No. 821,963. PATENTED MAY 29, 1906.

J. O. RAYMOND.

CARRIER SYSTEM.

APPLICATION FILED SEPT. 18, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

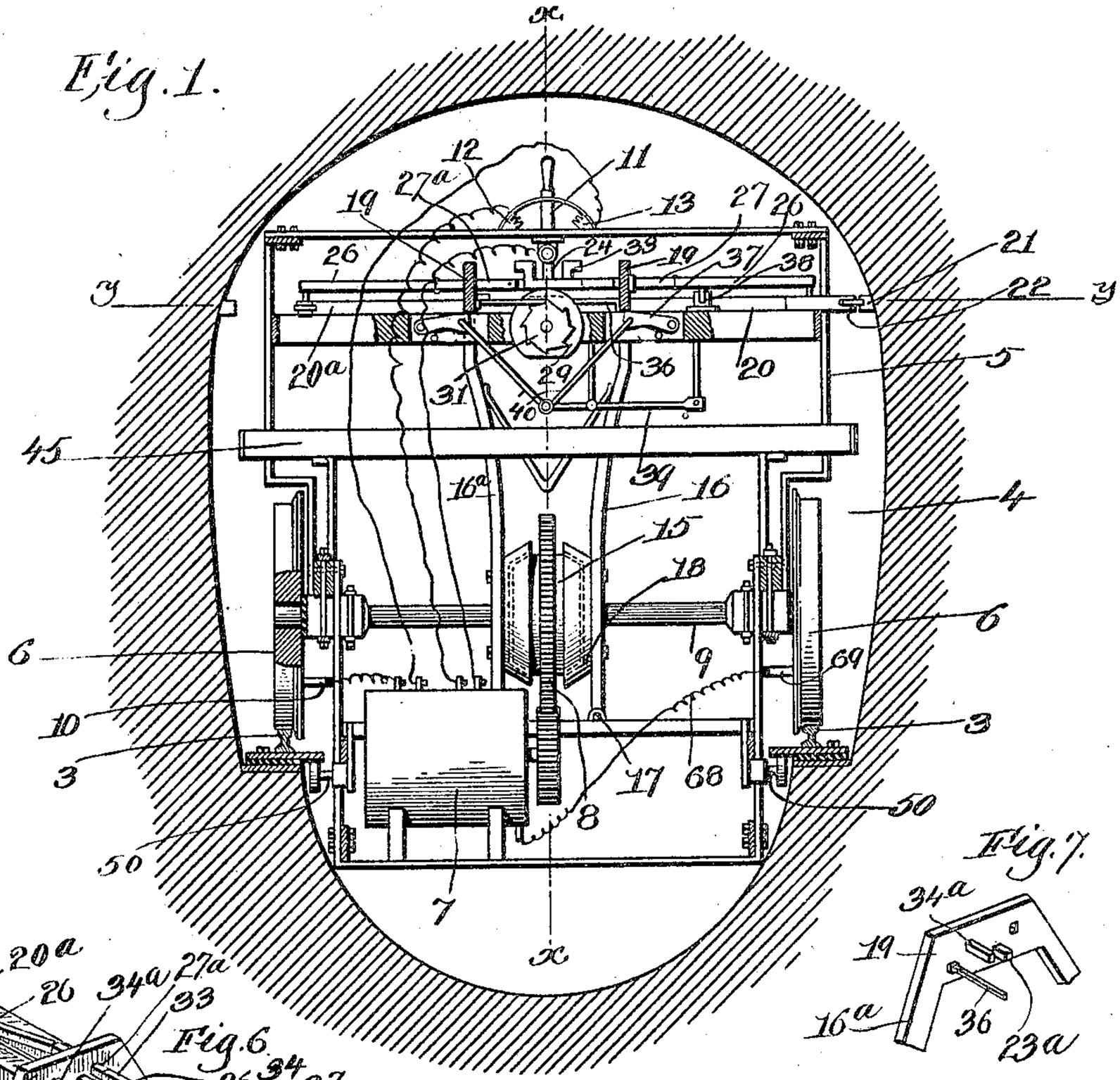


Fig. 7.

