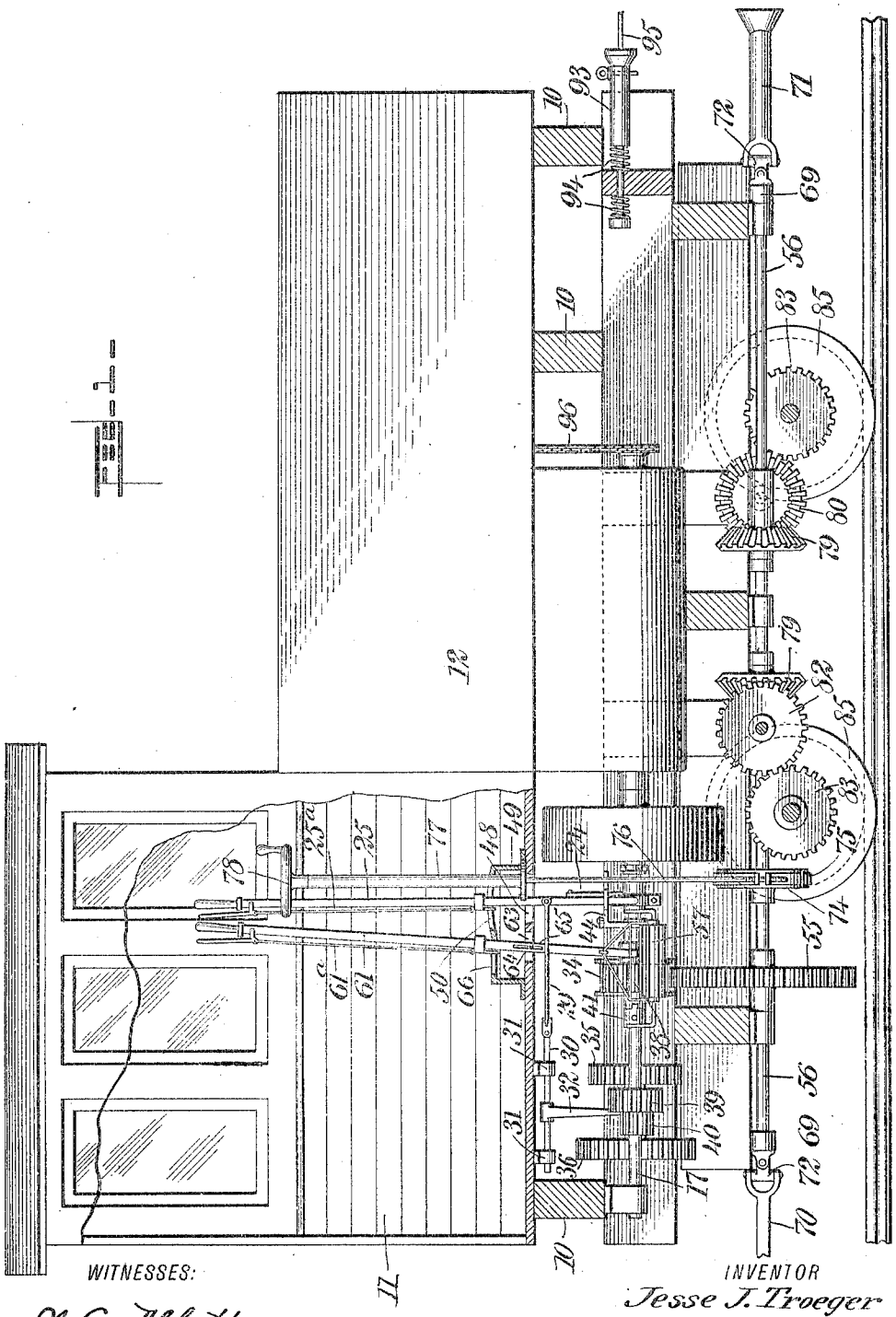
No. 804,638. PATENTED NOV. 14, 1905.

