June 26, 1951 G. GROVER 2,558,431

ROTATING SEESAW

Filed Feb. 25, 1948 3 Sheets-Sheet 1

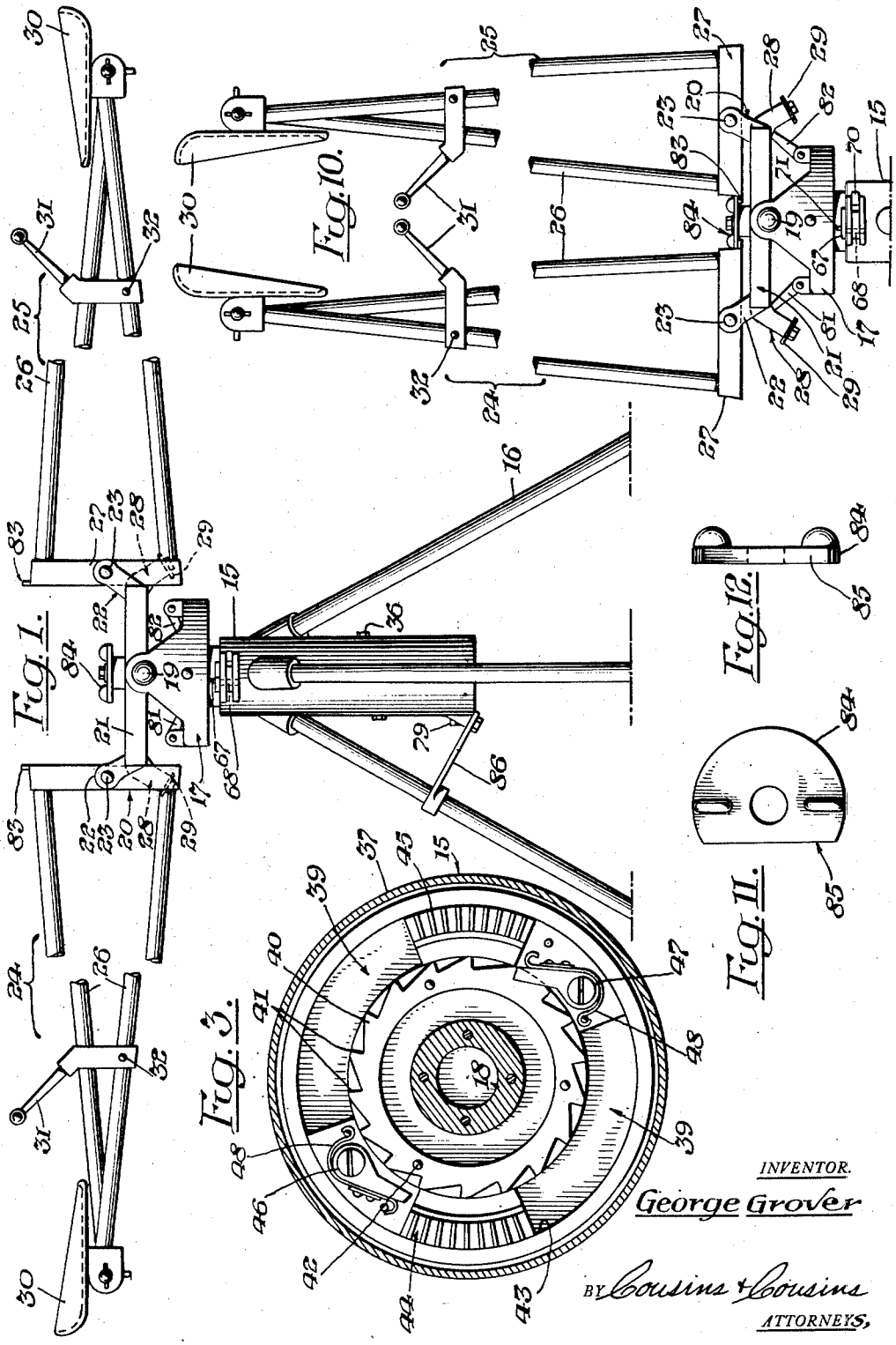


Fig. 1.

