A. C. McCORD.

DEVICE FOR DELIVERING MAIL FROM FAST MOVING CARS.

APPLICATION FILED JAN. 16, 1909.

967,223.

Patented Aug. 16, 1910.

5 SHEETS—SHEET 1.

Fig. 1

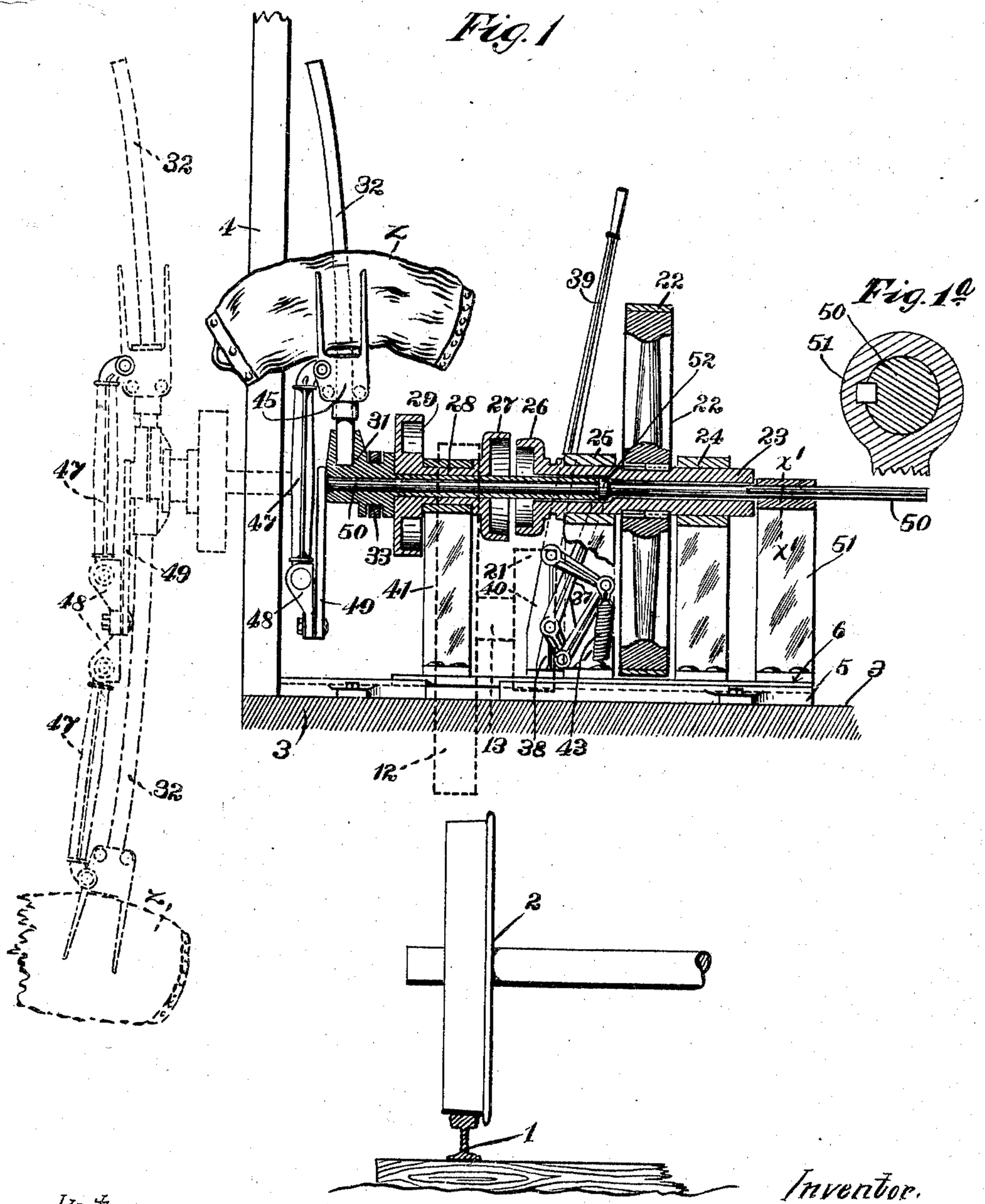


Fig. 1a

Witnesses:
R. P. Hicks
A. H. Ossahl.

Inventor.
Alvin C. McCord
By his Attorneys-
Williamson Merchant

A. C. McCORD.

DEVICE FOR DELIVERING MAIL FROM FAST MOVING CARS.