J. J. TROEGER.

MULTIPLE CAR LOCOMOTIVE.

APPLICATION FILED SEPT. 29, 1904.

4 SHEETS—SHEET 1.



WITNESSES:

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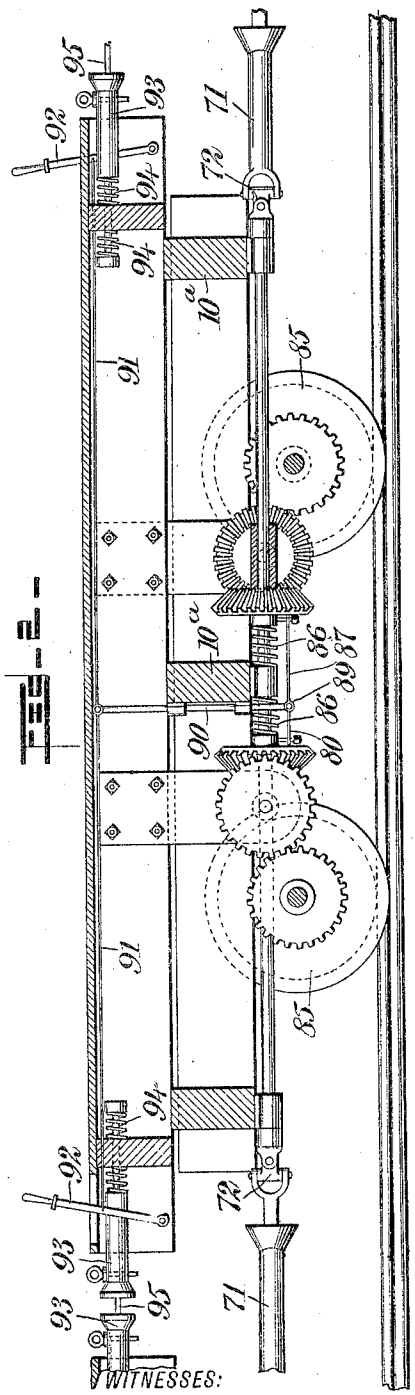


FIG. 2.