Fig. 6.

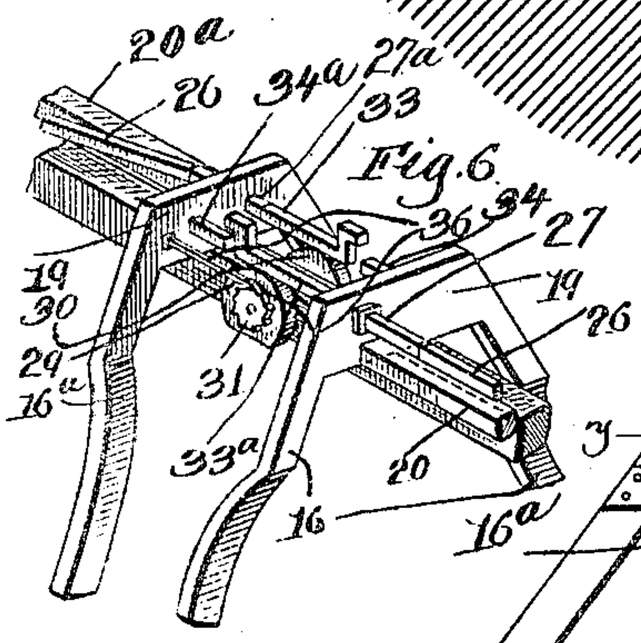
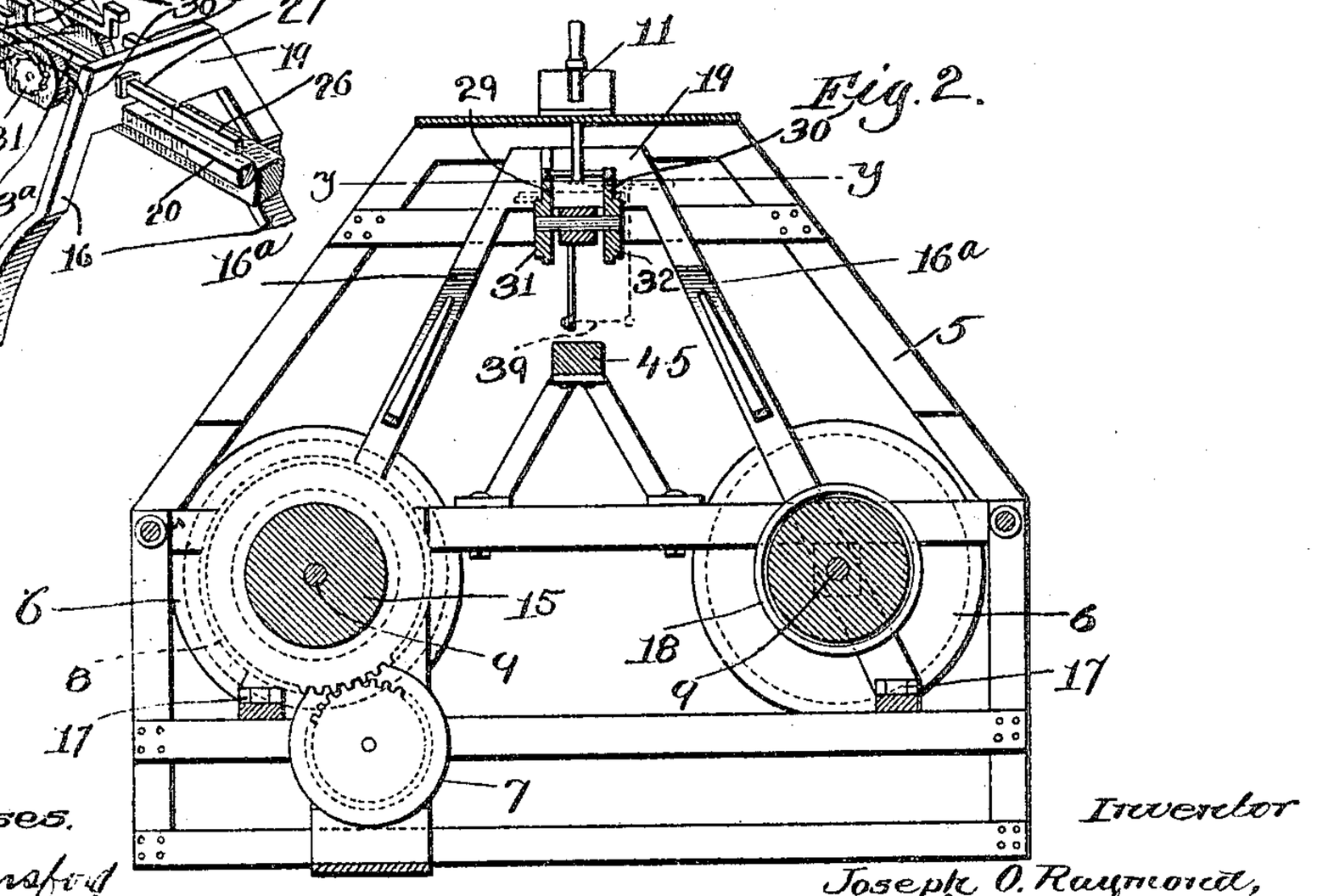