Fig. 10.

Fig. 12.

Fig. 11.

Fig. 3.

INVENTOR.
George Grover

BY Cousins & Cousins
ATTORNEYS.

June 26, 1951 G. GROVER 2,558,431

ROTATING SEESAW

Filed Feb. 25, 1948 3 Sheets-Sheet 2

Fig. 2.

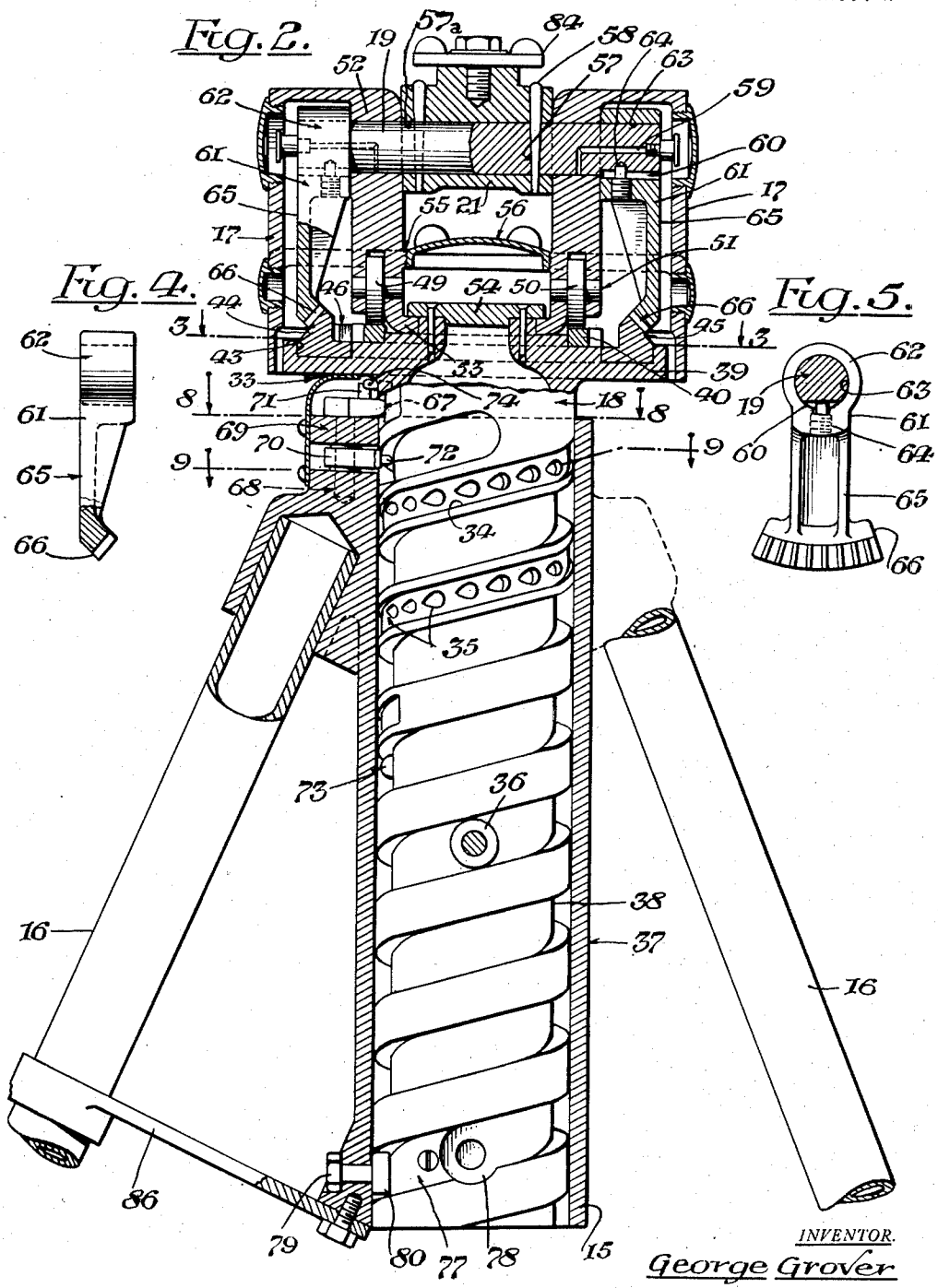


Fig. 4.