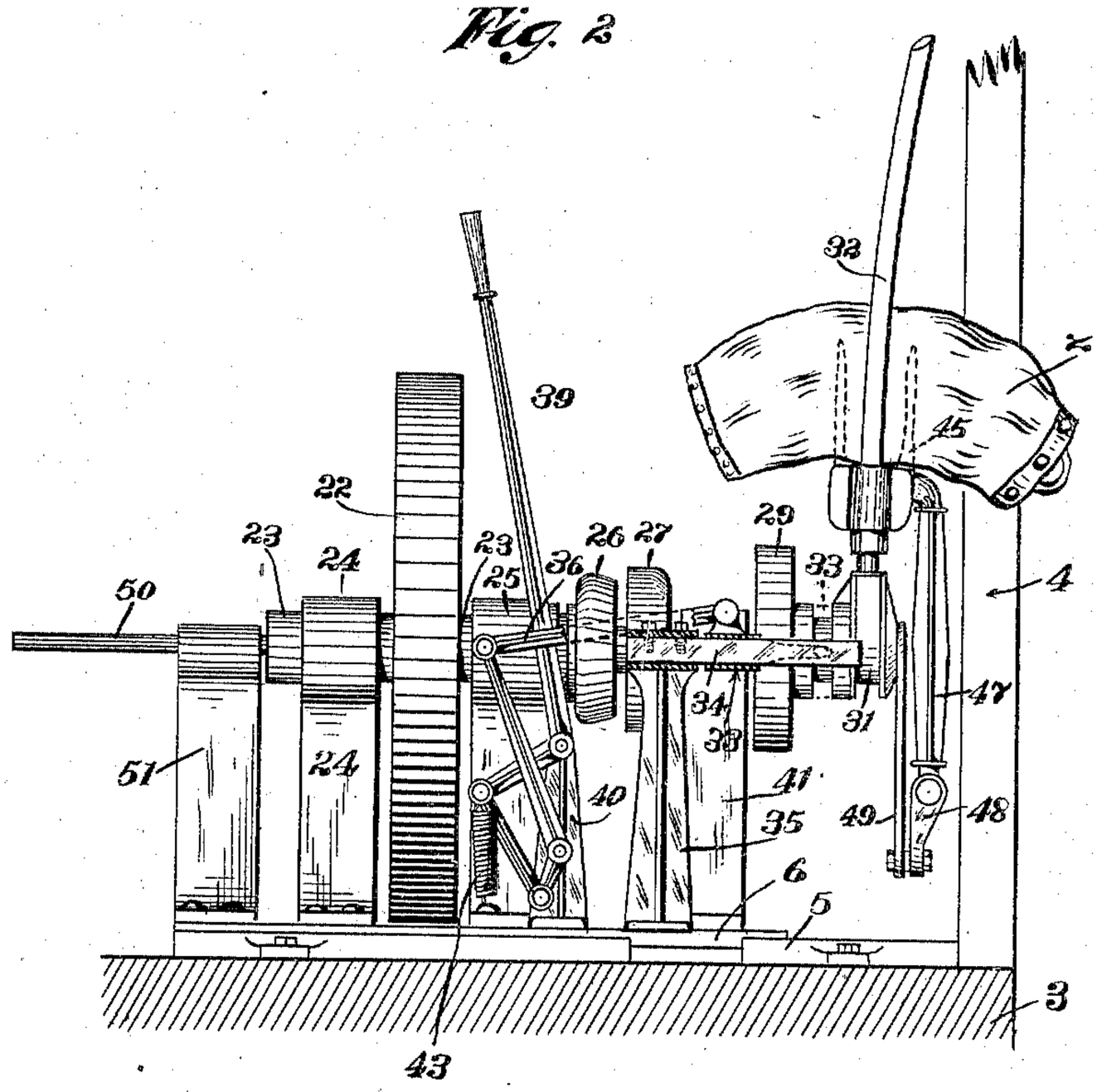
APPLICATION FILED JAN. 16, 1909.

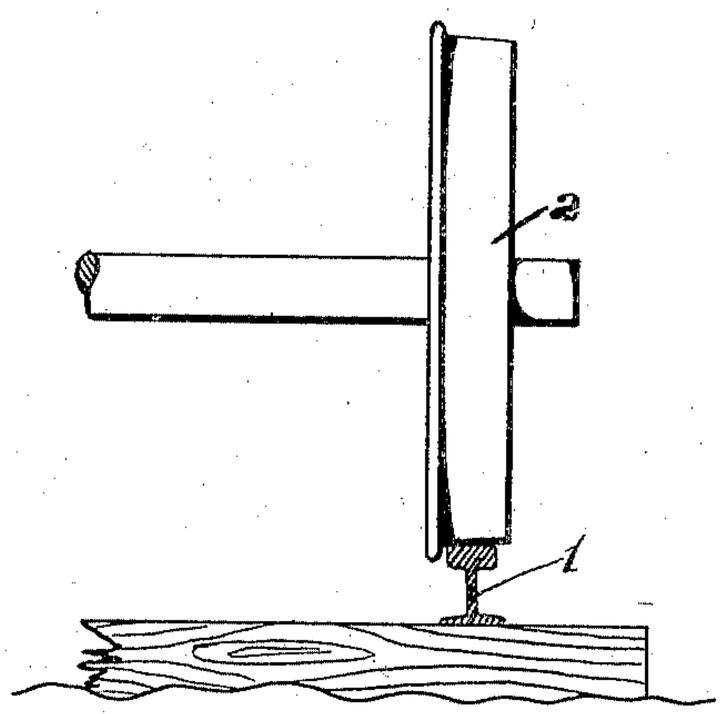
967,223.

Patented Aug. 16, 1910.

5 SHEETS—SHEET 2.

Fig. 2





Witnesses:
R. P. Hicks
A. H. Opsahl

Inventor:
Alvin C. McCord
By his Attorneys:
Williamson & Merchant

A. C. McCORD.

DEVICE FOR DELIVERING MAIL FROM FAST MOVING CARS.

APPLICATION FILED JAN. 16, 1909.

967,223.

Patented Aug. 16, 1910.

5 SHEETS—SHEET 3.

Fig. 3.