Fig. 2.



Witnesses.
W. C. Lunsford
Bertrand Simonds.

Inventor
Joseph O. Raymond,
by Mosby Gregory Attys

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2 SHEETS—SHEET 2

Fig. 3.

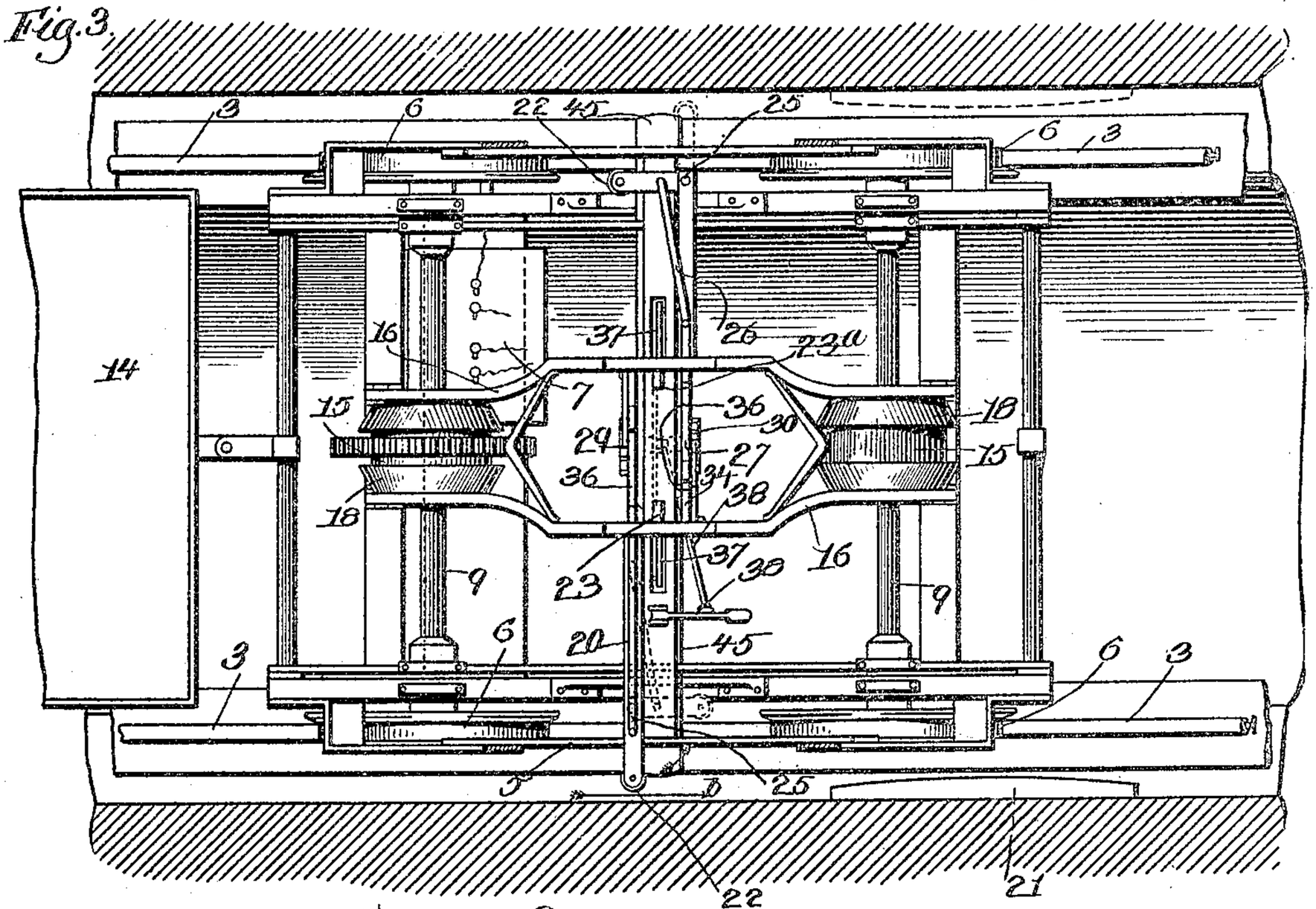
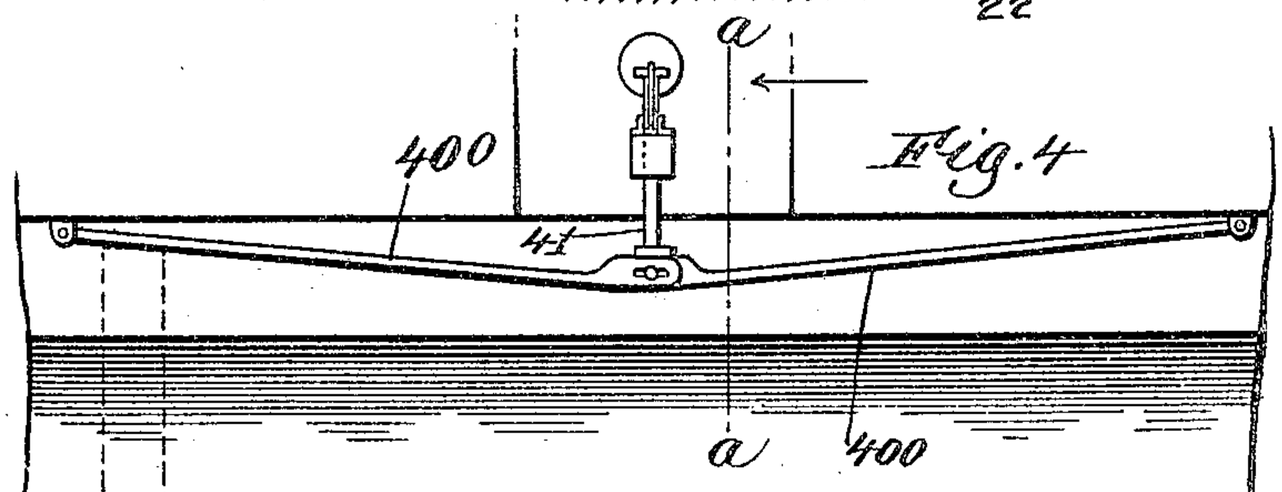


