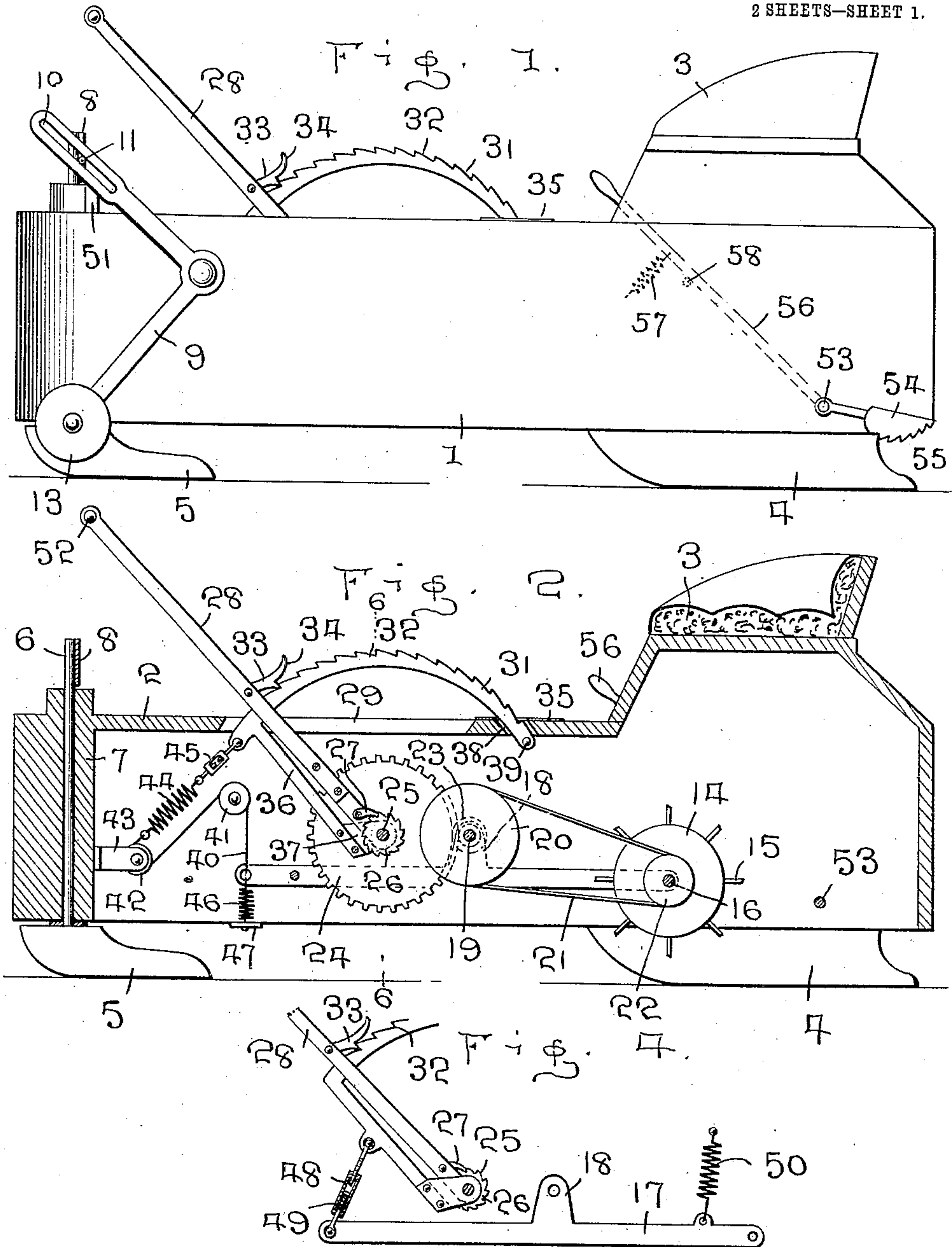


J. A. MUSGROVE, JR.
COASTER.
APPLICATION FILED OCT. 16, 1908.

917,640.

