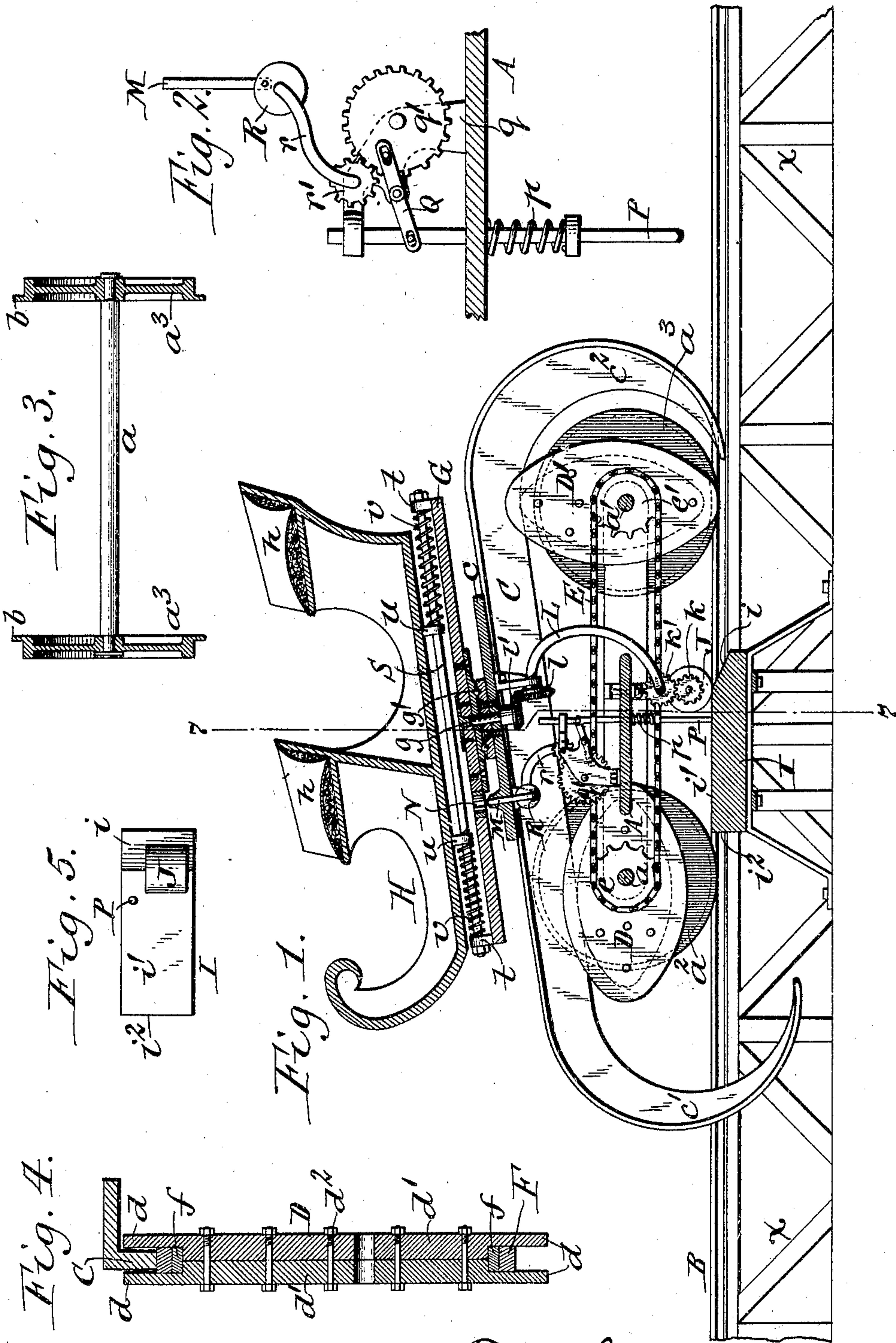


F. D. KNAPP.  
AMUSEMENT DEVICE.  
APPLICATION FILED