Fig. 4



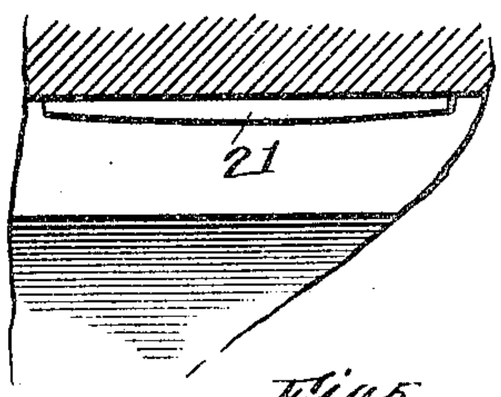
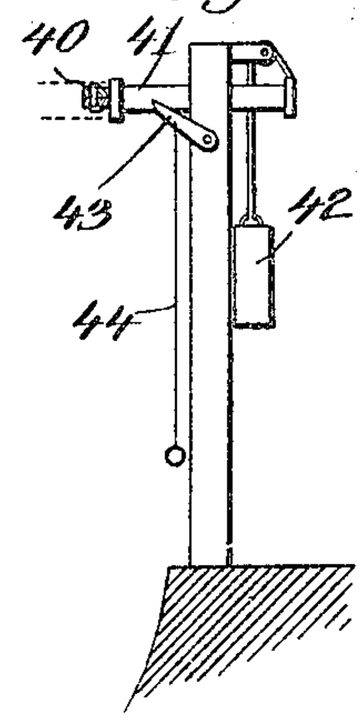


Fig. 5.



Witnesses:
W. C. Lunsford.
Bertrand Simonds.

Inventor:
Joseph O. Raymond,
By Crosby Gregory.
Attys.

UNITED STATES PATENT OFFICE.

JOSEPH OLIVER RAYMOND, OF CONCORD, NEW HAMPSHIRE.

CARRIER SYSTEM.

No. 821,963. Specification of Letters Patent. Patented May 29, 1906.

Application filed September 18, 1905. Serial No. 278,872.

To all whom it may concern:

Be it known that I, JOSEPH OLIVER RAYMOND, a citizen of the United States, and a resident of Concord, in the county of Merrimack and State of New Hampshire, have invented an Improvement in Carrier Systems, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention has for its object to provide a novel carrier for transporting parcels, packages, mail-matter, and similar articles from one destination to another.

The carrier is so constructed that it is automatically propelled and is automatically stopped at each station along the route, and the brake-setting mechanism is automatically reversed at the end of the route, so that when the carrier reaches the end of the route it can be sent back to its starting-point over the same track.

A mechanism embodying my invention will now be described, and the novel points of the invention will be pointed out in the claims.

In the drawings, Figure 1 is a vertical section through the propeller of my improved device. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a section on the lines *y y*, Figs. 1 and 2. Fig. 4 is a detail of the mechanism for bringing the carrier to rest; and Fig. 5 is a section on the line *a a*, Fig. 4, looking in the direction of the arrow. Fig. 6 is a perspective view of the reversing mechanism, and Fig. 7 is a detail of a portion of the swinging frame 16.

In the illustrated embodiment of my invention the carrier and the propeller thereof are illustrated as adapted to travel in a subway or conduit. I wish it understood, however, that my improved carrier might equally well be used on a surface track on an elevated structure.

The propeller or engine which furnishes the propelling power, as well as the trailer which carries the parcels or packages, is adapted to run on tracks 3, which in this embodiment of the invention are located in a conduit or subway 4. Said propeller or engine comprises a suitable frame 5, having the driving-wheels 6, and it is driven by a motor 7 of any suitable pattern, which is geared to a drive-gear 8 on the axle 9 of the driving-wheels. The current for the motor is taken from one wheel 6 by a suitable brush 10. Said wheel is insulated from the driving-axle 9, and the rail 3 on which said wheel rests is also insulated.