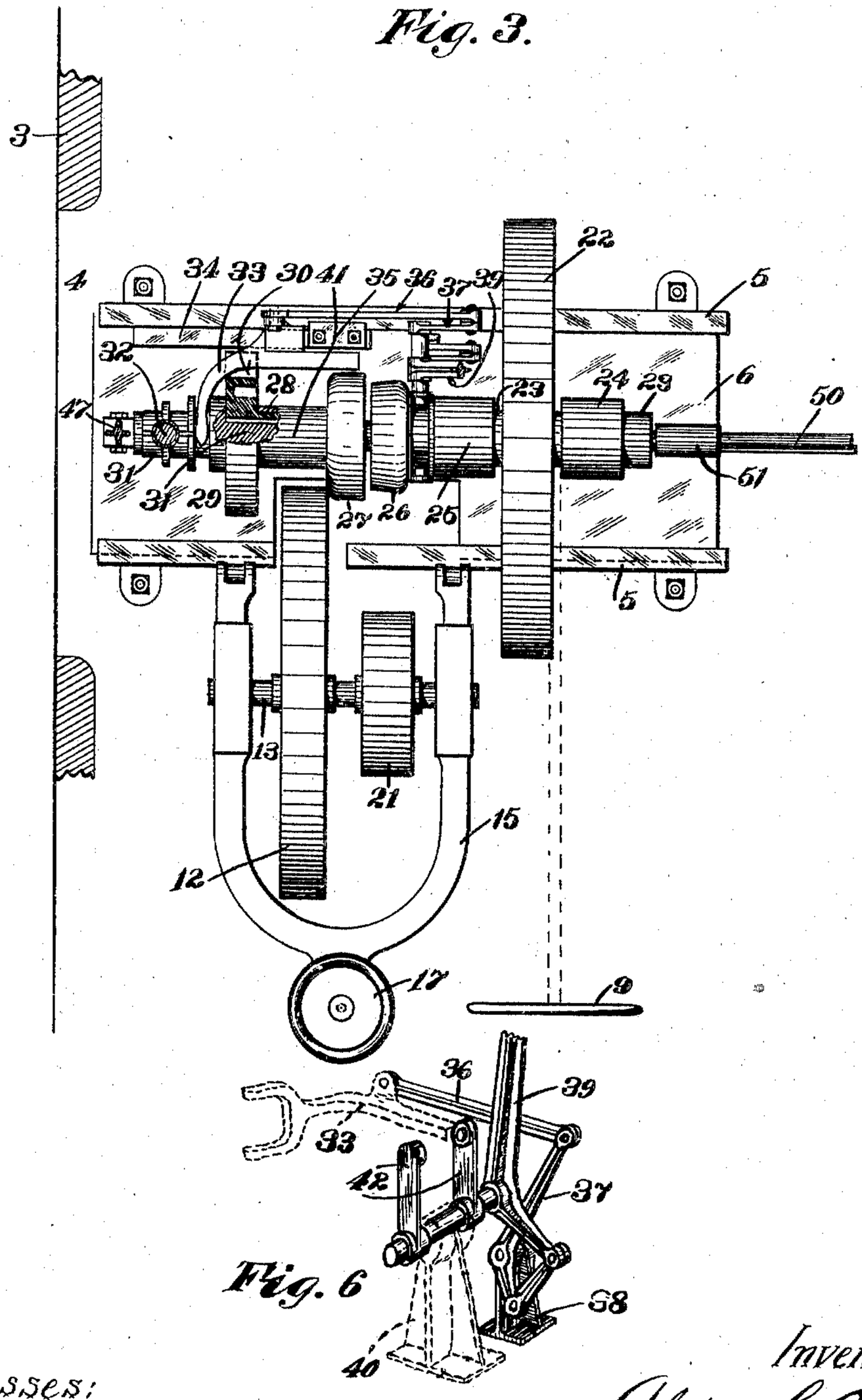


Fig. 6

Witnesses:

R. P. Hicks

A. H. Osgood.

Inventor:

Alvin C. McCord

By his Attorneys

Williamson Merchant

A. C. McCORD.

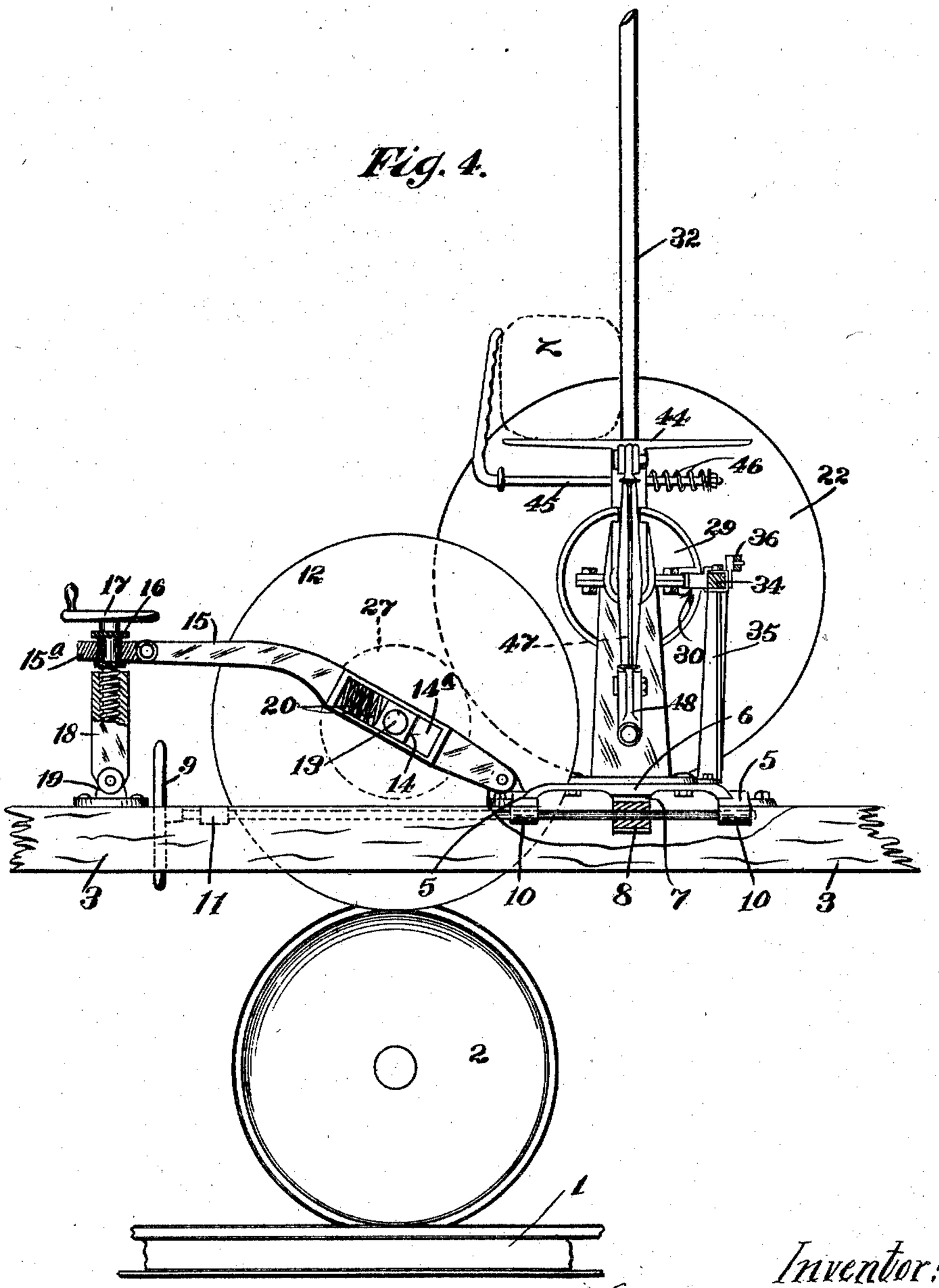
DEVICE FOR DELIVERING MAIL FROM FAST MOVING CARS.