OCT. 18, 1904.

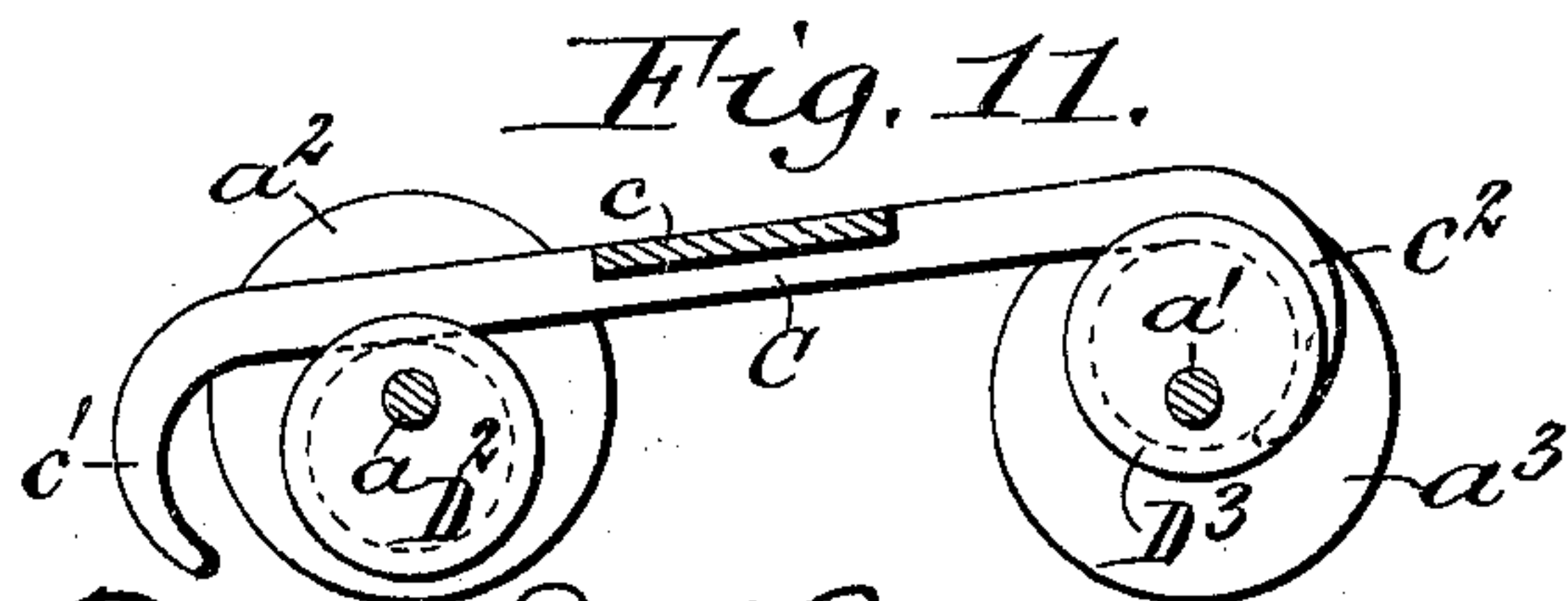
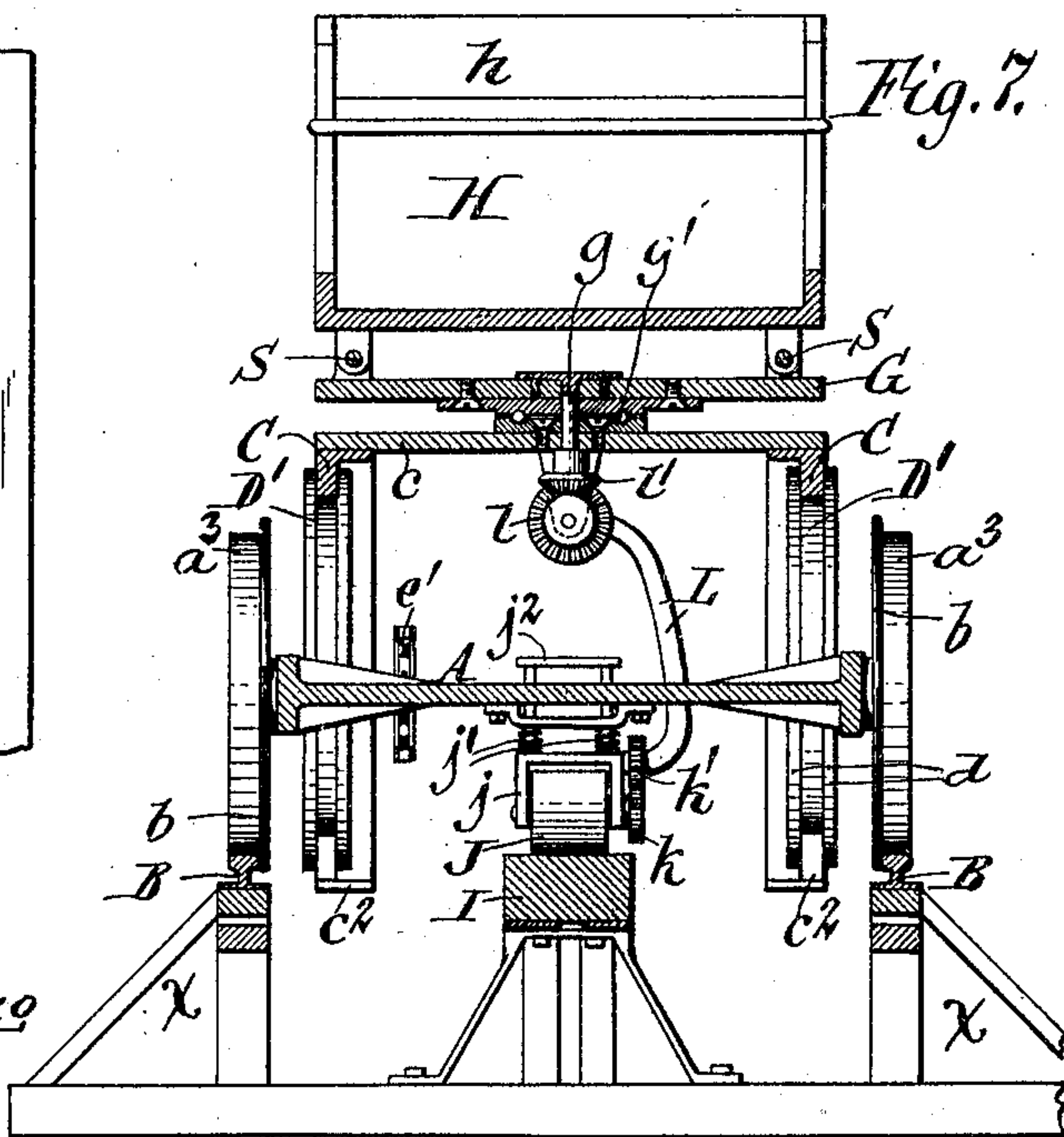