Fig. 5.

INVENTOR.
George Grover

BY Cousins & Cousins
ATTORNEYS.

June 26, 1951 G. GROVER 2,558,431

ROTATING SEESAW

Filed Feb. 25, 1948 3 Sheets-Sheet 3

Fig. 8.

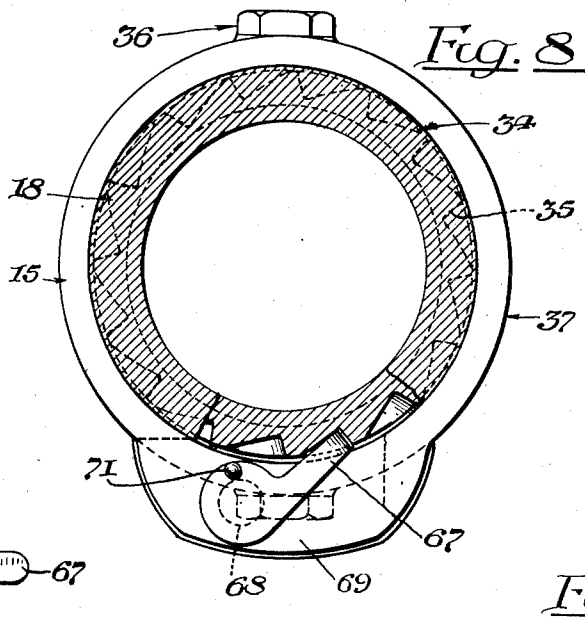


Fig. 6.

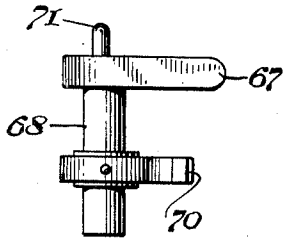


Fig. 7.

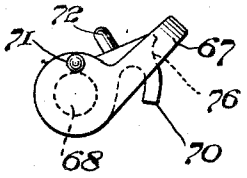
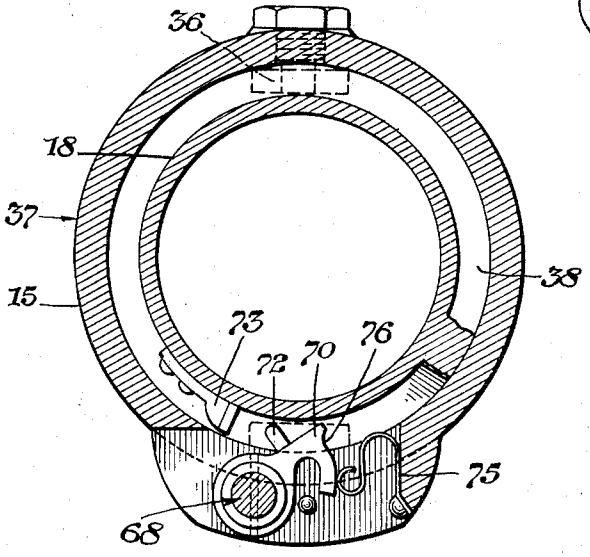


Fig. 9.



INVENTOR.
George Grover
BY
Cousins & Cousins
ATTORNEYS.

Patented June 26, 1951

2,558,431

UNITED STATES PATENT OFFICE

2,558,431

ROTATING SEESAW

George Grover, Long Island City, N. Y.

Application February 25, 1948, Serial No. 10,608

3 Claims. (Cl. 272—30)

1

This invention relates to an improved combination see-saw and merry-go-round.