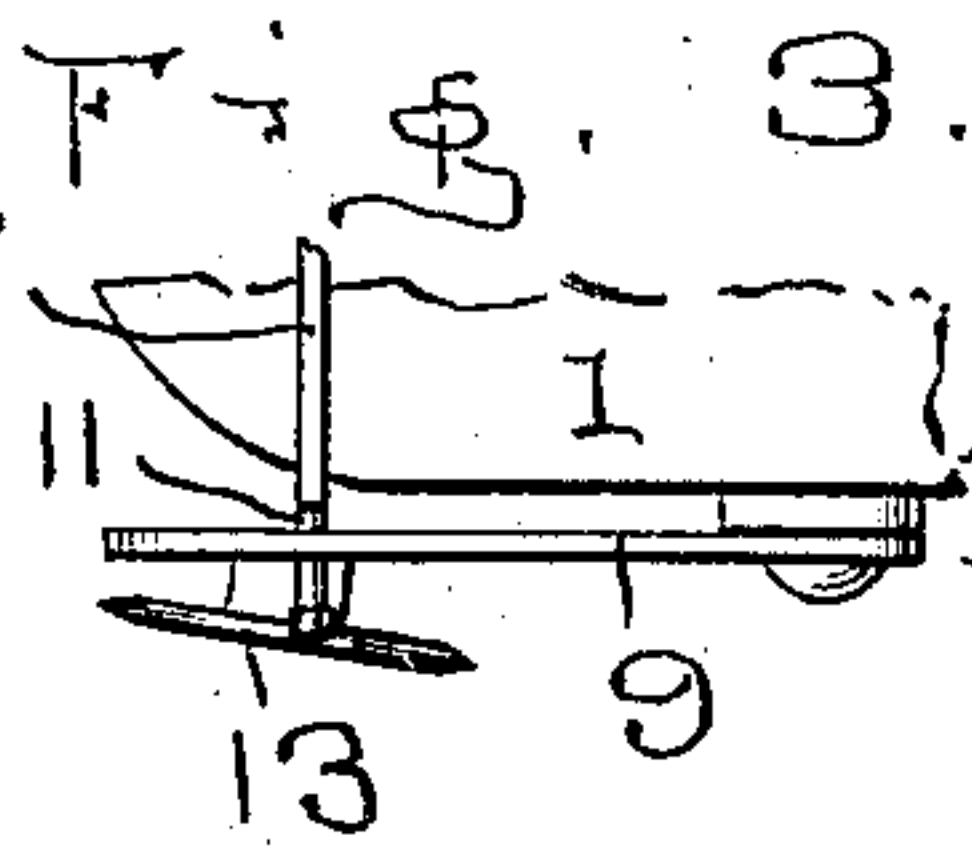
Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 5.