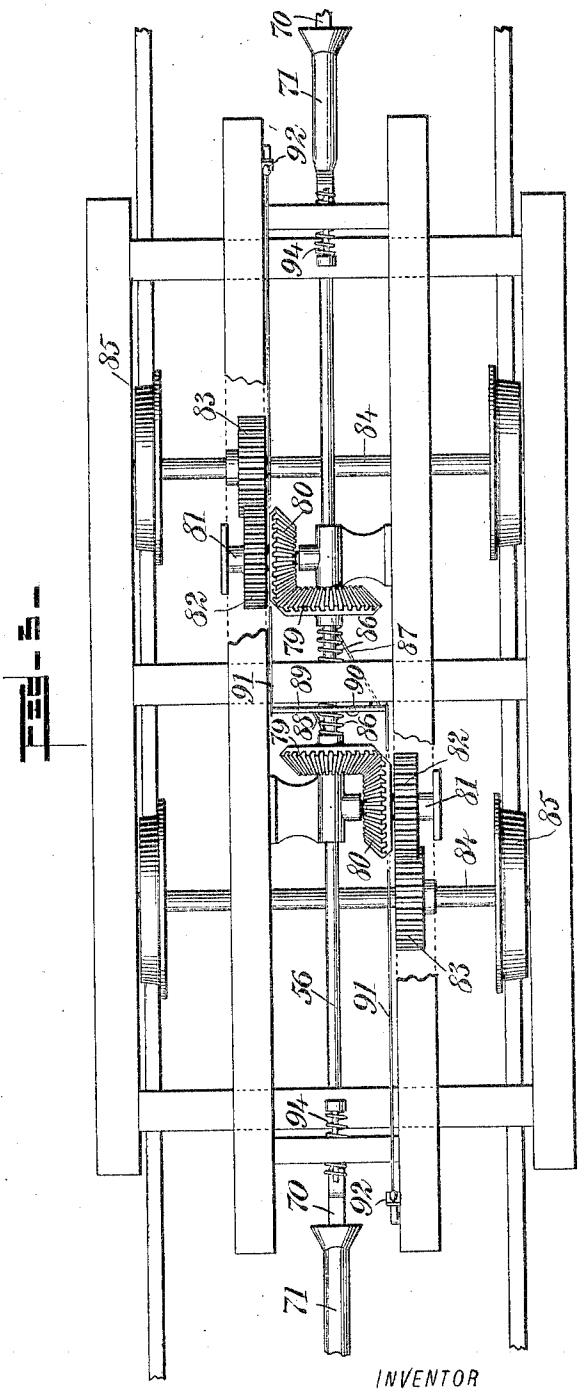


FIG. 3.

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4 SHEETS—SHEET 3.

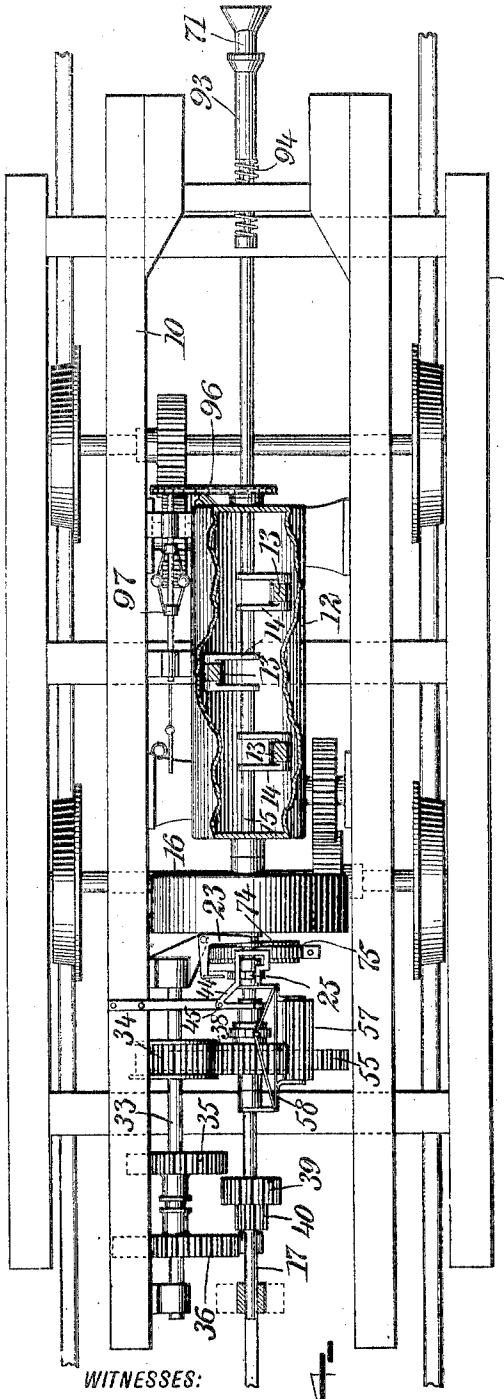


FIG. 1.

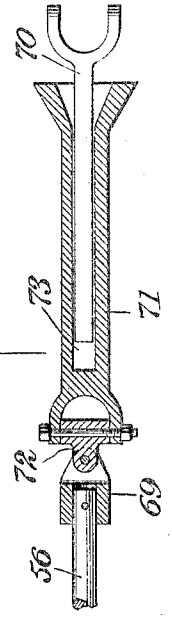


FIG. 6.