APPLICATION FILED JAN. 16, 1909.

967,223. Patented Aug. 16, 1910.

5 SHEETS—SHEET 4.

Fig. 4.



Witnesses:
R. P. Hicks
A. H. Opsahl.

Inventor:
Alvin C. McCord
By his Attorneys,
Williamson & Merchant

A. C. McCORD.

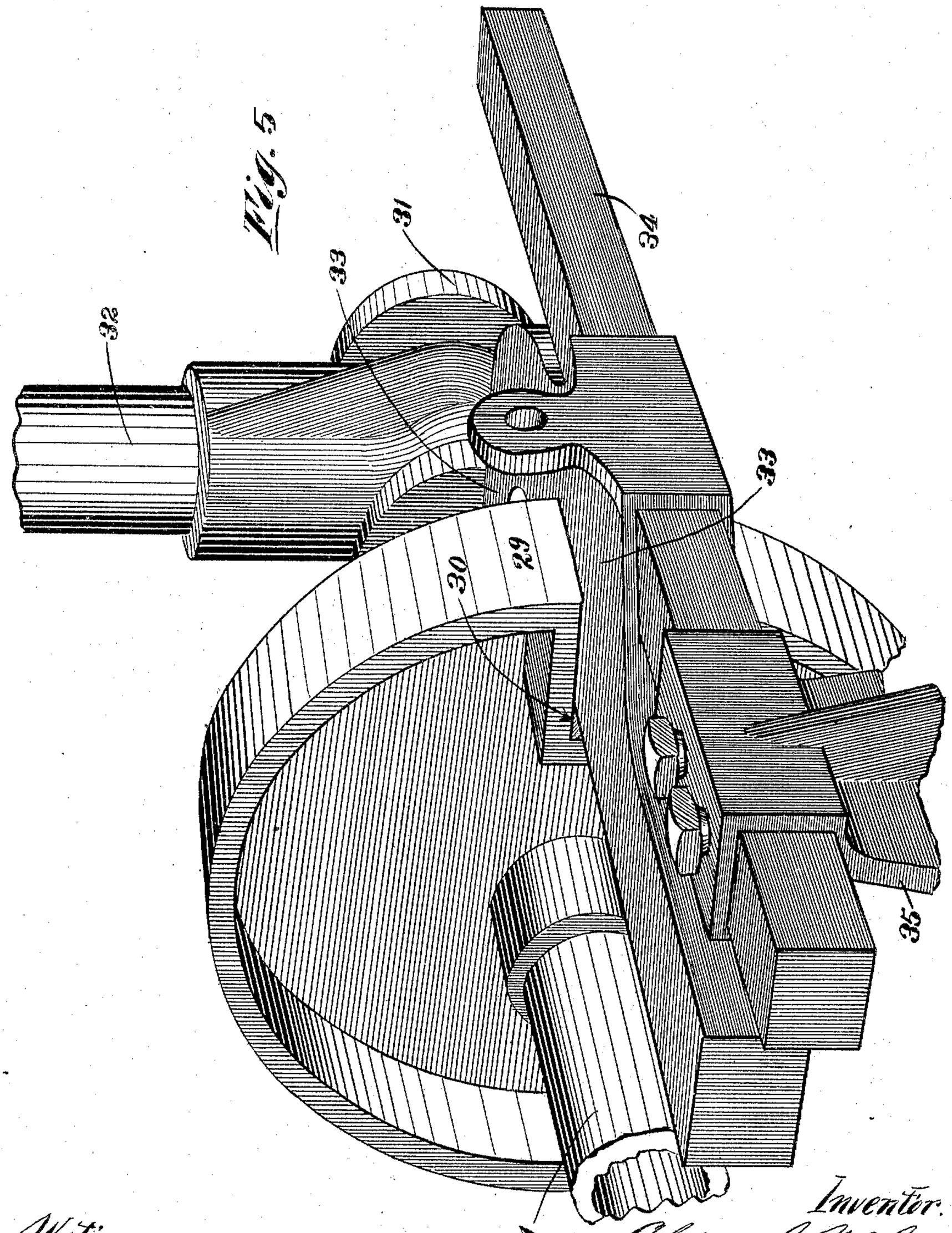
DEVICE FOR DELIVERING MAIL FROM FAST MOVING CARS.

APPLICATION FILED JAN. 16, 1909.

967,223. Patented Aug. 16, 1910.

5 SHEETS—SHEET 5.

Fig. 5



Witnesses:
P. P. Hicks
A. H. Staehl.

Inventor.
Alvin C. McCord
By his Attorneys:
Williamson & Merchant

UNITED STATES PATENT OFFICE.

ALVIN C. McCORD, OF CHICAGO, ILLINOIS.

DEVICE FOR DELIVERING MAIL FROM FAST-MOVING CARS.

967,223. Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed January 16, 1909. Serial No. 472,632.