An object of this invention is to provide a see-saw which will automatically give the users thereof a rotary ride at the end of a given number of teetering motions.

Another object of this invention is to provide a combined see-saw and merry-go-round which may be operated by small infants.

A further object of this invention is to provide a rotating see-saw which will present a minimum of exposed working parts.

An object of this invention is to provide a durable, tamper-proof, rotating see-saw.

A feature of this invention is its compact construction.

Another feature of this invention is its simplicity of operation.

A further feature of this invention is its automatic release which sets off the rotary motion of the see-saw.

A feature of this invention is its foldable construction.

Another feature of this invention is its novel jacking mechanism.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings, forming part hereof, is illustrated one form of embodiment of the invention, in which drawings similar reference characters designate corresponding parts, and in which:

Figure 1 is a view in side elevation of a complete embodiment of the rotating see-saw.

Figure 2 is a vertical section of a teetering and rotating mechanism, according to this invention.

Figure 3 is a horizontal section taken on line 3—3 of Figure 2, looking in the direction indicated by the arrows.

Figure 4 is a view in side elevation, partially cut away, of a gear arm, according to this invention.

Figure 5 is a view in front elevation of the gear arm shown in Figure 4.

Figure 6 is a side elevational view of the sprag assembly, according to this invention.

Figure 7 is a top plan view of the sprag assembly shown in Figure 6.

Figure 8 is a horizontal section taken on line 8—8 of Figure 2.

Figure 9 is a horizontal section taken on line 9—9 of Figure 2.

Figure 10 is a view in side elevation of the working parts of the see-saw in a folded position.

2

Figure 11 is a top plan view of the locking plate, according to this invention.

Figure 12 is a side elevation of the plate shown in Figure 11.

Referring to the drawings, and particularly to Figure 1, 15 indicates a cylindrical housing to which are secured three supporting members 16. The supporting members 16 comprise a base upon which the see-saw stands.

A rotating head 17, shown above the housing 15 in Figures 1 and 2, is supported by an elevating screw 18 carried within the said housing 15. A horizontal shaft 19 freely held by the head 17 provides the pivotal point upon which the see-saw teeters.

The conventional teeter board is replaced by a three-pieced structure 20 in this embodiment of the invention. The central member of the teeter board construction comprises a bracket 21. This bracket 21 is secured at its midpoint to the shaft 19. Each end of the bracket 21 is provided with ears 22 to which are attached, as by pins 23, extending frames 24 and 25.

The frames 24 and 25 are somewhat triangular in form and may comprise tubular steel sections 26 connected at their extremities and diverging toward the center of the see-saw. A flat bar 27 is provided to receive the inner ends of the frames 24, 25. This bar 27 is pinned to the ears 22 of the bracket 21.

A seat 30 is attached to the outer end of each frame 24, 25. Each frame 24, 25 also carries, spaced from the end thereof, a combined hand grasp 31 and foot rest 32.

A stop member 28 is secured to the bracket 21 on each side thereof. This stop 28 is disposed in such manner as to limit the rotation of the central bracket 21 in each direction. A resilient bumper 29 is carried by the end of the stops 28 to cushion the impact of the said stop 28 against the rotary head 17.

As the see-saw is teetered, in the usual manner, a jacking device 33, best shown in Figure 2, is brought into action. The jacking device 33 employs a central elevating screw 18. The helix of the screw 18 is provided with a recessed surface 34, into the bottom of which are cut a plurality of sprag receiving sockets 35. Rollers 36, carried by the wall 37 of the housing 15, extend into the trough 38 of the elevating screw 18 and rotatably support it.

The top of the screw 18 is provided with a large flange 39, shown in plan in Figure 3. A

ring 40, having ratchet teeth 41 cut therein, is secured to the flange 39 as by screws 42 or other suitable means. The flange 39 is cut away adjacent the ring 40 to form an annular recess 43.

Two miter gear sectors 44, 45, freely slidable within the recess 43, are placed therein. The gear sectors 44, 45 are each provided with a pawl 46, 47. These pawls 46, 47 are engageable with the teeth 41 in the ratchet ring 40 and serve to turn it in a hereinafter described manner. Spring means, indicated by the numeral 48 in Figure 3, urge the said pawls against the teeth 41.