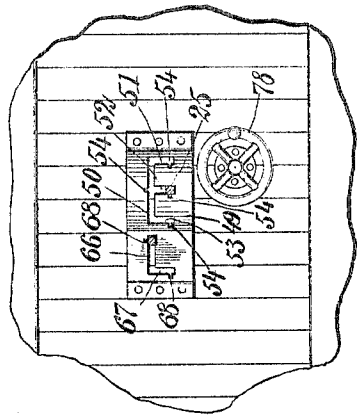


FIG. 5.

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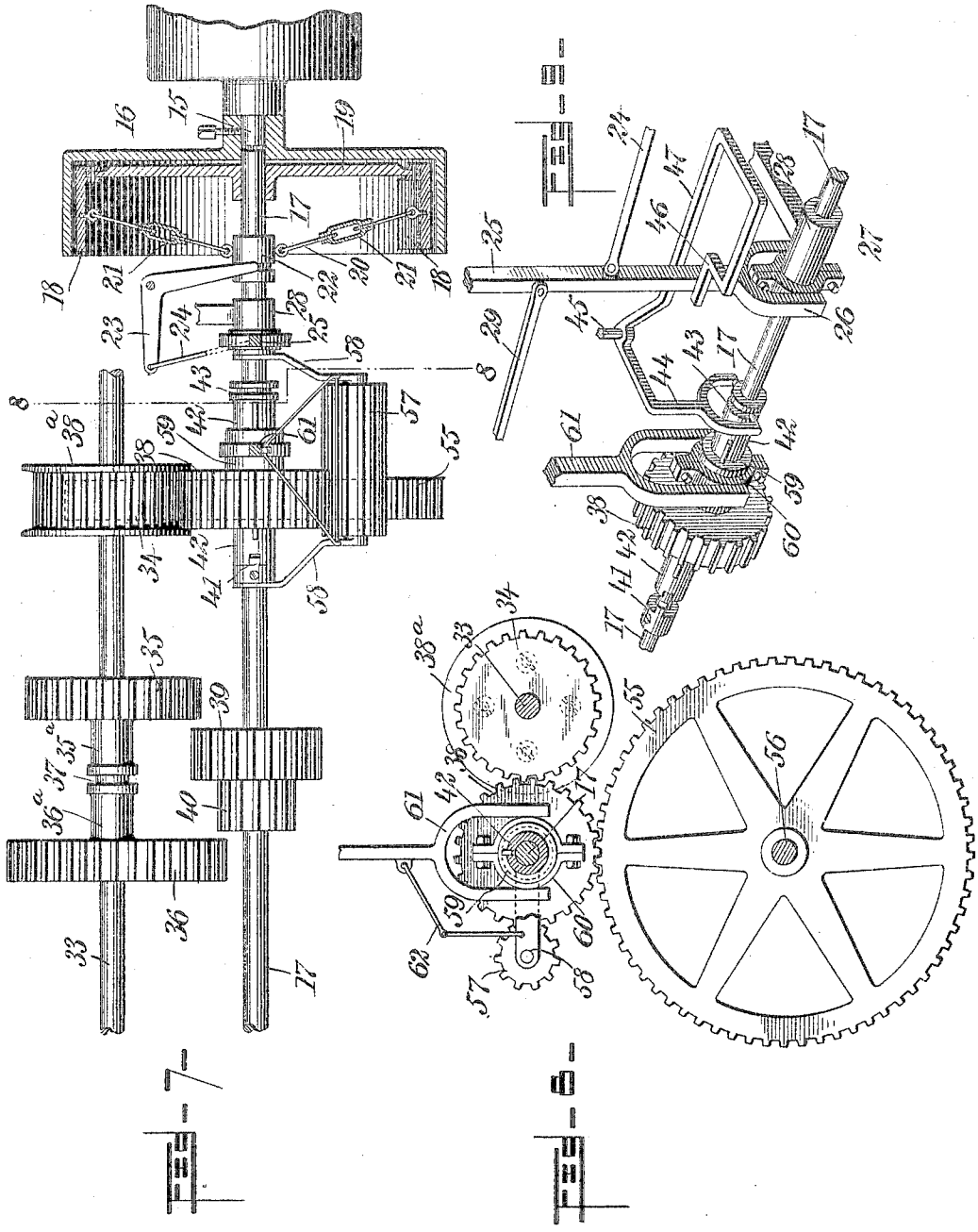
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4 SHEETS—SHEET 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JESSE JEREMIAH TROEGER, OF CHICAGO, ILLINOIS.