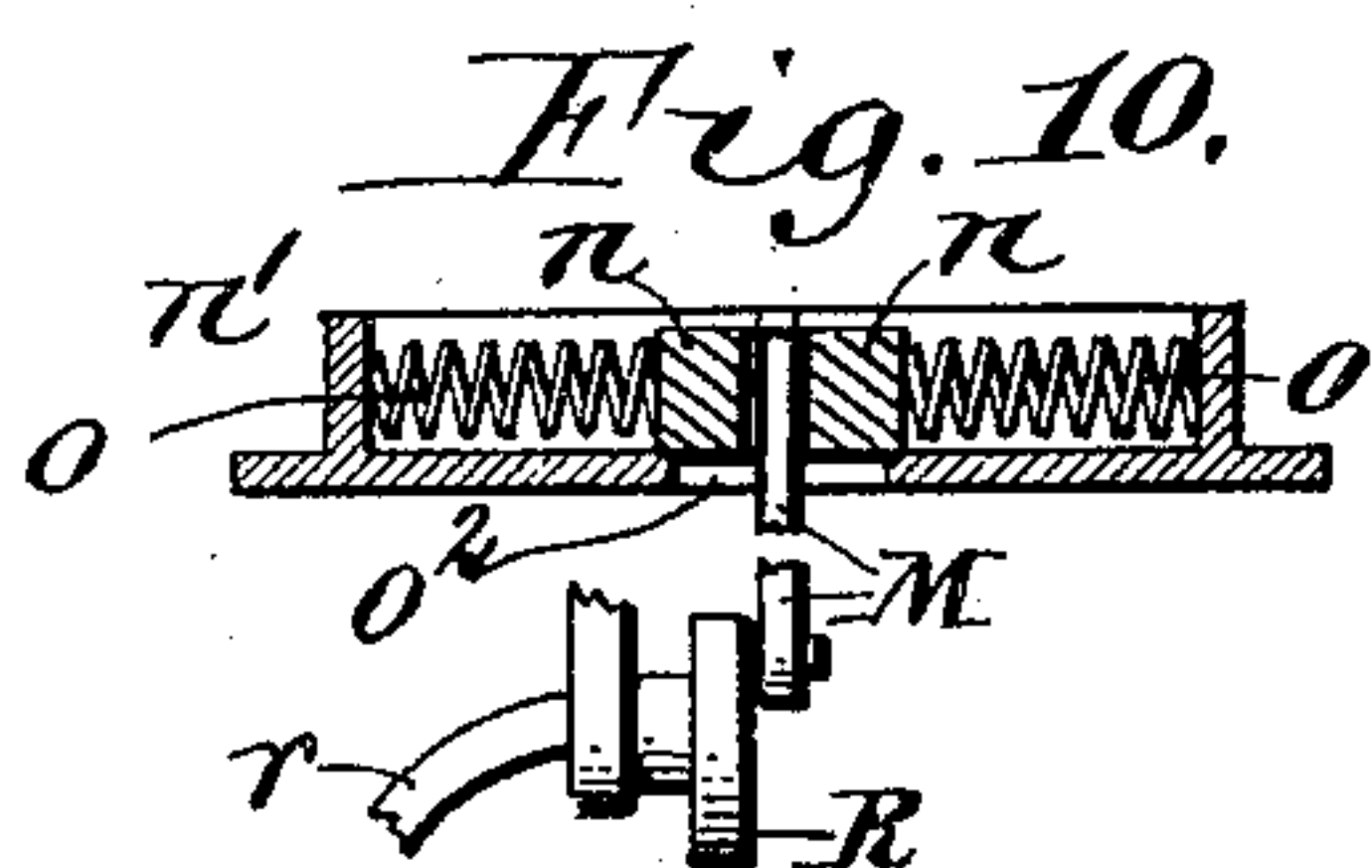
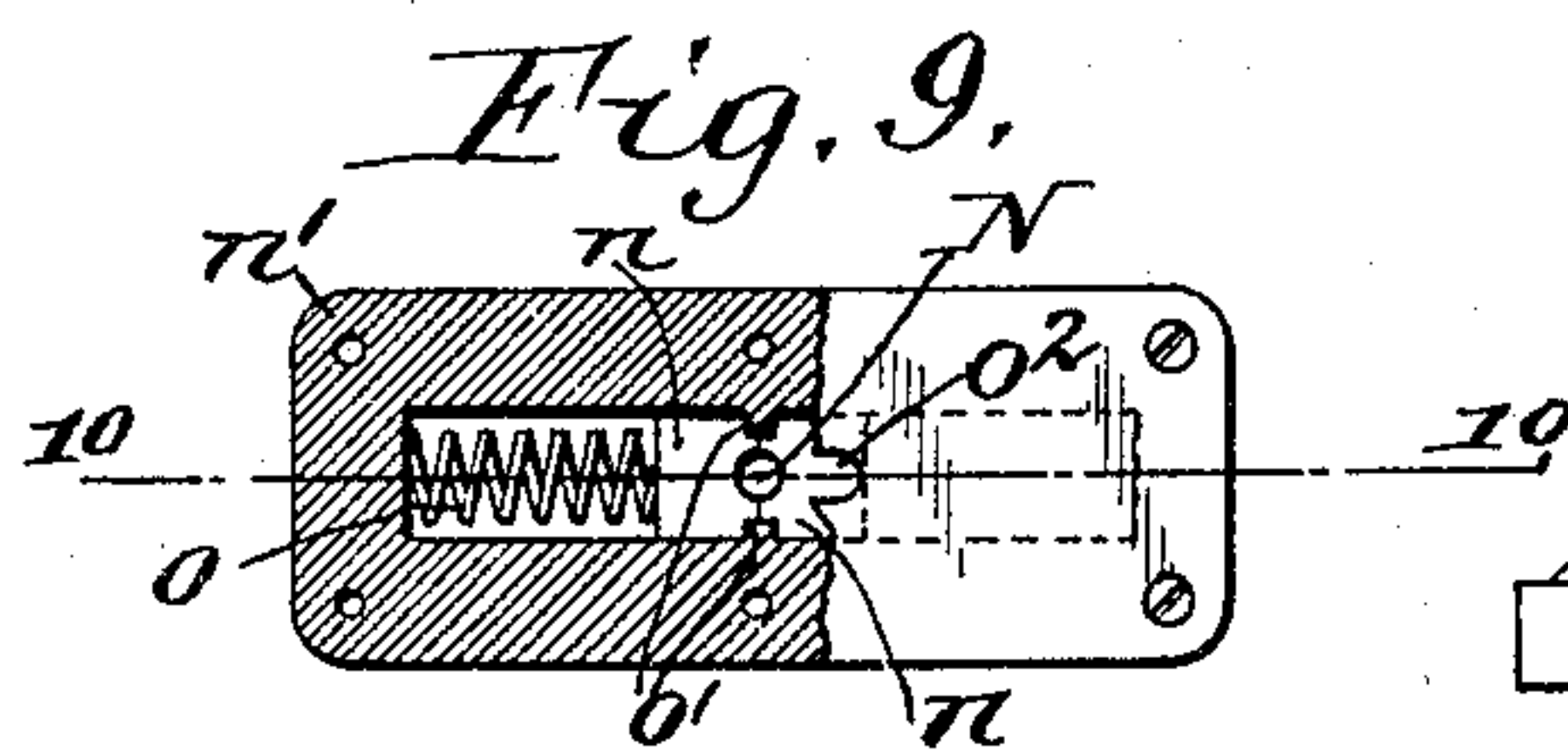
