frame, an arm on the said bushing, for turning it in the said bearing, to move the pinion in or out of mesh with the fixed gear-wheel,

a locking gear-wheel on the said crank-shaft, and a locking-pin fixed on the said bearing and adapted to be engaged by the said locking gear-wheel at the time the said pinion is moved out of mesh with the fixed gear-wheel on turning the eccentric bushing.

9. A merry-go-round provided with a crank-shaft, a support for a seat, hung on the crank-arm of the said crank-shaft, the said support having a fork, the members of which are provided with inwardly-extending lugs, and a journal-box engaging the crank-arm and having recesses for the reception of the said lugs.

10. A merry-go-round provided with a crank-shaft, a support for a seat, hung on the crank-arm of the said crank-shaft, the said support having a fork, the members of which are provided with inwardly-extending lugs, a journal-box engaging the crank-arm and having recesses for the reception of the said lugs, and a locking means for removably locking the lugs in position on the said journal-box.

11. A merry-go-round provided with a crank-shaft, a support for a seat, hung on the crank-arm of the said crank-shaft, the said support having a fork, the members of which are provided with inwardly-extending lugs, a journal-box engaging the crank-arm and having recesses for the reception of the said lugs, and a button mounted to turn on the said box and adapted to extend over the said lugs, to hold the latter in place in the recesses of the journal-box.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM F. MANGELS.

Witnesses:

THEO. G. HOSTER,

EVERARD BOLTON MARSHALL.