The motor is controlled by a suitable switch comprising a pivoted switch-blade 11, adapted to engage either of two contacts 12 and 13, dependent on the direction in which it is desired to rotate the motor. The return from the motor is through a wire 68, brush 69, one of the wheels 6, and the other rail 3, or in any other suitable way. The propeller is adapted to draw one or more cars 14, in which the articles to be transported may be placed.

My present invention is designed for use in locations where there will be one or more stations intermediate the terminals on the route, and my device herein illustrated is so constructed that the carrier will be automatically stopped at each station. To accomplish this purpose, I provide a brake mechanism which is automatically applied as each station is approached, and I also provide means for opening the switch, and thus cutting out the motor 7.

The brake herein shown comprises a friction-brake member 15, fast on each axle 9, and a swinging frame 16, which is pivoted to the frame of the propeller at 17 and carries a friction-brake member 18 for each brake member 15. The swinging frame 16 is substantially U-shaped, as best shown in Fig. 2, and its upper side 19 is adapted to be acted upon by a sliding acuator 20, which in turn is acted upon by stationary cams 21 as the car moves forward. The end of each sliding actuator is provided with an antifriction-roll 22, and when in operative position said end projects sufficiently far to be engaged by the cam 21 as the car moves forward, as best seen in Fig. 3. When the car comes opposite a cam 21, the sliding actuator by its engagement with the cam is moved inwardly, thereby swinging the frame 16 toward the center of the car and applying brakes. This inward swinging movement of the frame 16 is utilized to cut out the motor, and for this purpose the upper portion 19 of said frame is provided with an arm or projection 23, which is adapted to engage the lower end 24 of the switch-blade when said frame is swung inwardly, thereby opening the switch and cutting out the motor.

My propeller is adapted to travel in both directions on the same track and to be automatically stopped at each station regardless

of the direction in which it is going. Accordingly I make the friction members 15 in the shape of double-cone members and provide two frames 16 and 16ª, each carrying the friction members 18, and also employ two sliding actuators 20 and 20ª, one of which is operative when the car is traveling in one direction and the other of which is operative when the car is traveling in the other direction. Each sliding actuator is jointed at 25, and the outer swinging end of each actuator is connected by a link 26 with a slide, said slides being designated 27 and 27ª, respectively.

29 and 30 are two independent cam-wheels journaled in the frame to freely turn, and rigid with each cam-wheel is a ratchet-wheel, said ratchet-wheels being designated 31 and 32. Resting on the cam-wheel 30 is the pivoted end 33 of the slide 27ª, and projecting from the upper part 19 of the swinging frame 16 is a bunter 34. The free end of said pivoted portion 33 is normally held by the cam 30 just above the end of the bunter 34, as seen in Fig. 6; but when the cam-wheel is turned so that the flat portion thereof comes under said pivoted end said end drops and comes into line with the bunter 33, so that during the next inward movement of the frame 16 the slide 27ª will be actuated. The cam-wheel 29 controls a similar pivoted end 33ª, which is hinged to the slide 27, and the top part 19 of the swinging frame 16ª has a bunter 34ª, which coacts with the pivoted part 33ª. The swinging frame 16ª also has a projection 23ª to engage the tail 24 of the switch-blade 11.