MULTIPLE-CAR LOCOMOTIVE.

No. 804,638. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed September 29, 1904. Serial No. 226,479.

To all whom it may concern:

Be it known that I, JESSE JEREMIAH TROEGER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Multiple-Car Locomotive, of which the following is a full, clear, and exact description.

My invention relates to a locomotive and car system by which every wheel of the cars is made a driving-wheel. In the systems at present employed it is impossible to run locomotives on narrow-gage railways to good advantage because the locomotives are top-heavy. In order to pull the load, the locomotive must have sufficient weight to give the necessary friction upon the tracks, and the addition of more weight when it is already near the limit causes the driving-wheels to slip and prevents the running of the train.

It is one of the objects of my invention to overcome these faults by connecting all the wheels of the cars with the locomotive in such a manner that each of the wheels is a driving-wheel. Consequently the addition of more load to the cars only makes the drive-wheels press upon the rails with greater force, and so provides for the more ready propulsion of the train, provided there is sufficient power. Moreover, instead of making the engine sufficiently heavy to provide all the friction necessary for the load which it is going to carry it will only be necessary to make it heavy enough to provide the power, as the weight of the cars and their loads is depended upon to produce the desired friction. This will permit the use of a locomotive weighing from two thousand to four thousand pounds in place of those weighing more than twenty-eight thousand pounds.

A further object of the invention is to provide a brake upon the main shaft of the locomotive which will be equivalent to an air-brake on account of the fact that it is applied indirectly to all of the axles on the train.

A further object is to provide means for varying the speed and reversing the motion of the train.

A further object of the invention is to provide means for connecting the cars together and transmitting the motive power from one to another in a convenient manner.

A still further object of the invention is to provide means for disengaging the connections between the axles of any car and the driving-shaft.

Further objects of the invention will appear in the course of the subjoined description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a locomotive and cab, partly in section, showing one form of my invention applied thereto. Fig. 2 is a vertical longitudinal section of the running-gear of a car constructed in accordance with the principle of my invention. Fig. 3 is a plan view thereof. Fig. 4 is a plan view of the running-gear of the locomotive. Fig. 5 is a fragmentary plan view of a portion of the floor of the cab. Fig. 6 is a sectional view, on an enlarged scale, of a device for coupling the shafts of different cars and the locomotive together. Fig. 7 is a side elevation, partly in section, of a portion of the operating-gear, on an enlarged scale. Fig. 8 is a sectional view on the line 8 8 of Fig. 7, and Fig. 9 is a perspective view of a portion of the operating means.

10 represents the various portions of the frame of the locomotive. Upon this frame is mounted a cab 11, which is preferably provided with a compartment 12 for the reception of a motor, a water-tank, and a gasolene-tank, (not shown,) or for the reception of any other driving means and accessories which it may be desired to employ. The connecting-rods 13 of the motor are designed to operate cranks 14 of a main shaft 15. On this shaft 15 is secured a clutch-cup 16, by means of which it is connected with a shaft 17. The shafts 15 and 17 will hereinafter be designated as the two portions of the motor-shaft. Inside of the cup 16 are mounted a plurality of clutch members 18, movable upon a frame 19 and operated by a series of rods 20, adjustable by means of turnbuckles 21. The inner ends of these rods are connected with a collar 22, which is capable of sliding upon the shaft 17 and is operated by means of a bell-crank 23, connected through a rod 24 with a hand-lever 25. It will be obvious that the shifting of the hand-lever back and forth upon the shaft 17 as a pivot will cause the bell-crank to force the slide 22 in and out and cause the clutch members 18 to engage with or be disengaged from the cup 16. The lever 25 is provided with a yoke 26, which is pivotally connected with a frame 27, pivotally attached to the shaft 17 and capable of a rotary movement