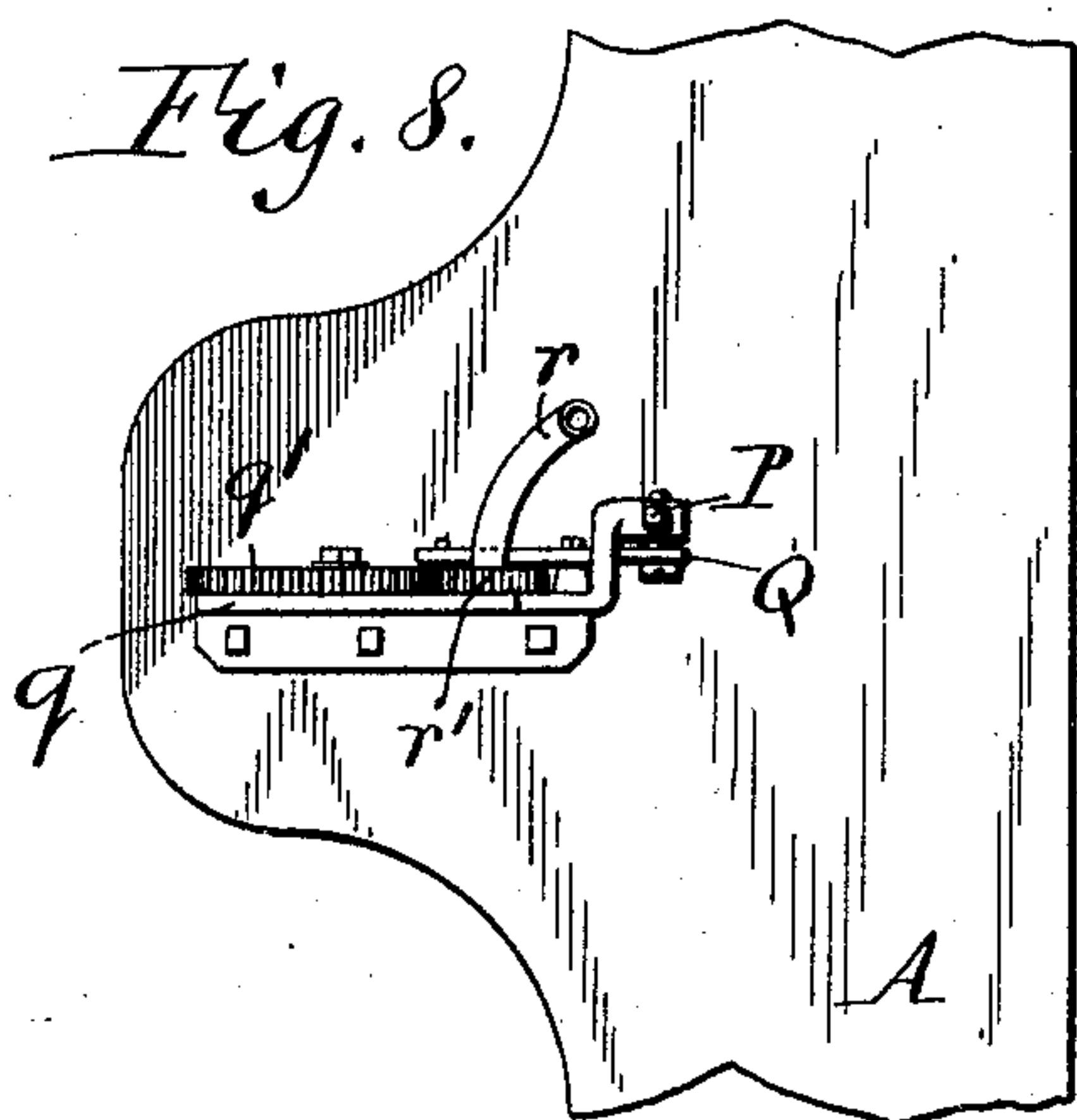
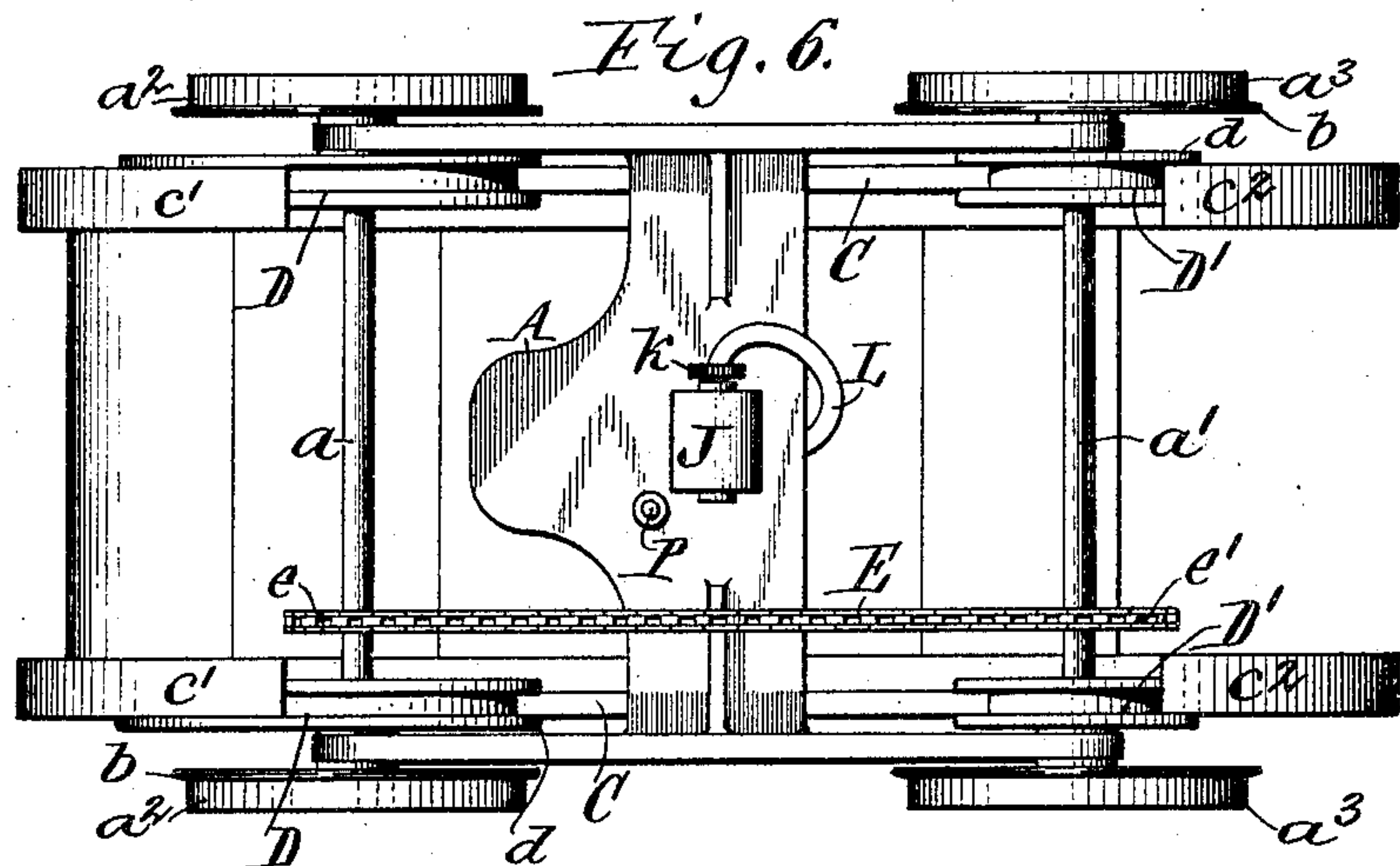
2 SHEETS—SHEET 1