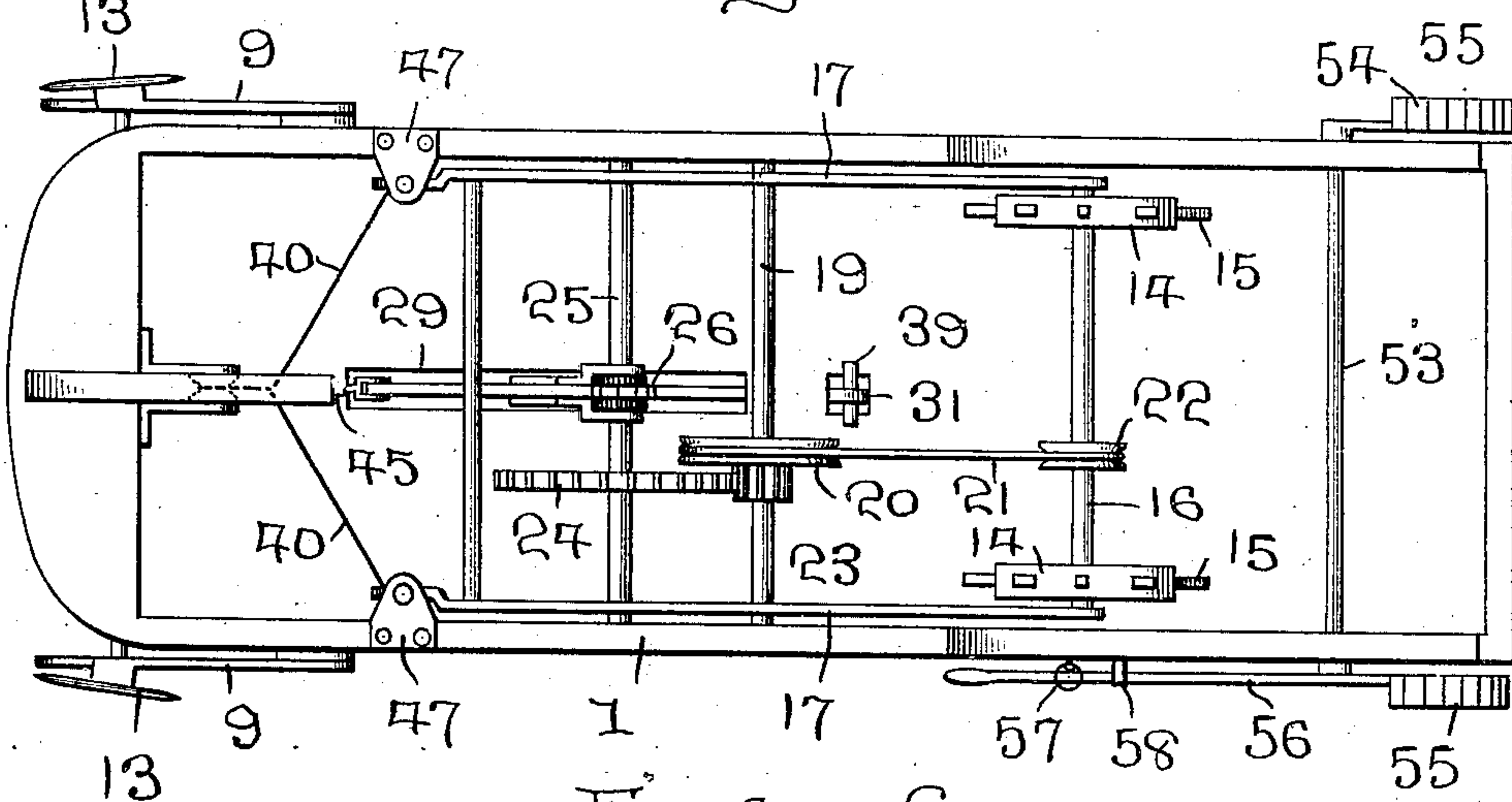
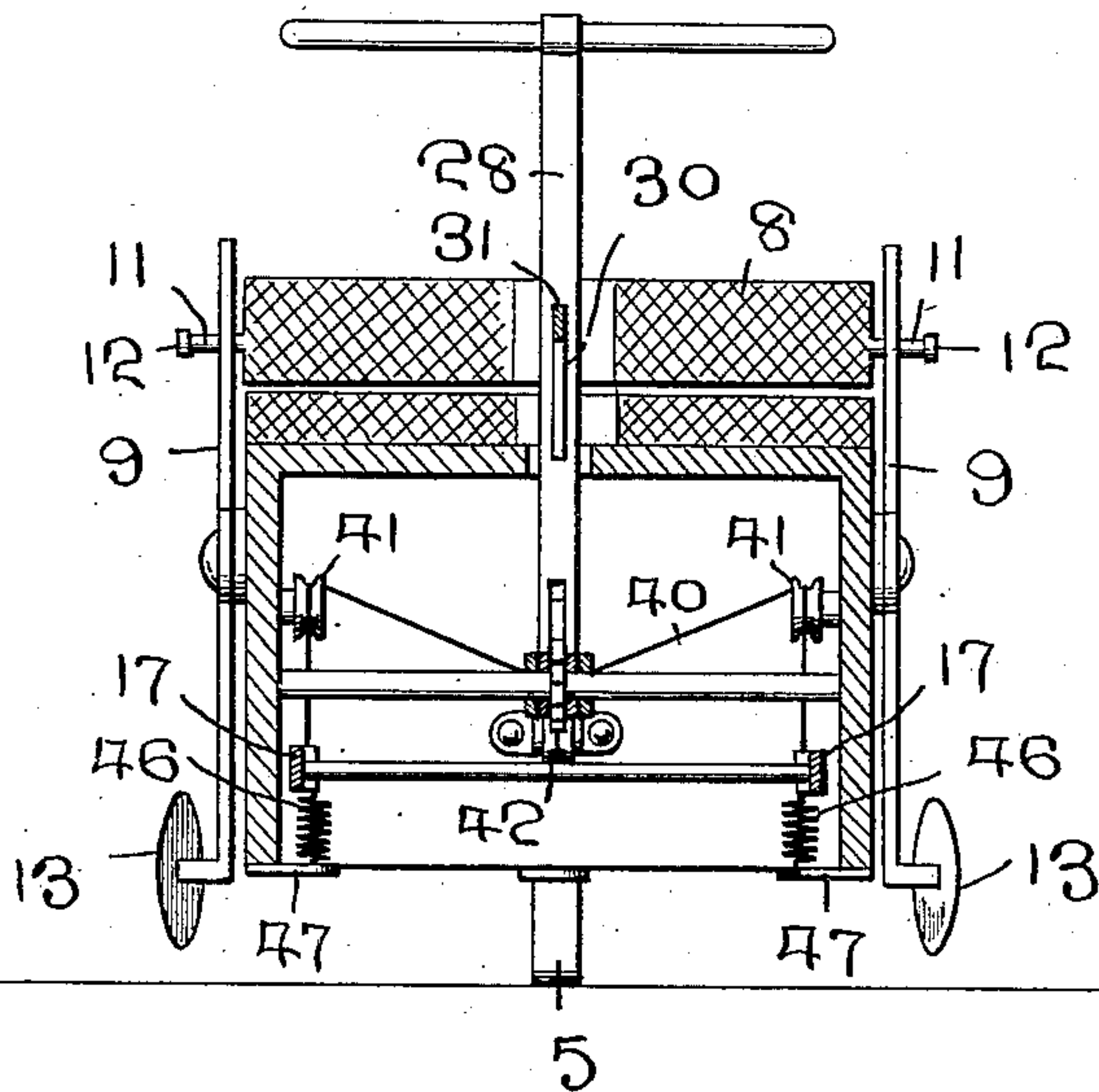