To all whom it may concern:

Be it known that I, ALVIN C. McCORD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Devices for Delivering Mail from Fast-Moving Cars; 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 has for its object to provide an efficient device for delivering mail bags or other things from a fast moving car, with safety, at the point desired; and to this end, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The through or long distance mail trains are now usually run at high speed. Many of these trains make a speed averaging a mile per minute; and they seldom stop between terminal stations. Nevertheless, there are many intermediate points whereat it is desirable to deliver the mail. Hand delivery is impracticable for the reason that the mail bag has the accumulated momentum of the fast moving car and if thrown out by hand, will be carried forward a considerable distance and then will strike the ground with such great violence as to be liable to tear the mail bags to pieces and destroy the mail. Moreover, a mail bag so thrown out by hand is subject to the suction from the train and is liable to be drawn under the car wheels.

My invention overcomes the above noted difficulties produced by the momentum of the car and drops the mail bag or other thing with safety.

The invention is based on the principle of physics which is usually illustrated by the following statement:—If a cannon, located on the rear end of a moving car, be fired backward therefrom, and the ball have the same muzzle velocity as the velocity of the car moving in the opposite direction, then the ball will drop directly down to the track, at the point where it leaves the muzzle of the cannon. On this principle, it is clear that if a suitable dropper, located on the car, be set under motion substantially at the same speed as the car but in a direction opposite to the travel of the car, at the desired point of delivery, then the mail bag, or other thing to be delivered therefrom, will drop directly to the ground just as if it were dropped out by hand from the car in a stationary position.

The invention is capable of being embodied in manifold forms of structure. Any dropping device having combined therewith means for moving the same substantially at the speed of the car but opposite to the travel of the car, at the desired point of delivery, is within the principle and spirit of the invention from the broad point of view. I prefer, however, to employ a dropper which is mounted for rotary motion opposite to the travel of the car and which is projectable, from its normal or idle position inside the car, outward through the car door opening into its delivering position outside the car. The mechanism for setting this rotary dropper under motion substantially at the speed of the car but opposite to the travel thereof, may take numerous forms. One desirable form is the use of a friction drive which takes its motion from one of the car wheels and is so designed that its fly wheel and heaviest parts would be brought up to speed before the delivery station is reached and then that this motion can be imparted to the dropper, by friction clutches, after the dropper has been projected into its delivery position outside the car.

The accompanying drawings illustrate the invention as organized for operation by such a friction drive.

A companion case, filed of even date herewith, under Serial No. 472,633, illustrates the invention as organized for operation by a pneumatic motor, the piston of which is controlled to drive the rotary dropper at the speed of the car but opposite to the travel thereof, at the point of delivery.

In the accompanying drawings, wherein like references refer to like parts throughout the several views, Figure 1 is a view chiefly in vertical section, but partly in front elevation, with some portions broken away, others removed and others shown in diagram only, directions being taken with reference to the position of an observer looking backward from the front end of the car; or otherwise stated, the car is assumed to be moving toward the observer; Fig. 1ª is a detail in section on the line x^1 x^1 of Fig. 1; Fig. 2 is a rear elevation of the parts shown in Fig. 1; Fig. 3 is a view of the parts shown in Figs. 1 and 2, chiefly in plan, but

with some portions shown in horizontal section and others broken away; Fig. 4 is a righthand elevation of the parts shown in Fig. 3, with some parts removed, others broken away and some parts shown in diagram only; and Fig. 5 is a view in perspective, showing certain portions of the rotary dropper and the sliding shipper fork and lock for the same. Fig. 6 is a perspective view of the lever connections which control the dropper and the friction clutch.

The numeral 1 represents a portion of the track, 2 one of the car truck wheels and 3 a portion of the car body, to-wit, that portion which has in its side wall the customary door opening 4, shown in Fig. 3.

The numerals 5 represent a pair of suitably spaced horizontal bed rails bolted, or otherwise rigidly secured, to the floor of the car crosswise thereof, directly opposite the door opening 4 and extending near to the same. In these bed rails 5, as guideways, is mounted a sliding bed plate 6 which has, on its under side, a rack 7 extending lengthwise thereof. This rack 7 is engaged by pinion 8 fixed to a hand shaft 9 which is mounted in suitable bearings 10 and 11, of which the members 10 are formed integral with one of the bed rails 5 and the other member 11 is fixed to the car floor as best shown in Fig. 4. It is obvious that, with this hand wheel 9 and the parts 7 and 8, the bed plate 6 and whatever may be fixed thereto or carried thereby can be moved lengthwise of the bed rails 5 in either direction desired.

The numeral 12 represents a friction wheel fixed to a countershaft 13 mounted in sliding bearing boxes 14 suitably supported in a yoke 15. The lower ends or feet of this yoke are pivoted to one of the bed rails 5, as best shown in Figs. 3 and 4, and the upper arched end of the yoke is provided with a pivoted extension 15^a, which is carried by collars 16 fixed to a hand screw 17. The hand screw is screw-seated in a short bearing pedestal 18, having its lower end pivoted to an anchor bracket 19 fixed to the floor of the car. Hence, with the hand screw 17 the upper or arched end of the bearing yoke 15 can be raised and lowered and held in any desired angular adjustment. The sliding boxes 14 move in ways 14^a formed in the legs of the yoke 15 and are subject to springs 20 reacting between the boxes and the upper ends of the ways and tending to yieldingly hold the boxes 14 and the countershaft 13 in their lowermost position. The friction wheel 12 works down through a suitable opening in the car floor, in proper position to have its periphery or face brought in contact with the tread surface of the truck wheel 2 when the yoke 15 is in its lowermost position; and, by the hand screw 17, the said friction wheel 12 can be held in contact with the car wheel under any desired pressure. It, of course, follows that the wheel 12 will take rotary motion from the car wheel 2 at the same peripheral speed but in the opposite direction at its top or upper half zone of its travel. The countershaft 13 has also fixed thereto a friction pulley 21 of smaller diameter than the friction wheel 12.