The operation of the device will now be described. Assuming that the carrier is moving in the direction of the arrow *b*, Fig. 3, the actuator 20 will be straightened while the actuator 20ª will be buckled, as shown in Fig. 3. When the car approaches a station the actuator 20 engages a cam 21, and the said actuator moves inwardly toward the center of the car, thereby applying the brake and opening the switch, as above described. The car is thus brought to rest. Each inward movement of the frame 16 operates to advance the ratchet-wheel 32 and cam 30 one step, said frame 16 being provided with a pawl 36, which is adapted to engage the teeth of the ratchet-wheel, and thus give it its movement. The ratchet-wheel will thus be advanced one step at each station. The inward swinging movement of the frame 16 to apply the brake carries the upper end 19 thereof inwardly beyond the spring-pressed latch 37, and said latch springs up behind the top of the frame and keeps the brake set. In order to start the carrier after the bundles or packages have been removed, the operator releases the latch 37 by means of a suitable handle 38, which handle is connected to a long lever 39, which in turn is connected by links 40 with the latch 37, whereby the brakes are released, and then closes the switch and starts the motor. It will be understood that there is one latch 37 for each swinging frame. As each station is reached the cam 30 is advanced one step, as stated above, and the ratchet-wheel 32 is so shaped that when the terminal of the route has been reached the cam will have made one revolution, and at this time the flat portion thereof will come under the pivoted end 33 of the slide 27ª. Said end then drops and at the next stop, which will be the last stop on the route, the inward movement of the frame 16 pushes outwardly on the slide 27ª and through the link 26 straightens the actuator 20ª, and thus throws said actuator into operative position.

When the packages have all been delivered and the cars 14 are reloaded, the operator starts the motor in the opposite direction by reversing the switch 11. As the car moves to the left, Fig. 3, the actuator 20ª, which is now thrown into operative position, is in position to engage the cams 21 on the opposite side of the conduit, and thus to apply the brake and throw out the switch at each station. Each inward movement of the left-hand frame 16ª in Fig. 1 will rotate the cam 29 one step, and by the time that the car has reached the other end of the route said cam 29 has made a complete revolution and the lower part thereof comes under the pivoted part 33ª of the slide 27. During the return trip of the car the actuator 20 has been doubled or thrown into the dotted-line position, Fig. 3, by its engagement on the cams 21, and when the car reaches the end of its return journey said actuator is straightened in the same manner that the actuator 20ª was straightened. It will thus be seen that the stopping mechanism of the car is automatically reversed at each end of the trip.

In order to insure that the car will be brought to rest at a definite point at each station, I employ the mechanism shown in Fig. 4. This comprises a pair of resilient members 400 at each side of the track opposite each station. The members 400 of each pair are pivoted at their outer ends to fixed bearings and are pivotally connected together at their inner ends.

41 designates a bunter adapted to engage the two members of each pair at their central portion, said bunter being normally held forward either by means of a suitable spring or by a weight 42, as seen in Fig. 5.

43 is a pawl or latch for locking the bunter in its forward position, said latch having a pull device 44 connected thereto, by which it can be released.

The frame 5 of the propeller is provided with a cross-piece 45, which is so positioned that it engages the opposite pairs of brake members 400, as shown in dotted lines, Fig. 4. Normally said brake members are held in

the full-line position, Fig. 4, by the bunters 41, the latter being locked by the pawls 43.

Whenever a car approaches a station and after the brakes have been set by the cam 21, said car enters between the brake members 400, and the cross-piece 45, by its frictional engagement with the brake members 400, operates to bring the car to rest at a definite point. The members 400 are made resilient, so as to avoid any shock or jar. When the operator desires to start the car, he releases the latch 43 by means of the pull device, so that the brake members 400 can swing back into the dotted-line position, Fig. 4.

In order to prevent the car from jumping from the tracks, I propose to employ safety-rails 50, which are carried by the frame and which are adapted to run on the outside of the tracks 3.

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

1. In a carrier system, a car adapted to travel in both directions on a single track, automatic means to stop the car at predetermined points along the track when going in one direction, and other automatic means to stop said car at said points when the car is traveling in the opposite direction.

2. In a device of the class described, a car adapted to travel in either direction on a track, two separate automatically-operated brake-applying mechanisms, means to render one mechanism operative when the car reaches one terminal of the route, and means to render the other mechanism operative when the car reaches the other terminal of the route.