on the sleeve. A box 28, mounted on the frame, supports the end of the shaft 17. It will be obvious, therefore, that the lever 25 may be swung upon the shaft as a pivot, or in a direction at right angles thereto upon the pivots, (not shown,) between the yoke 26 and the frame 27. A link 29 is pivotally connected with the lever 25 and extends in a direction substantially at right angles to the link 24, so as to connect with the slide 30, mounted in guides 31 upon the bottom of the cab 11. This slide is provided with an arm 32, rigidly connected therewith.

33 represents a counter-shaft, upon which is slidingly mounted a gear 34. Two gears 35 and 36 are slidingly mounted upon this shaft. They are provided with sleeves 35^a and 36^a, having a space 37 between them. These gears and sleeves are keyed to the shaft 33, but are capable of sliding longitudinally upon it. The arm 32 extends into the space 37 between the sleeves 35^a and 36^a, and when the slide 30 is reciprocated it will be obvious that the gears 35 and 36 will be reciprocated on the shaft 33 in the same manner.

The shaft 17 is provided with three gears 38, 39, and 40. The gear 38 is designed to mesh with the gear 34 and the gears 39 and 40 with the gears 35 and 36, respectively. Flanges 38^a are provided to cause the gears 38 and 34 to constantly mesh with each other.

It will be seen that upon shifting the gears 35 and 36 in either direction one of them will be caused to engage with the corresponding gear upon the shaft 17, and if the gear 38 is simultaneously disengaged from the shaft 17 the engagement of either of these gears 35 or 36 with its mate on the shaft 17 will cause the latter shaft to operate at a lower speed. When the gears are in engagement, in the manner shown in Fig. 7, the motion of the motor will be transmitted to any gear in engagement with the gear 38 at what may be ccalled the "normal" or "highest" rate of speed. When, however, the gear 38 is disengaged from the shaft 17, it rotates independently of it, and the gear 35, brought into engagement with the gear 39, motion will be transmitted to the counter-shaft 33 by the two last-mentioned gears, and from that through the gears 34 and 38 to any other gear in engagement with the gear 38 at a lower rate of speed. A still lower rate may be obtained by engaging the gears 36 and 40 with each other.

In order to disengage the gear 38 from the shaft 17, a locking-clutch 41 is secured to the shaft 17, and a sleeve 42, having engagement with the clutch 41, is rotatably mounted upon the shaft 17 and a keyway provided for the gear 38. Upon the sleeve 42 is shown a circumferential groove 43, in which engages the yoke of a lever or bell-crank 44, pivoted to a stationary part of the machine by means of a shaft 45. This bell-crank is provided with a projecting end 47 and a reëntrant angle 46. In the position shown in Fig. 9 it will be obvious that the movement of the lever 25 to the left about the shaft 17 as a pivot will cause the bell-crank 44 to be operated so as to throw the sleeve 42 into engagement with the clutch 41 and cause the gear 38 to be for the time rigidly secured to the shaft 17. It will be seen also that if the lever in its original position were pulled either forward or backward along the length of the shaft 17 about its other pivots so as to clear the ends of the reëntrant angle-piece 46 the movement of the same lever upon the shaft 17 as a pivot would not cause the operation of the bell-crank and sleeve to throw the gear 38 into rigid engagement with the shaft 17. As will be explained later, this provides for keeping the gear 38 in locking engagement with the shaft 17 when the gears 35 and 36 are out of engagement with the gears 39 and 40 and unlocks the clutch 41 from the sleeve 42 when either one of the last-mentioned gears is in engagement with its mate.