The numeral 22 represents a large fly wheel splined to a hollow shaft 23 which is mounted for a limited sliding motion in a pair of bearing pedestals, marked respectively 24 and 25, fixed to the sliding bed plate 6 and spaced apart from each other to permit the fly wheel 22 to work between the same and be held thereby under the sliding motion of the shaft 23. The said fly wheel 22 and its supporting pedestals, together with the hollow shaft 23, will move with the bed plate 6 lengthwise of the bed rails 5; and, hence, by the proper manipulation of the hand wheel 9, said fly wheel 22 may be made to take such a position that its periphery will be brought into frictional engagement with the pulley 21 fixed to the counter-shaft 13. Hence, the motion imparted by the car wheel 2 to the parts 12, 13 and 21 will, by said part 21, be imparted to said fly wheel 22, and thereby cause the latter to turn opposite to the direction of the car's travel throughout the lower zone of its movement, all as indicated by the arrows in Fig. 4 of the drawings.

The sliding hollow shaft 23 bearing the fly wheel 22, has formed integral with its left end the male member 26 of a friction clutch. The numeral 27 represents the cooperating female member of this friction clutch and is formed integral with the right end of a hollow driving hub or sleeve 28 which has formed integral with its left end a flanged locking disk 29 having an open mouthed radial notch 30 formed therein, as best shown in Fig. 5. The driving hub 28 is mounted in a bearing pedestal 41 fixed to and rising from the sliding bed plate 6, as best shown in Figs. 1 and 2; and the bearing part of said pedestal fits the driving hub 28 between the parts 27 and 29 so as to prevent the said parts from any sliding motion.

The numeral 31 represents the dropper shaft and the numeral 32 the delivery arm of the same. The shaft 31 rests in the driving hub 28 and the parts 27 and 29 as a long bearing for the same, and its right end also extends into a recessed portion of the hollow shaft 24. This dropper shaft 31 is splined to the driving hub 28, as shown in Fig. 3, so that while it may be driven in a rotary direction by the driving hub 28, it will slide lengthwise of the said hub as required to move its delivery arm 32 from its normal position inside the car to a delivery position outside the car, represented respectively by the full and dotted lines in Fig. 1 of the

drawings. Said shaft 31 is also hollow for a purpose which will presently be noted.

The numeral 33 represents a locking shipper fork slide which is mounted on a guide rail 34, which is adjustably secured to the upper end portion of a bearing bracket 35 fixed to the sliding bed plate 6 as best shown in Figs. 3, 4 and 5. The outer or forked end of this part 33 takes hold of the dropper shaft 31 outward of the notched disk 29, as best shown in Figs. 1 and 3. The body portion of the part 33 is of rectangular form in cross section and normally occupies the notch 30 of the disk 29; but the said part 33 can be moved outward far enough to make its inner end clear the outer profile edges of the notch 30 and when this occurs the disk 29, the parts 27 and 28 and the dropper shaft 31 splined thereto can be rotated.

The shipper fork slide 33 is connected by a link 36 with the long arm of the bell crank lever 37, which is pivoted to a short pedestal 38, best shown in Fig. 6, and which pedestal 38 is fixed to the sliding bed plate 6, as best shown in Figs. 1 and 2. The short arm of the bell crank 37 is connected to the short arm of a bell crank hand lever 39, which is pivoted in a bearing bracket 40 fixed to the sliding bed plate 6, as best shown in Figs. 2 and 6, and having rigid with its pivot shaft a shipper fork 42 which rises from below and engages with the hollow shaft 23 directly back of the hub of the clutch member 26, as best shown in Fig. 3. By reference to these levers and their connecting links, it will be seen that by the manipulation of the hand lever 39, the sliding shipper fork 33 will be given a relatively long motion in advance of any material motion which will be imparted by the shipper fork 42 to the clutch member 26. This is for the purpose of throwing the dropper shaft and the shipper fork slide 33 outward to their limit before the clutch member 26 is brought into driving relation with the clutch member 27. The parts are assumed to be so proportioned that the member 26 will be brought into driving frictional contact with the member 27 precisely at the instant when the inner end of the shipper fork slide 33 passes entirely out from the notch 30.

A strong spring 43 is shown in Figs. 1 and 2 as applied to the short arm of the bell crank hand lever 39, with its lower end anchored to the bed plate 6 and operating to hold the hand lever 39 at the extreme of its right hand movement, as best shown in Fig. 1. Hence, when the dropper shaft 31 and the shipper fork slide 33 are moved outward by the hand lever 39, it is done against the tension of said spring 43; and it is assumed that the operator will let go of the hand lever 39 at the instant when the shipper fork slide 33 clears the notch 29 of the driving disk 30. Then, at the same instant, the clutches 26 and 27 being in driving relation, the disk 29 and the dropper shaft 31 splined thereto, together with its delivery arm 32, will be given one complete revolution, while the inner end of the slide 33 will be held by the spring 43 abutting the outer profile face of the disk 29 and reenter the notch 30 and be thrown back to its limit by the spring 43 at the end of the single revolution of the dropper shaft. This return motion of the dropper and the parts connected with the shipper fork slide 33 will separate the clutch members 26 and 27, in advance of the reëntry of the slide in the notch 30 of the disk 29, so that the latter can stop the disk and the dropper and there hold the same until the lever 39 is again thrown outward to its limit.

From the foregoing, it can be readily seen that the accumulated motion of the fly wheel 22 and the parts to which it is splined will be imparted to the parts 27, 28 and 29 and to the rotary dropper shaft 31 splined thereto; and that, therefore, this shaft 31 and this delivery arm 32 will be rotated at substantially the speed of the car and will be moving throughout the lower zone of its travel, in a direction opposite to the travel of the car. Hence, if this arm 32 can be made to drop the mail bag Z or other article, it is obvious that the same can be dropped to the ground free from momentum. The special details for insuring the proper holding and delivery of the bag will not be noted.