Fig. 6



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UNITED STATES PATENT OFFICE.

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COASTER.

No. 917,640.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed October 16, 1908. Serial No. 458,137.

To all whom it may concern:

Be it known that I, JAMES A. MUSGROVE, Jr., a citizen of the United States, residing at Red House, in the county of Charlotte and State of Virginia, have invented certain new and useful Improvements in Coasters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in coasters and more particularly to that class adapted to be operated on level surfaces and my object is to provide means for manually propelling the coaster.

A further object is to provide means for intermittently raising and lowering the propelling medium when power is applied to propel the coaster.

A further object is to provide means for automatically releasing the parts of the power-applying mechanism, whereby the propelling parts of the device may be returned to their initial positions and a still further object is to provide suitable guiding mechanism for the coaster.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a side elevation of my improved coaster ready to be applied to use. Fig. 2 is a central, vertical, longitudinal sectional view through the coaster. Fig. 3 is a detail elevation of a portion of the guiding mechanism. Fig. 4 is a detail elevation of a slightly modified form of power-applying mechanism. Fig. 5 is a bottom plan view of the coaster, and, Fig. 6 is a transverse vertical sectional view through the coaster, as seen on line 6—6, Fig. 2.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the frame of my improved coaster, which is preferably oblong and hollow, the lower edge of the frame being open, while the upper edge is provided with a covering 2, the rear portion of the covering being extended upwardly and formed into a seat 3.

The prime object of my invention is to provide means for propelling the coaster over snow or ice or level surfaces and to this end the frame 1 is mounted upon runners 4 at the

rear of the frame 1 and at the edges thereof and a guiding runner 5 at the forward end of the frame, the guiding runner 5 having an upwardly extending stem 6, which passes through a socket 7 in the forward end of the frame. The stem 6 is of sufficient length to extend entirely through the frame 1 and has secured to its upper end a cross arm 8, by which means the stem 6 may be rotated and the runner 5 swung laterally to guide the coaster. The inner face of the cross arm 8 is preferably milled and is adapted to be engaged by the feet of the occupant of the seat 3 and in this manner, moved back and forth to guide the runner 5. The guiding of the coaster is further controlled by pivotally securing to the side walls of the frame 1, bell crank levers 9, the upper arms of the levers having elongated slots 10 adapted to receive pins 11 carried at the ends of the cross arm 8, the outer ends of said pins being provided with heads 12, which prevent the pins from leaving the slots when the cross arm is operated to change the course of the coaster.

The downwardly extending arms of the bell crank levers have secured to their ends, disks 13, which disks are set at an angle to the longitudinal trend of the frame 1, the forward portion of the disks being closer to the frame and in the event of one of the disks being lowered into engagement with the surface over which the coaster is passing, the inclination of the disk will quickly change the course of the vehicle. The bell crank levers are so arranged that when the cross arm 8 is extended in a straight line across the frame 1, both disks will be out of engagement with the surface over which the coaster is passing, but when the cross arm is rotated to change the course of the coaster, the forward movement of one end of the cross arm will lower one of the disks and elevate the opposite disk, thereby insuring that but one of the disks will engage the surface at a time.