Frank D. Knapp, Inventor  
Louis W. Gratz, Robert Weithenack, Witnesses, by Geyer & Popp, Attorneys

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2 SHEETS—SHEET 2.



Louis W. Gratz  
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Frank D. Knapp, Inventor  
Witnesses. by Ceyer & Papp Attorneys.



# UNITED STATES PATENT OFFICE.

FRANK D. KNAPP, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO  
FRANK J. KNAPP, OF BUFFALO, NEW YORK.

## AMUSEMENT DEVICE.

SPECIFICATION forming part of Letters Patent No. 794,511, dated July 11, 1905.

Application filed October 18, 1904. Serial No. 228,958.

*To all whom it may concern:*

Be it known that I, FRANK D. KNAPP, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Amusement Devices, of which the following is a specification.

This invention relates to that class of amusement devices comprising passenger-cars which have the capacity of rocking, swaying, or turning the passengers for their entertainment and exhilaration.

The object of this invention is the production of an amusement device of this character which is effective in amusing those using the same, which is perfectly safe, and which is comparatively simple and durable in construction.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical longitudinal section showing one car embodying the features of my improved amusement device. Fig. 2 is a fragmentary sectional elevation, on an enlarged scale, of the locking mechanism for holding the passenger-support against turning. Fig. 3 is a detached sectional view of one of the axles of the carriage and the wheels applied thereto. Fig. 4 is a detached sectional view, on an enlarged scale, of one of the tumbling-wheels. Fig. 5 is a top plan view of the stationary cam or abutment and the actuating-wheel and tappet cooperating therewith. Fig. 6 is a bottom plan view of the carriage and the parts mounted thereon. Fig. 7 is a vertical cross-section of the same, taken in line 7 7, Fig. 1. Fig. 8 is a fragmentary top plan view of the locking mechanism. Fig. 9 is a fragmentary bottom view, partly in section, showing the socket of the locking device whereby the passenger-support is held against horizontal rotation. Fig. 10 is a vertical section taken in line 10 10, Fig. 9. Fig. 11 is a fragmentary sectional elevation showing a modification of my amusement device.

Similar letters of reference indicate corresponding parts throughout the several views.

In its general organization the amusement device is constructed in the form of a car which comprises a suitable carriage, a verti-

cally-rocking support mounted on the carriage, and a horizontally-turning body mounted on said support and having seating capacity for the passengers which are to be entertained by this amusement device.

The carriage may be constructed in any suitable way, that shown in the drawings consisting of a main frame A, axles  $a$   $a'$ , journaled transversely at the front and rear ends of said frame, and running-wheels  $a^2$   $a^3$ , arranged at opposite ends of the axles. These wheels preferably run on rails B and are provided with flanges  $b$  on their inner sides for confining the same on the rails. These rails may be arranged in any desired manner, but preferably in the form of an endless or circular track or railway, and the wheels on one side of the carriage are rigidly secured to the corresponding ends of the axles, while the wheels on the opposite side of the carriage are loosely mounted on the respective ends of the axles by ball-bearings or otherwise. By this means the axles are rotated by the wheels on one side of the carriage, while the wheels on the opposite side of the carriage are free to rotate at a different speed, thereby preventing dragging or sliding of some of the wheels of the carriage in running over the circular track.

The vertical rocking frame consists, essentially, of two longitudinal side bars C C and a horizontal cross-piece or table  $c$ , connecting the side bars. This rocking frame receives its motion by means of rotary tumbling-wheels D D', which are mounted on the front and rear axles of the carriage, respectively, and which engage at their periphery with the under sides of said side bars. Each of these wheels is preferably of elliptical form and secured eccentrically to one of the axles, the two tumbling-wheels of each axle being secured in the same position thereon. The tumbling-wheels of one axle have their major axis arranged at right angles, or substantially so, to that of the tumbling-wheels of the other axle, these wheels being retained in this position by means of positive gearing between the two axles of the carriage. The preferred gearing for this purpose, as shown in the



drawings, consists of a chain belt E, passing around sprocket-wheels  $e$   $e'$ , arranged on the front and rear axles of the carriage, respectively. As the carriage moves forwardly the rocking frame is raised and lowered alternately at opposite ends by reason of the rotation of the tumbling-wheels engaging with the under sides thereof and the arrangement of one pair of tumbling-wheels at right angles to the other pair. By constructing the tumbling-wheels in the form of an ellipse and mounting the same eccentrically on the axles each of the wheels during one complete rotation raises the rocking frame varying heights, thereby producing an irregularity in the vertical motion of the seats, which is not only exhilarating, but also highly pleasing to the passengers. In order to further heighten the interest and the pleasure derived from this device, the side bars of the rocking frame are adapted to slide lengthwise in opposite directions on the tumbling-wheels as the rocking frame is alternately inclined in one direction or the other. This longitudinal sliding movement is limited by means of stops  $c'$   $c''$ , which are preferably formed by bending the rear portions of the side bars downwardly and toward each other in a curve. As the rocking frame is lowered at its front end and raised at its rear end, the same slides forwardly on the tumbling-wheels until the rear stops  $c''$  of the side bars engage with the rear tumbling-wheels. As the front end of the rocking frame is raised and the rear end lowered during the continued rotation of the tumbling-wheels, this frame slides rearwardly on the wheels until the front stops  $c'$  engage with the front tumbling-wheels. By curving the stops in the manner described the forward and backward sliding movement of the rocking frame on the tumbling-wheels is not arrested suddenly, but gradually, thereby avoiding any sudden shock to the passengers of the car and also giving the same a neat appearance. Instead of making the tumbling-wheels of elliptical form and mounting the same eccentrically on their axles, as shown in Fig. 1, wheels  $D^2$   $D^3$ , of circular form and mounted eccentrically on their axles, may be employed, as shown in Fig. 11. The construction shown in Fig. 1 is, however, preferred, as it permits of obtaining a greater variety in the vertical motion of the rocking frame.