The numeral 44 represents a table-like bracket, having its hub mounted for sliding movement lengthwise of the delivery arm 32 of the dropper. In the hub of this table bracket 44 is mounted a two-pronged draw bolt clamp 45 subject to a spring 46 tending to hold the same in its innermost position. The prongs of this clamp 45 are so related to the leaves of the table bracket 44 that when a mail bag Z is placed on one of the leaves of the table, the clamp will coöperate with the table and the delivery arm 32 yieldingly to hold the mail bag Z between the said parts. It must be obvious, therefore, that if the table bracket 44 and clamp 45 can be moved outward lengthwise of the arm 32, the mail bag will be released from the clamp at the tip of the arm. Positive means are provided for this purpose. The means shown include a long toggle lever member 47 pivoted to the table bracket hub 44 at one end and having its other end pivoted to a short toggle lever member 48 which, in turn, is pivoted to the lower end of a crank arm 49. The pivots connecting the parts 47 and 48 and the parts 48 and 49 have their axes at right angles to each other so that the long lever 47 is indirectly connected to the crank arm 49 by universal

joint. The shaft 31 of the dropper is hollow, as best shown in Fig. 1, and the crank arm 49 is fixed to a relatively small shaft 50 which is seated in the dropper shaft 31 as a bearing and extends outward also through the fly wheel shaft 23 and a special bearing pedestal 51 fixed to the bed plate 6, at the right end of the same, as best shown in Fig. 1. This shaft 50 is splined to the bearing portion of the pedestal 51 as shown in Fig. 1ª so as thereby to be held against rotary motion while free for sliding motion with the dropper shaft 31 when that is moved outward to its delivery position, or back therefrom to its normal position. The shaft 50 is long enough to permit of this sliding motion without passing to the left of its bearing pedestal 51. The crank arm 49 of the shaft 50 projects downward from the left end of the shaft and abuts against the left end of the dropper shaft 31 and, hence, it will be moved outward with the dropper shaft. The inner end of the dropper shaft 31 abuts against a collar 52 formed on the central part of the shaft 50, as shown in Fig. 1; and, hence, when the dropper shaft is drawn back inward to its normal position by the spring 43, the crank shaft 50 will also be carried back therewith.

Inasmuch as the parts 49 and 50 are held from rotation by the bearing pedestal 51, it follows that the toggle levers 47 and 48 must travel around the stationary crank arm 49. Hence, if it be assumed that the normal position of the parts be that shown in full lines in Figs. 1 and 2, it will follow that the table 44 and clamp 45 will be forced outward to their limit lengthwise of the delivery arm 32 when the latter reaches the lowermost point of its travel. It, therefore, follows that the mail bag will be dropped at the lowest point in the travel of the dropper arm 32, or when the parts are in the position shown in dotted lines in Fig. 1. It is obvious that the mail bag Z will necessarily be released, at this instant, because there will then be no base of reaction for coöperation with the clamp 45. The body of the bag will be beyond the tip of the arm and, hence, must drop, while the clamp can move inward until its forked end strikes the adjacent leaf of the table 44. Under the continued rotation of the dropper, after the bag is released, the table bracket 44 and the clamp 45 will be brought back inward to their limit on the arm 32, at the time the latter reaches its uppermost position and the shipper fork slide 33 again reenters the notch 30 of the disk 29 under the tension of its retracting spring 43, as hitherto noted. Centrifugal force will also assist to move the table 44, clamp 45 and mail bag Z outward lengthwise of the delivery arm 32 after the rotation of the dropper begins.

Having regard to the timing of the starting into action of the different parts, the operator can load the dropper with the mail bag Z for the next station at any time he desires; then, as the train nears the station, he will throw the bed plate and all the parts carried thereby over into the proper position for bringing the fly wheel 22 into frictional engagement with the pulley 21 after he has forced the friction wheel 12 into contact with the car wheel 2. The fly wheel 22 will thus be brought up to the required speed of rotation before the station is reached. Assuming the car door to be open, the operator will then manipulate the hand lever 39 to throw the dropper outward to its delivery position and bring the friction clutches into driving relation just at the instant the station is reached. Delivery will then take place under instantaneous action and the parts of the dropper and the clutches connected with said lever 39 will be returned inward to their normal position by the retracting spring 43. Then the operator will again manipulate the hand screw 9 and return the sliding bed plate and parts carried thereby to their innermost or normal position.

It should, perhaps, be noted that the reason for mounting the countershaft 13 in the sliding bearings 14 on the yoke 15 and making the same subject to the spring 20, is to permit the friction wheel 12, carried by said countershaft to have a yielding action in compensation for the up and down motion of the car body relative to the truck wheels.

It should also be noted that, while the delivery arm 32 extends generally in a radial direction from the dropper shaft 31, it is also curved outward so as to deliver the bag as far away from the car wheels as is practicable. Hence, when the word radial is used in the specification and claims as applying to this delivery arm 32, it must be understood that it is not used in its strict mathematical sense of requiring a straight line.

It must be understood that, if the delivery device is adapted to set the mail bag or other thing to be delivered under motion opposite to the travel of the car, before it is dropped, it would be serviceable even if the full speed of the car was not attained.

What I claim is:

1. The combination with a car, of a rotary dropper comprising a rotary shaft projectable outward beyond the side wall of the car and having at its outer end a delivery arm, and means for imparting motion to said shaft and arm opposite to the travel of the car, substantially at the speed of the car, at the desired point of delivery, substantially as described.

2. The combination with a car, of a rotary dropper comprising a rotary shaft projectable outward beyond the side wall of the car and having at its outer end a delivery arm, means for imparting motion to said shaft

and arm opposite to the travel of the car, substantially at the speed of the car, at the desired point of delivery, and means for preventing the rotation of said shaft and arm at all times except when in their outermost position, substantially as described.

3. The combination with a car, of a rotary dropper normally within the car, but adapted to be projected outward beyond the side wall of the same and a friction drive for imparting motion to the said dropper from one of the car wheels, at substantially the same speed as the car but opposite to the travel of the car, at the desired point of delivery, and which friction drive includes a fly wheel adapted to be put under rotary motion at the speed of the car before the car reaches the desired point of delivery and a friction clutch adapted to connect the fly wheel with the shaft of the dropper near the instant of desired delivery, substantially as described.