When the coaster is used on a hillside, it will descend by gravity, but in order to propel the coaster on a level surface, I have provided propeller wheels 14 having around their peripheral surfaces, a plurality of spikes or teeth 15, which teeth will engage the surface over which the coaster is passing and cause the coaster to move forwardly when the propeller wheels are rotated. The propeller wheels are mounted on a shaft 16, the ends of which shaft are mounted in a tilting frame

17, the side bars of said frame having upwardly extending ears 18 adjacent their longitudinal centers, through which extends a driving shaft 19, the ends of said driving shaft 5 being rotatably mounted in the walls of the frame 1.

The driving shaft 19 has secured thereto a pulley 20, around which extends a belt 21, said belt also extending around a smaller 10 pulley 22 fixed to the shaft 16, and when power is applied to the shaft 19, the shaft 16 and propellers mounted thereon will be likewise rotated.

Power is applied to the driving shaft 19 by 15 placing thereon a pinion 23, with which meshes a driving cog wheel 24, said driving cog being fixed to a shaft 25, the ends of which shaft find bearings in the walls of the frame 1. The shaft 25 also has mounted 20 thereon a ratchet 26, with which is adapted to engage a pawl 27 carried between the bifurcated ends of a propelling bar 28, the lower ends of the bifurcated portion of the propelling bar being pivotally mounted on the shaft 25 at opposite sides of the ratchet wheel.

The propelling bar 28 is extended upwardly through an opening 29 in the cover 2 and is provided with a slot 30, through which extends a curved rack 31, the upper edge of 30 the rack being provided with teeth 32, with which is adapted to engage a latch 33 carried by the bar 28, the free end of the latch terminating in a curved finger 34, which, when the propeller bar is moved rearwardly, will 35 engage a plate 35 on the cover 2 and release the latch from the teeth on the rack. The rack 31 is supported at one end by means of a standard 36, the lower end of said standard having ears 37, which engage and rotate on the 40 shaft 25, the free end of the rack 31 being so arranged that it will extend through a recess 38 in the cover 2, the plate 35 being located over the recess 38 and also provided with an opening through which the rack extends, the 45 forward swinging movement of the rack being limited by extending a pin 39 through the free end of the rack. The movement of the curved rack is employed for rocking the frame 17, whereby the propelling wheels will 50 be intermittently lowered into engagement with the surface over which the coaster is passing and to readily accomplish this result, the bifurcated ends of a cable 40 are secured to the forward portion of the frame 17 and 55 extended thence over pulleys 41 on the side walls of the frame 1, thence around a sheave 42 carried in a bracket 43 at the forward end of the frame 1, where it is secured to a spring 44, the opposite end of said spring being secured to a turn buckle 45, which turn buckle 60 is in turn secured to the forward end of the rack 31 and it will be readily seen that when the latch 33 is in engagement with one of the teeth on the curved rack and the bar 28 is 65 moved rearwardly, a pull will be given the

cable 40 and the forward end of the frame 17 elevated, which will result in lowering the opposite end of the frame and extending the spikes on the propeller wheels into engagement with the surface over which the coaster 70 is passing. The frame 17 is returned to its normal position as soon as the latch 33 has been released from the teeth on the rack bar by securing one end of a spring 46 to the frame 17 and the opposite end thereof to a keeper 47 75 fastened at the lower edge of the frame 1 and as the spring 46 extends downwardly from the frame 17, an upward movement of the forward end of the frame 17 will expand the spring 46 and increase the tension thereof, 80 said increased tension serving to return the frame 17 to its initial position, when the curved rack is released.

In Fig. 4 of the drawings, I have shown a slightly modified means for operating the 85 frame 17 and in this instance the cable is dispensed with and the frame connected direct to the standard 36 through the medium of a turn buckle 48, one stem of the turn buckle having a spring 49 secured thereto, which 90 will serve to eliminate jar from the frame and rack, as does the spring 44 and in this construction, the frame is returned to its initial position by securing a spring 50 to that end 95 of the frame 17 carrying the propelling wheels, the spring 50 being extended upwardly from said frame and secured to the wall of the frame 1.