For the purpose of confining the rocking frame on the tumbling-wheels against lateral displacement each of the wheels is provided on its periphery with two circumferential flanges  $d$   $d'$ , forming an annular groove or channel between the same, which receives a side bar of the rocking frame, as shown in Fig. 4. In order to avoid any noise during the engagement of the side bars and their stops with the tumbling-wheels, each of the latter is provided in the bottom of its groove with a cushion or filling  $f$  of fiber or similar

material, and said cushion is surrounded with a facing F of malleable iron or similar durable material, which operatively engages the bearing edge of the side bar. By this means the noise which would otherwise be produced by engagement of the side-bar stops with the tumbling-wheels at the end of the sliding motion is deadened. Each of the tumbling-wheels is preferably constructed in two sections  $d'$   $d''$ , which are rigidly connected by bolts  $d'''$  or otherwise and have the flanges  $d$  at their outer edges so arranged as to form the circumferential groove which receives the cushion-filling and bearing-face.

The body of the car is supported upon the rocking frame by means of an intermediate platform G. This platform is pivoted on the cross-piece of the rocking frame by means of a vertical shaft  $g$ , and the weight thereof and the parts mounted thereon are supported by means of a ball-bearing  $g'$  of any suitable construction, which is interposed between the platform and the rocking frame.

The body H of the car is provided with seats  $h$  for the passengers and is preferably rotated at intervals during the forward movement of the carriage, so as to add to the interest and excitement of the apparatus. This rotation of the body is preferably effected automatically by mechanism which is constructed as follows: I represents a stationary abutment or cam arranged between the rails and having an inclined front end  $i$ , a horizontal top  $i'$ , and an abrupt rear end  $i''$ , as shown in Fig. 1. J is a frictional actuating-wheel mounted on the carriage and adapted to be rotated by engagement with the abutment. The actuating-wheel is mounted in a vertically-movable presser-frame  $j$ , which is guided on the frame of the carriage and is yieldingly held in a depressed position by springs  $j''$ . The downward movement of this presser-frame is limited by a cross-bar or stop  $j^2$ , mounted on the presser-frame and adapted to engage with the top of the carriage-frame, as shown in Fig. 7. Motion is transmitted from the actuating-wheel to the vertical shaft or pivot of the body-supporting platform by means of a lower gear-wheel  $k$ , secured to the axle of the actuating-wheel and meshing with an upper gear-wheel  $k'$ , pivoted on the presser-frame, a lower bevel gear-wheel  $l$ , journaled on the cross-piece of the rocking frame and meshing with a similar bevel-wheel  $l'$  on the lower end of the platform-shaft, and a flexible shaft L, connecting the upper gear-wheel  $k'$  and the lower bevel gear-wheel  $l$ . As the car moves forwardly its actuating-wheel rides up the inclined front end of the abutment and is turned by engagement with the horizontal top thereof, and the platform and the body carrying the passengers is turned horizontally by means of the intermediate driving mechanism connecting the same with the actuating-wheel. When the actuating-wheel clears the abrupt



rear end of the abutment, the rotation of the car-body ceases. The extent of the horizontal bearing-surface of the abutment J is such that the actuating-wheel is rotated sufficiently thereby to turn the car-body once around.

In order to hold the car-body properly in a forwardly-facing position on the rocking frame between one horizontal turning movement and another and also to release the body at the proper time to permit of such horizontal rotation, an automatic locking device is provided, which is preferably constructed as follows: M represents a vertically-movable locking-bolt which is guided in the cross-piece of the rocking frame and adapted to engage at its upper end with a socket N in the under side of the body-supporting platform. This socket is preferably formed in two walls or sections  $n, n$ , which are laterally movable toward and from each other and guided in a casing  $n'$ , secured to the platform. These socket-walls are yieldingly held against each other by means of springs  $o$ , each of which is arranged between the back of one wall and the adjacent part of the casing. The socket-walls are prevented from moving forwardly past the center of the socket by means of stops  $o'$ , arranged in the casing in position to be engaged by the front ends of the wall-sections, as shown in Fig. 9. The under side of the casing is provided with a slot  $o^2$ , through which the locking-bolt passes in entering the socket. P represents a vertically-movable tappet or rod which is arranged to engage with the inclined front end of the cam or abutment and to be raised thereby and then drop off from the abrupt rear end of the cam, thus furnishing the required movement for actuating the locking-bolt. This tappet is guided on the carriage-frame and is normally depressed by a spring  $p$ , so that its lower end is arranged below the plane of the horizontal top of the abutment J and in a position to be engaged by the inclined front end thereof. The upper end of the tappet-rod is connected with one arm of the rock-lever Q, which is pivoted on a bracket  $q$ , rising from the carriage-frame. The other arm of this rock-lever is slidingly connected with a crank or eccentric pin on a gear-wheel  $q'$ , pivoted on said bracket. R represents a crank-disk journaled on the under side of the rocking-frame cross-piece and having its crank loosely connected with the lower end of the locking-bolt, as shown in Figs. 1 and 10.  $r$  represents a flexible shaft which is connected at one end with the hub of the crank-disk R, while its opposite end is connected with a pinion  $r'$ , which is mounted on the bracket  $q$  and meshes with the gear-wheel  $q'$ . As the tappet-rod is raised by riding over the abutment it turns the rock-lever Q, which latter in turn rotates the gear-wheel  $q'$ . The motion of this gear-wheel is transmitted by the pinion  $r'$ , flexible shaft  $r$ , and crank-disk R to the locking-bolt