The floor of the cab is provided with a slot 48, through which the lever 25 extends in an upward direction, and above this slot is provided a frame 49 having a slot 50 provided with extensions 51, 52, and 53, so as to give it the shape of the letter **E**, as is shown in Fig. 5. Each of these extensions and the main portion of the slot is provided with a recess 54 for the reception of a locking device (indicated in a general way by 25^a) to keep the lever in any position in which it may be placed. Now it will be seen that with the lever 25 in the position shown in Fig. 5 the clutch 41 will be in engagement with the sleeve 42 and the clutch members 18 will be forced out into engagement with the cup 16, so as to provide for operating the device at the highest speed. When it is desired to change the speed to a lower one, the first operation necessary will be to pull the lever 25 backward to the slot 50. This operation will not cause the link 29 to be materially affected, but will push the link 24 in such a manner as to swing the bell-crank 23 and uncouple the clutch 16. Then the movement of the lever 25 along the slot 50 to the end of the slot in either direction will cause the slide 30 to be operated and place one of the gears 35 36 in engagement with its mate. Simultaneously with the operation of withdrawing the lever from the slot 52 into the slot 50 the lever will engage with the main portion 47 of the bell-crank 44 and pull the sleeve 42 out of engagement with the clutch 41, so that before the gears 35 36 are brought into engagement with their mates the gear 38 will have been disconnected from the shaft 17. After the desired gear—as, for example, 35—has been brought into engagement with its mate 39 and it is desired to again connect up the clutch 16 the lever is forced backwardly in the slot 53, which causes the clutch members to be en-

gaged with each other and the shaft 15 to be then rigidly connected with the shaft 17. When this is done, it will be observed that the lever 25 is forced along the end of the reëntrant angle-piece 46; but as it has been moved along sufficiently to cause it to be disengaged from this angle-piece it will not move the sleeve 42.

It has been stated above that the gear 38 is in engagement with another gear to transmit motion to the main shaft of the locomotive. This other gear is represented by 55 and the main shaft by 56, and it will be obvious that whether the gear 38 is directly connected with the shaft 17 or indirectly by means of the gears 35, 36, 39, and 40 the motion of the shaft 17 will be transmitted to the shaft 56 in the same direction under all circumstances so far mentioned. A reversing mechanism is desired, however, and the form which I have contemplated employing comprises a long or double-faced pinion 57. This pinion is provided with a face of twice the width of the face of the gear 38, and it is intended that the gear 38 shall always mesh with it and shall be moved lengthwise of the shaft 17 for the purpose of being disengaged from the gear 55. When this is done, the frame 58, upon which the pinion 57 is mounted, is swung about the shaft 17 as a pivot and brought into engagement with the gear 55. Consequently it will be obvious that the rotation of the shaft 17 will be transmitted to the gear 55 in the opposite direction and that the locomotive will be reversed. The flanges 38^a cause the gear 34 to move with the gear 38. For accomplishing this result a sleeve 59 is slidably mounted upon the sleeve 42, but is keyed to it, so that it always rotates with it. This sleeve is provided with a frame 60, which is pivotally connected to a lever 61. The lever is also connected with the frame 58 by means of a connection 62. It will be understood that the swinging of the lever 61 about the shaft 17 as a pivot will swing the pinion 57 toward or away from the gear 55 and provide for the operation above mentioned. Also the swinging of the lever 61 along the shaft 17 will cause the gear 38 to be moved along the shaft and to disengage it from the gear 55 when desired. The lever 61 passes upwardly through a slot 63 in the floor of the cab, and it is pivoted upon a rod 64 in a slot 65 in the lever. It will be understood that the swinging of the lever about its pivot provides for the longitudinal motion of its lower end and the gear 38 upon the sleeve 42. Its other motion upon the shaft 17 as a pivot is allowed for by the rod 64.