In operation, the occupant of the seat extends the soles of his feet against the ends of 100 the cross arm 8, his heels resting against a block 51 on the cover 2 and when in this position, he grasps the handle bars 52 at the upper end of the propeller bar 28 and draws said bar rearwardly. In view of the fact that the 105 pawl 27 is in engagement with the ratchet wheel 26, the shaft 25 will be rotated and the propeller wheels likewise rapidly rotated through the medium of the gears 23 and 24, the pulleys 20 and 22 and the belt 21. At 110 the time of swinging the bar 28 rearwardly the curved rack 31 will be moved rearwardly in an arc of a circle, and the frame 17 tilted until the spikes on the propeller wheels are in engagement with the surface over which the 115 coaster is traveling. When the propeller bar has reached its rearward stroke, the curved finger 34 at the end of the latch 33, will engage the plate 35 and swing the latch upwardly, whereupon the tension of the springs 120 44 and 46 will immediately return the curved rack to its forward or initial position and at the same time elevate the propeller wheels 14. The occupant of the seat then returns the propeller bar to its forward position and 125 again moves the same rearwardly, thus again lowering the propeller wheels and imparting movement thereto. If it is desired to direct the coaster to the right, the cross arm 8 is rotated by pressing thereon with the left foot, 130

which will result in turning the guiding runner 5 to the right and at the same time lowering the disk 13 on the left side of the frame 1 and in view of the angle at which said disk is disposed, the coaster will be quickly turned to the right and positively held against slipping. If the coaster is to be turned to the left, the right foot is pressed against the cross arm and the runner turned to the left, while the disk at the right of the frame 1 will be lowered.

Extending laterally through the rear portions of the frame 1, is a shaft 53, on the outer ends of which are secured rub blocks 54, the forward edges of said blocks being curved and provided with teeth 55, which teeth are adapted to be lowered into engagement with the surface over which the coaster is passing and stop the forward movement of the coaster, the rub blocks being operated through the medium of a lever 56 secured to one end of the shaft. The lever 56 is normally held in its forward position and thus maintaining the rub blocks above the surface over which the coaster is passing, by means of a spring 57, one end of which spring is secured to the lever and the opposite end to the outer face of the frame 1, the forward swinging movement of said lever being limited by a stop 58.

Although I have shown and described the coaster as mounted upon runners and to be used for coasting on ice or snow, it will be readily understood that the frame 1 may be mounted on wheels and the same mechanism employed for propelling the wheeled coaster. It will further be seen that by the proper manipulation of the bar 28, the speed of the coaster may be readily increased or decreased and while the coaster affords a great deal of amusement, it at the same time causes the occupant of the seat to exercise the muscles of the body in operating the coaster. It will likewise be seen that by mounting the propeller wheels on a tilting frame and bringing them into engagement with the surface over which the coaster is passing only when power is applied to the propellers, they will not drag over the surface when not in use.

What I claim is:

1. In a coaster, the combination with a frame and supporting means therefor; of propellers for the coaster, a tilting frame supporting said propellers, means to normally hold the propellers in an elevated po-

sition and additional means to simultaneously lower and rotate the propellers.

2. In a coaster, the combination with a frame and supporting means therefor; of propelling wheels carried by said frame, means to normally hold the propelling wheels in an elevated position, a curved rack adapted to lower said propeller wheels into engagement with the surface over which the coaster is passing and means to impart movement to the propeller wheels and operate said curved rack simultaneously.

3. In a coaster of the class described, the combination with a frame and supporting means therefor; of a tilting frame, propeller wheels rotatably mounted on said tilting frame, a shaft forwardly of said propeller wheels, driving mechanism extending from said shaft to the propeller wheels, a curved rack pivotally mounted on said shaft, means connecting one end of the curved rack with the tilting frame, whereby when the rack is moved rearwardly, the propellers will be lowered, means to return the tilting frame and rack to their initial positions when released and a propeller bar having means thereon to rotate the shaft and impart movement to the propeller wheels and additional means to engage the curved rack and swing the same rearwardly.

4. In a coaster of the class described, the combination with a frame, supporting means therefor and means to propel the coaster forwardly; of guiding mechanism comprising a stem having means at its lower end to support the forward end of the frame, a cross arm fixed to the upper end of the stem adapted to rotate the stem when pressure is applied to the ends thereof and change the course of the supporting means at the forward end of the frame, bell crank levers pivotally secured to the frame and having their upper ends slotted to receive portions of the cross arm and guiding means at the lower ends of the bell crank levers adapted to engage the surface over which the coaster is passing and cause the coaster to quickly change its course.

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

JAMES A. MUSGROVE, JR.

Witnesses:

C. E. FETZER,
W. T. FITZ GERALD.