in the proper direction for withdrawing the same from the socket of the platform. This withdrawal of the locking-bolt is so timed that it occurs just in advance of the beginning of the horizontal rotation of the platform with the body and is again permitted to rise for engaging the socket just before the platform completes its rotation. The return or locking movement of the bolt is effected by means of the weight of the tappet aided by the spring  $p$ , which causes the tappet to be depressed the instant the same clears the abrupt rear end of the stationary abutment. As the locking-bolt enters the socket, as shown in Fig. 10, the momentum of the rotating body-supporting platform causes the socket-section on the trailing side of the socket to be pushed backwardly against its spring, thereby compressing the latter. When the spring recovers itself and again pushes this socket-section forwardly, the platform is moved slightly in the opposite direction, causing the socket-section on the opposite side of the locking-bolt to be pushed backward slightly and effect a compression of its spring, after which both sections of the socket are gradually returned to their central position with the locking-bolt between them, and the platform is held against displacement with the seats of the car-body facing forwardly. By employing a yielding socket on the platform for the reception of the locking-bolt the rotation of the body is brought to a standstill without any unpleasant jar, which otherwise would be the case if this rotation were arrested suddenly and positively. To still further guard against any perceptible jar of the passengers seated in the body as the rocking frame is stopped at either end of its longitudinal movement on the tumbling-wheels, the body is guided upon the platform so as to be capable of longitudinal movement thereon, and cushioning means are provided for deadening the shocks at both ends of this movement. The means suitable for this purpose (shown in Figs. 1 and 7 of the drawings) consist of two longitudinal rods S, arranged above the platform and supported at opposite ends by lugs  $t$ , rising from the platform, guide-lugs  $u$ , arranged on the under side of the body and sliding on the rods, and cushion-springs  $v$ , surrounding the guide-rods between the guide-lugs of the body and the supporting-lugs of the platform. As the body slides on the rods in either direction, upon tilting the rocking frame the springs at that particular end of the body are compressed and bring the body gradually to a standstill, thereby avoiding any unpleasant effect upon the passengers.

When installing my improved amusement device, the rails upon which the carriage runs are preferably elevated by means of a trestle  $x$  or other support, so as to furnish the necessary clear space below the carriage in which the rocking frame and the tumbling-wheels



may freely move up and down while in operation.

In practice a number of cars or vehicles, such as the one shown in the drawings, will be connected up to form a circular train somewhat resembling the well-known merry-go-round, and this train may be driven by any suitable means—for instance, by a motor mounted on one or more of the cars.

In order to add to the interest of the device, the abutments J may be arranged between the rails at varying distances apart, so that the car-body will be turned horizontally at irregular intervals. The passengers by this means will therefore be unable to calculate when such turning of the body will be effected and will therefore at times be surprised, thereby increasing the amusement effect of the device.

Inasmuch as some persons may object to the turning movement of the car-body on account of physical disability, part of the cars in a train may have the body simply rocked vertically, others may be operated so as to obtain the combined sliding and rocking effect, while the remainder of the cars may be constructed so as to also turn the body horizontally, and thus utilize all of the features of the amusement device, as shown and described.

I claim as my invention—

1. In a device of the character described, the combination of a carriage, a passenger-support and means mounted on said carriage and operating to raise and lower said carriage and also move the same forward and backward relatively to the carriage, substantially as set forth.

2. In a device of the character described, the combination of a carriage, alternately-operating elevating means arranged at opposite ends of the carriage, and a passenger-support mounted on said elevating means and capable of lengthwise movement thereon, substantially as set forth.

3. In a device of the character described, the combination of a carriage, rotary tumbling-wheels of irregular form circumferentially mounted on the front and rear of said carriage, and a passenger-support resting on said wheels and capable of sliding lengthwise thereon, substantially as set forth.

4. In a device of the character described, the combination of a carriage, elliptical tumbling-wheels mounted on the front and rear of said carriage, and a passenger-support resting on said wheels, substantially as set forth.

5. In a device of the character described, the combination of a carriage, elliptical tumbling-wheels mounted on the front and rear of said carriage, means for rotating said wheels and maintaining the major axis of the front wheels at right angles to that of the rear wheels, and a passenger-support resting on said wheels, substantially as set forth.

6. In a device of the character described,

the combination of a carriage, elliptical tumbling-wheels mounted eccentrically on the front and rear of the carriage, and a passenger-support resting on said wheels, substantially as set forth.

7. In a device of the character described, the combination of a carriage, elliptical tumbling-wheels mounted eccentrically on the front and rear of the carriage, means for rotating said wheels and maintaining the major axis of the front wheels at right angles to that of the rear wheels, and a passenger-support resting on said wheels, substantially as set forth.

8. In a device of the character described, the combination of a carriage consisting of a frame, front and rear axles journaled on said frame, running-wheels mounted on said axles, sprocket-wheels mounted on said axles, a chain belt passing around said sprocket-wheels, tumbling-wheels mounted on the axles, and a passenger-support resting on said tumbling-wheels, substantially as set forth.

9. In a device of the character described, the combination of a carriage consisting of a frame, front and rear axles journaled on said frame, running-wheels mounted on opposite ends of said axles, the wheels at corresponding ends of the axles being fast thereon while the wheels at the opposite ends of the axles are loose thereon, gearing connecting said axles and causing the same to turn in unison, tumbling-wheels mounted on said axles, and a passenger-support resting on said tumbling-wheels, substantially as set forth.

10. In a device of the character described, the combination of a carriage, rotary tumbling-wheels mounted on the front and rear of said carriage, and a passenger-support comprising longitudinal bars resting on said wheels and a seat-body mounted on said bars, substantially as set forth.

11. In a device of the character described, the combination of a carriage, rotary elliptical tumbling-wheels mounted on the front and rear of said carriage, means for rotating said wheels in unison and maintaining the major axis of the front wheels at right angles to that of the rear wheels, and a passenger-support comprising longitudinal bars resting on said wheels and a seat-body mounted on said bars, substantially as set forth.

12. In a device of the character described, the combination of a carriage, rotary elliptical tumbling-wheels mounted on the front and rear of said carriage, means for rotating said wheels in unison and maintaining the major axis of the front wheels at right angles to that of the rear wheels, and a passenger-support comprising longitudinal bars resting on said wheels and capable of sliding lengthwise thereon, stops for limiting said lengthwise movement of the bars, and a seat-body mounted on said bars, substantially as set forth.

13. In a device of the character described,



the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage and having flanges on their periphery, and a passenger-support comprising bars resting on said wheels and a seat-body mounted on said bars, substantially as set forth.

14. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage and each wheel having a pair of flanges on its periphery forming a circumferential groove or channel between its flanges, and a passenger-support comprising bars sliding lengthwise on the bottom of said grooves of the wheels and having downwardly-bent ends forming stops which are adapted to engage with the outer side of said wheels and limit the longitudinal movement thereof, and a seat-body mounted on the bars, substantially as set forth.

15. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage and each wheel composed of two circumferentially-flanged sections which are connected to form a groove between them, a cushion medium arranged in said groove and a facing applied to said cushion, and a passenger-support comprising bars which are arranged between the flanges of the wheels and rest on the facings thereof, and a seat-body mounted on the bars, substantially as set forth.

16. In a device of the character described, the combination of a carriage, a passenger-support mounted on said carriage and capable of longitudinal movement thereon, and means for periodically turning said passenger-support horizontally on the carriage, substantially as set forth.

17. In a device of the character described, the combination of a carriage, a passenger-support mounted on said carriage, means for rocking said passenger-support vertically and means for rotating said passenger-support horizontally, substantially as set forth.

18. In a device of the character described, the combination of a carriage, tumbling-wheels mounted to turn vertically on the front and rear of said carriage, a rocking support resting on said tumbling-wheels, and a seat-body pivoted on said support to turn horizontally, substantially as set forth.

19. In a device of the character described, the combination of a carriage, tumbling-wheels mounted to turn vertically on the front and rear of said carriage, a rocking support resting on said tumbling-wheels, a seat-body pivoted on said support to turn horizontally, a stationary abutment, and an actuating mechanism for turning said seat-body which is operated by engaging with said abutment, substantially as set forth.

20. In a device of the character described, the combination of a carriage, tumbling-wheels mounted to turn vertically on the front

and rear of said carriage, a rocking support resting on said tumbling-wheels, a seat-body pivoted on said support to turn horizontally, a stationary abutment arranged adjacent to the path of the carriage, and mechanism for turning said seat-body comprising a friction-actuating-wheel adapted to engage with said abutment and intermediate mechanism for transmitting the movement of the friction-wheel to the seat-body, substantially as set forth.

21. In a device of the character described, the combination of a carriage, tumbling-wheels mounted to turn vertically on the front and rear of said carriage, a rocking support resting on said tumbling-wheels, a seat-body pivoted on said support to turn horizontally, a stationary abutment arranged adjacent to the path of the carriage, and mechanism for turning said seat-body comprising an actuating-wheel adapted to engage with said abutment and a flexible transmitting mechanism connecting said actuating-wheel with the seat-body, substantially as set forth.

22. In a device of the character described, the combination of a carriage, tumbling-wheels mounted to turn vertically on the front and rear of said carriage, a rocking support resting on said tumbling-wheels, a seat-body pivoted on said support to turn horizontally, a stationary abutment arranged adjacent to the path of the carriage, and mechanism for turning said seat-body comprising a friction-wheel adapted to engage said abutment so as to be turned thereby and provided with a gear-wheel, and a flexible shaft provided at one end with a gear-wheel which meshes with the gear-wheel of the friction-wheel and at its opposite end with a bevel gear-wheel which meshes with a bevel gear-wheel on the pivot of the seat-body, substantially as set forth.

23. In a device of the character described, the combination of a carriage, tumbling-wheels mounted to turn vertically on the front and rear of said carriage, a rocking support resting on said tumbling-wheels, a seat-body pivoted on said support to turn horizontally, a stationary abutment arranged adjacent to the path of the carriage, and mechanism for turning said seat-body comprising a friction-wheel adapted to engage said abutment so as to be turned thereby and provided with a gear-wheel, a flexible shaft provided at one end with a gear-wheel which meshes with the gear-wheel of the friction-wheel and at its opposite end with a bevel gear-wheel which meshes with a bevel gear-wheel on the pivot of the seat-body, a movable frame mounted on the carriage and supporting the friction-wheel and connecting parts, and springs for holding said frame yieldingly in a depressed position, substantially as set forth.

24. In a device of the character described, the combination of a carriage, a passenger-support mounted on the carriage, means for



rocking the passenger-support vertically, means for turning the passenger-support horizontally, and retractable means for holding said passenger-support against horizontal movement, substantially as set forth.

25. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage, a vertically-rocking support resting on said tumbling-wheels, a seat-support pivoted on said rocking support to turn horizontally, and a locking-bolt mounted on said rocking support and adapted to engage with a socket in the seat-support, substantially as set forth.

26. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage, a vertically-rocking support resting on said tumbling-wheels, a seat-support pivoted on said rocking support to turn horizontally, a socket arranged on the seat-support and having a yielding side wall, and a locking-bolt arranged on the rocking support and adapted to engage with said socket, substantially as set forth.

27. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage, a vertically-rocking support resting on said tumbling-wheels, a seat-support pivoted on said rocking support to turn horizontally, a socket arranged on the seat-support and having its opposite wall movable, springs for yieldingly moving said walls toward each other, and a locking-bolt mounted on the rocking support and adapted to engage with said socket, substantially as set forth.

28. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage, a vertically-rocking support resting on said tumbling-wheels, a seat-support pivoted on said rocking support to turn horizontally, a locking-bolt mounted on the rocking support and adapted to engage with a socket on the

seat-support, a stationary abutment, and a retracting mechanism for said bolt adapted to engage with said abutment and to be operated thereby, substantially as set forth.

29. In a device of the character described, the combination of a carriage, tumbling-wheels mounted on the front and rear of said carriage, a vertically-rocking support resting on said tumbling-wheels, a seat-support pivoted on said rocking support to turn horizontally, a locking-bolt mounted on the rocking support and adapted to engage with a socket on the seat-support, a stationary abutment, and a retracting mechanism for said bolt comprising a tappet adapted to engage said abutment, a gear-wheel mounted on the carriage, a rock-lever connecting said tappet with said gear-wheel, a crank-disk connected with said bolt, and a flexible shaft connected at one end with said crank-disk and provided at its opposite end with a gear-pinion which meshes with said gear-wheel, substantially as set forth.

30. In a device of the character described, the combination of a carriage, a vertically-rocking support mounted on the carriage, a seat-support capable of longitudinal movement relatively to said rocking support, and a buffer device for cushioning the longitudinal movement of said seat-support, substantially as set forth.

31. In a device of the character described, the combination of a carriage, a vertically-rocking support mounted on the carriage, a platform pivoted on said rocking support to turn horizontally, longitudinal guide-rods mounted on said platform, a seat-body mounted on said rods, and springs mounted on said rods and operating to yieldingly resist longitudinal movement of the seat-body on said rods, substantially as set forth.

Witness my hand this 15th day of October, 1904.

FRANK D. KNAPP.

Witnesses:

THEO. L. POPP,

FRANK J. KNAPP.