3. In a device of the class described, a car adapted to travel in either direction upon a track, two separate brake-applying mechanisms, means operated by one mechanism to render the other mechanism operative when the car reaches one terminal of the route, and means actuated by the latter mechanism to render the former operative when the car reaches the other terminal of the route.

4. In a device of the class described, a car adapted to travel in either direction on a track, two separate automatically-operating brake-applying mechanisms, one being operative when the car travels in one direction and the other when the car travels in the opposite direction, and means actuated by the operative brake-applying mechanism to render the inoperative mechanism operative when the car reaches the end of the route.

5. In a device of the class described, a car, a brake therefor, a brake-actuator to apply the brake, and a cam at each point where the car is to stop along the route, said cam being situated to be engaged by the actuator as the car moves over the track whereby said actuator is moved by the cam to cause the brakes to be applied.

6. In a device of the class described, a car, a brake therefor, a brake-actuator operative when the car moves in one direction only, and a fixed cam at each point where the car is to stop, said cam being situated to be engaged by the actuator as the car moves over the track in one direction.

7. In a device of the class described, a car, two brakes therefor, two brake-actuators, one being operative when the car moves in one direction and the other when the car moves in the opposite direction, a fixed cam for each actuator, each cam being situated to be engaged by the corresponding actuator during movement of the car.

8. In a device of the class described, a car, two brakes therefor, an actuator for each brake, one actuator being operative when the car moves in one direction and the other when the car moves in the opposite direction, means to engage the inoperative actuator and thus stop the car at predetermined points, and means to render operative the inoperative actuator at each terminal of the route.

9. In a device of the class described, a car, two independently-movable swinging frames thereon, a brake which is set by the inward swinging movement of each frame, a sliding actuator for each frame, and means to engage one actuator and thereby move the corresponding frame when the car is moving in one direction, and other means to engage the other actuator to thereby swing the other frame when the car moves in the opposite direction.

10. In a device of the class described, a car, two independently-movable swinging frames thereon, a brake which is set by the inward swinging movement of each frame, a sliding actuator for each frame, one actuator being operative when the car is moving in one direction and the other when the car is moving in the opposite direction, means to engage the operative actuator and thereby set the brake at predetermined points along the route, and means operated by the operative actuator to render the other actuator operative at each terminal of the route.

11. In a device of the class described, a car, a brake therefor, a brake-actuator, a cam at each point where the car is to stop along the route, said cam being situated to be engaged by the actuator as the car moves over the track, and means to bring the car to rest at a predetermined point.

12. In a device of the class described, a car, a brake therefor, a brake-actuator, a cam at each point where the car is to stop along the route, said cam being situated to be engaged by the actuator as the car moves over the track, and a stopping device to engage the car after the brakes are set and bring it to rest at a predetermined point.

13. In a device of the class described, a car, a motor thereon for propelling the car, a

switch for controlling the motor, a brake for the car, a brake-actuator, a cam at each point where the car is to stop along the route, each cam being situated to engage the actuator and thereby cause the brake to be applied, and means controlled by the actuator to automatically open the switch and cut the motor out when the brake is applied.

14. In a device of the class described, a car, a motor for propelling the car, a reversing-switch controlling the motor, two brakes, an actuator for each brake, one actuator being operative when the car moves in one direction and the other when the car moves in the opposite direction, means to engage the operative actuator at the points where the car is to stop and thereby apply the brake, and means to open the switch by the movement of either actuator.

15. In a device of the class described, a car, a motor thereon for propelling said car, a switch for controlling the motor, a brake for the car, a mechanically-operated brake-actuator, a cam at each point where the car is to stop along the route, said cams being situated to engage the actuator and thereby move the latter positively to cause the brake to be applied, and means to automatically open the switch and cut the motor out when the brake is applied.

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

JOSEPH OLIVER RAYMOND.

Witnesses:
THOMAS F. CLIFFORD,
EDMUND S. COOK.