4. The combination with a car, of a rotary dropper normally within the car but adapted to be projected outward beyond the side wall of the same, and a friction drive for imparting motion to the said dropper from one of the car wheels at substantially the same speed as the car but opposite to the travel of the car, at the desired point of delivery, and which friction drive includes a fly wheel adapted to be put under rotary motion at the speed of the car before the car reaches the desired point of delivery, and an automatically releasing friction clutch adapted to be shifted by hand to connect this fly wheel with the shaft of said dropper, near the instant of the desired delivery, and to release itself from said dropper shaft after delivery has been made, substantially as described.

5. The combination with a car, of a rotary dropper shaft having at its outer end a radial delivery arm, means for rotating said shaft and arm substantially at the speed of the car and opposite to the travel thereof at the point of delivery, and a bag holder on said delivery arm movable lengthwise thereof to drop the bag from the tip of the arm, substantially as described.

6. The combination with a car, of a rotary dropper shaft having at its outer end a radial delivery arm, means for imparting motion to said shaft and arm opposite to the travel of the car, substantially at the speed of the car, at the desired point of delivery, and a yielding clamp on said delivery arm coöperating therewith to hold the bag or other article to be delivered and movable lengthwise of the arm under the rotary motion of the shaft and arm to effect the delivery from the tip of the arm, at the lowest point of the arm's travel, substantially as described.

7. The combination with a car, of a rotary dropper having at its outer end a radial delivery arm, means for imparting motion to said arm opposite to the travel of the car substantially at the speed of the car, at the desired point of delivery, a clamp on said delivery arm coöperating therewith to hold the article to be delivered, and positive means for moving this clamp lengthwise of said arm under the rotary motion of the dropper so as to effect the delivery from the tip of the arm at the lowest point of the arm's travel, substantially as described.

8. The combination with a car, of a rotary dropper comprising a rotary shaft projectable outward beyond the side wall of the car and having at its outer end a radial delivery arm, means for holding said shaft from rotary motion with said delivery arm in an upright position, while being loaded and projected to its outermost limit, means for imparting motion to said shaft and arm opposite to the travel of the car, substantially at the speed of the car, at the desired point of delivery, and a clamp on said arm coöperating therewith to hold the bags or other article and movable lengthwise thereof under the rotary motion of the dropper, to effect the delivery from the tip of the arm at the lowest point of the arm's travel, substantially as described.

9. The combination with a car, of a rotary dropper having at its outer end a radial delivery arm, means for imparting motion to said dropper substantially at the speed of the car and opposite to the travel thereof, at the desired point of delivery, and a bag holder on said arm comprising a table movable lengthwise thereof and having seated therein a spring held clamp which cooperates with the table and the arm to hold the bag, and positive means for moving said table and clamp lengthwise of said arm under the rotary motion of the dropper, so as to effect the delivery at the tip of the arm, substantially as described.

10. The combination with a hollow dropper shaft having at its outer end the radial delivery arm, of the holding table and clamp movable lengthwise of the arm and the shaft mounted within the dropper shaft for sliding movement therewith but splined to a fixed bearing, and which shaft is provided at its outer end with an outwardly extending crank arm and a set of toggle levers connecting said table and clamp with said stationary crank arm whereby, under the rotation of the dropper shaft, the table and clamp will be forced to the tip of the delivery arm, substantially as described.

11. The combination with a car, of a countershaft adjustably supported thereon and having a friction wheel which can be brought into frictional contact with the tread of one of the car truck wheels, a friction pulley on said countershaft and a fly wheel

on the car adapted to be brought into frictional engagement with said pulley, substantially as described.

12. The combination with a car, of a countershaft having a friction wheel and a friction pulley secured thereto, which countershaft is mounted in bearings which can be raised or lowered to bring said friction wheel into contact with one of the truck wheels of the car and which bearings are under spring tension for yieldingly holding said friction wheel in contact with the truck wheel, substantially as described.

13. The combination with a car, of a bearing yoke having its feet pivoted to the car and its upper or outer end pivotally connected to an adjusting screw which, in turn, works in a bearing block pivoted to the car, a countershaft mounted in sliding bearings seated in the legs of said yoke and subject to springs tending to force the bearings to their lowermost limit, a friction wheel and a friction pulley fixed to said countershaft, which friction wheel is adapted to be raised or lowered by said yoke to bring the same into contact with one of the truck wheels of the car, substantially as described.

14. The combination with a car, of the rotary dropper and the friction drive for the same, including the countershaft with a friction wheel adapted to engage with one of the car wheels and having thereon a friction pulley, the driving hub to which the dropper shaft is splined, and having thereon one member of a friction clutch, the sliding bed plate, the fly wheel and its supporting shaft carried by said bed plate and movable lengthwise of its bearings and having on its outer end the other member of said friction clutch, with said parts so arranged that the fly wheel can be brought up to the speed of the car and then that the dropper shaft can be forced outward to its delivery position and its driving hub be set into action by said friction clutches, substantially as described.

15. The combination with a rotary dropper shaft, of the friction drive for the same, including a driving hub within which the dropper shaft has its bearing and to which said shaft is splined, which driving hub has at its inner end one member of the friction clutch and at its outer end a notched disk, and a shipper fork slide movable on a stationary guide, which slide engages the notch of said disk and holds the dropper shaft from rotation at all times except when projected outward to its limit or delivery position and will then release the dropper for rotation by the friction drive, substantially as described.

16. The combination with a rotary dropper shaft, of the friction drive for the same, including the driving hub to which said shaft is splined, which hub has on its inner end one member of a friction clutch and on its outer end a notched holding disk, a shipper fork slide for said shaft movable on a stationary guide and engaging the notch of said disk until forced outward to its limit, the fly wheel splined to its supporting shaft and which shaft is movable lengthwise of its bearings and has formed on one end thereof the other member of said friction clutch and a spring-held hand lever having connections to said shipper fork slide and also provided with a shipper fork which takes hold of the fly wheel shaft, all for coöperation, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALVIN C. McCORD.

Witnesses:
B. W. Middleton,
C. J. Copeland.