The rotary head 17 rides upon the ratchet ring 40 on the flange 39 by reason of two rollers 49, 50. These rollers 49, 50 are mounted upon shafts 51 which, in turn, are carried by the inner wall 52 of the said head 17. The inner wall 52 is provided with an inwardly turned flange 53, so that a keeper plate 54, secured to the top of the screw member 18, may hold the said rotary head 17 upon the screw 18. The inside of the wall 52 may be provided with threads 55 to receive a cover plate 56. This cover plate 56 serves to keep foreign matter out of the working parts of the mechanism.

The pivotal shaft 19 slips through a horizontal bore 57*a* in the central bracket 21 of the teeter board assembly 20. The bracket 21 is then pinned to the shaft 19 as by tapered pins 58. These pins 58 slip into holes 57 provided for this purpose in the shaft 19. The shaft 19 is also drilled from each end, as indicated at 59 in Figure 2, so that grease or some suitable lubricant may be forced between the bearing surfaces of the shaft 19 and the bore 57*a*.

Each end of the shaft 19 is provided with a flat 60. This flat 60 enables a driving gear arm 61 to be rigidly attached thereto. The arm 61, shown in Figures 2, 4, 5, consists of an enlarged upper portion 62, centrally bored, as shown at 63, to permit it to be slipped upon the ends of the shaft 19. The upper portion 62 is drilled and tapped to receive a set screw 64 which secures the gear arm 61 to the shaft 19.

The downwardly extended portion 65 of each gear arm 61 carries a miter gear segment 66 at the end thereof. These gear segments 66 mesh with the miter gears 44 and 45 which ride within the recess 43 of the flange 39. It will be seen, from an examination of Figures 3 and 4, that as the see-saw is teetered, the gear arms 61 cause the miter gears 44 and 45 to slide toward one another within the recess 43. Thus, upon one tilt of the see-saw the gears 44—45 will move toward each other around the top of the recess 43, shown in Figure 3, and upon the opposed tilt the gears 44—45 will swing toward each other at the bottom of the said recess 43.

The opposed pawls 46, 47, shown in Figure 3, impart a counter-clockwise motion to the ratchet ring 40, which in turn carries the screw member 18 with it.

As the screw member 18 is raised, the sockets 35 are engaged by a sprag 67. This sprag 67 is part of an assembly best shown in Figures 6, 7, 8 and 9. The sprag 67 is secured to a short shaft 68 which is pivotally mounted in a vertical position within a bearing 69 secured to the wall 37 of the housing 15. The wall 37 of the housing 15 is cut away adjacent the said bearing 69 so that the sprag 67 and two levers 70, 71 associated therewith may have access to the screw member 18.

The lowermost lever 70, best shown in Figure 9, carries a pin 72 thereon. This pin 72

extends into the trough 38 of the screw member 18. A trip member 73 (see Figure 9) is secured within the trough 38 of the screw 18 at a point which will bring it into contact with the pin 72 when the screw 18 has reached the desired limit of travel. The trip member 73 forces the pin 72 away from the screw member 18 thereby rotating the entire sprag assembly and releasing the screw 18. This action causes the screw member 18 to spiral downward upon the rollers 36, thereby imparting a rotating motion to the see-saw teeter board assembly 20.

As the screw member 18 reaches the bottom of its travel, a small pin 74, best shown in Figure 2, carried beneath the flange 39 of the screw 18, comes into contact with the resetting lever 71. This lever 71 is mounted upon the top of the sprag 67 but is displaced from the center axis thereof. The motion imparted to the lever 71 by the pin 74 causes the shaft 68 to rotate, thereby resetting the sprag 67 to the position shown in Figure 8.

Spring means 75 (see Figure 9) is provided to urge the sprag 67 into contact with the sprag sockets 35. The lever 70 is employed as the cammed surface upon which the spring 75 bears. A slight recess 76 is provided upon the cam surface of the lever 70 so that it may be grasped and held in the tripped position when the sprag is disengaged.

In the preferred embodiment of the invention, shown in the drawings, the screw member 18 is raised approximately three turns. This should be sufficient to impart a satisfactory rotary motion to the see-saw in its downward travel. The construction of the rotating mechanism is such that after the screw member reaches the bottom of its travel the see-saw teeter board can continue to turn under the impetus of its own inertia, since the pawls 46, 47 will merely override the teeth 41, until the see-saw comes to rest and the teetering motion is resumed.

A positive stop member 77 is provided near the bottom of the helix of the screw member 18. This stop 77, located in the helix trough 38, is positioned to butt up against a roller 36 substantially at the same moment that the sprag 67 is released. The trough 38 may be cut away immediately in front of the stop 77, as shown at 78 in Figure 2. This formation of the trough 38 will give the screw member 18 additional impetus on its return travel by causing it to climb the cut-away portion of the trough slightly.

The wall 37 of the housing 15 adjacent the point at which the stop 77 should come to rest in its downward travel, is drilled and provided with a stud 79. A suitable nut 80 is secured to the stud 79 within the housing 15 so that the stop member 77 will come to rest against it.

As the see-saw is teetered, there will be a slight tendency of the frames 24 and 25 to rotate in a clockwise direction as a result of the helical nature of the central screw member 18. However, a very slight additional lateral pressure by the left foot of the child as he touches the ground, will overcome this tendency. Alternately, the children may enjoy a combined teetering and rotating ride by failing to apply the extra pressure to overcome the tendency of the frames to move laterally during their operation.

When it is desired to store the see-saw, it may be folded as shown in Figure 10. The three part construction of the teeter board 20 permits each of the frame members 24, 25, to be tilted upward into a vertical position. Two small blocks

81, 82, pivotally mounted on opposite sides of the rotary head 17, may then be swung out to prevent further rocking motion of the frames. A flange 83, shown in Figures 1 and 10, is formed on the upper edge of the bar 27 of each frame 24, 25. When the frame is lifted, a small winged plate 84 (shown in Figures 11 and 12), rotatably held to the top of the bracket 21, may be brought over the flange 83. One of the edges 85 of the plate 84 is cut away to permit it to be brought over the flanges 83 in this manner until they are both locked in place, as shown in Figure 10.

Additional rigidity may be given the tripod stand of the see-saw by the use of braces 86, as shown in Figures 1 and 2.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States, is:

1. In a rotary see-saw, a teetering platform, a jacking device to elevate the platform coupled to and supporting the said platform, fully automatic means comprising a trip carried by the jacking device to release the jacking device at its maximum upward travel and a helical member, associated with the jacking device to impart a rotary motion to the teetering platform during the downward travel of said jacking device.

2. In a rotary see-saw, a teetering platform, a jacking device comprising a housing, a screw member rotatably held by the said housing, sprag means to limit the direction of travel of the screw and means actuated by the said platform to turn the said screw member to elevate the platform coupled to and supporting the said platform,

fully automatic means comprising a trip carried by the screw member of the jacking device adapted to engage the sprag member of the said jacking device to release the jacking device at its maximum upward travel and a helical member, associated with the jacking device to impart a rotary motion to the teetering platform during the downward travel of said jacking device.

3. In a rotary see-saw, a teetering platform, a jacking device comprising a housing, a screw member rotatably held by the said housing, sprag means to limit the direction of travel of the screw and means actuated by the said platform to turn the said screw member to elevate the platform coupled to and supporting the said platform, means to release the jacking device at its maximum upward travel, a helical member, associated with the jacking device to impart a rotary motion to the teetering platform during the downward travel of said jacking device and a pin to reset the sprag member after the downward travel of the jacking device.

GEORGE GROVER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
937,753	Barrett	Oct. 26, 1909
1,903,116	Koschka	Mar. 28, 1933
1,904,687	Jacob	Apr. 18, 1933