The frame 49 is provided with an L-shaped slot having two parts 66 and 67 for the lever 61 and a pair of notches 68 for a locking device 61^a. It will be understood that this L-shaped slot provides for the two motions of the lever above mentioned and permits the securing of the lever in the desired position, so as to allow for forward or backward motion.

The numeral 56, which has been mentioned, represents the main or line shaft upon the locomotive, as well as the similar shafts upon the various cars. Each of these shafts is provided with a cap 69, and the caps at the two opposite ends are provided, respectively, with a square bar 70 and a thimble 71. The bar and thimble are preferably connected with the caps by means of universal joints 72, and the thimble is provided with a square passage 73 for the reception of the bar 70. It will be obvious that when a bar 70 of one car is thrust into a thimble 71 of another the rotation of one shaft will cause the rotation of the other. By connecting these line-shafts with the various axles of the cars it will be obvious that a brake-disk 74 may be applied to the main shaft in the locomotive and brake-bands 75 applied by means of a screw-threaded rod 76, so that the whole of the cars may be braked at the same time by the operation of a single brake in the cab of the locomotive. This is equivalent to the operation of the air-brakes in use upon heavy trains. The cab, as shown, is provided with a hollow standard 77 and a hand-wheel 78 for operating the brake.

Each of the shafts 56 is preferably provided with a bevel-gear 79 for each axle of the car. This bevel-gear meshes with a second bevel-gear 80, mounted on a shaft 81 and rigidly connected with a gear 82, mounted upon the same shaft. The last-mentioned gear meshes with a gear 83, mounted upon the axle 84 of the car, upon which the drive-wheels 85 are mounted. It will be obvious that motion transmitted in this manner to all the wheels of the cars will make each wheel a drive-wheel and that the more load there is applied to the cars the more friction will there be between the wheels and rails and that it is impossible for the wheels to slip under a heavy load. The bevel-gears 79 are preferably pressed into engagement with the gears 80 by resilient means—as, for example, springs 86. In order to disengage these gears from the gears 80 and permit the operation of the shaft without moving the car, a pair of rods 87 and 88 are connected at the ends of the springs 86 and to a bar 89, pivoted, by means of a rod 90, to the frame of the car, which is represented by the numeral 10^a. This rod 90 is oscillated from either end of the car by means of flexible connections 91 and levers 92. These levers are preferably in close proximity to the coupling device, which is represented by the numeral 93. The coupling device may be provided with the usual springs 94 and coupling-pins 95.

It will be understood that by constructing a locomotive and its cars on the principle set forth above or upon the particular embodiment of that principle which I have illustrated and described in detail a construction can be obtained in which there is no possibility of

slipping of the driving-wheels on account of a great load, in which the locomotive may be made light and no additional weight will be needed for the purpose of providing sufficient friction, so that an electric, gasolene, or other motor can be employed with satisfaction, and in which the two or three men now employed on ordinary locomotives can be displaced by a single man. It will also be understood that on account of the possibility of using other forms of motors than those now employed very little water will be necessary, and no space would have to be provided for it, that there is no danger of fire, that the motor when starting a train may have a leverage over the drive-wheels nine times as great as it does after the train is in motion and a different gearing is substituted, and that the weight of the motor can be greatly reduced and the expense decreased to a minimum. The advantage of having a single brake upon the line-shaft which will apply its power to all the wheels of the train alike will be obvious.

While I have illustrated and described a particular embodiment of my invention, it will be evident that the latter is not limited thereto and that the principle that I have set forth may be carried out in many other ways.

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

1. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, said shafts being operatively connected together, transverse shafts on each car, means for operatively connecting the line-shafts to all of said transverse shafts, and resilient means for holding said first-named means in operative position.

2. The combination of a locomotive, a car, a line-shaft on the locomotive, a line-shaft on the car, a transverse shaft on the car means for operatively connecting said shafts on the car together, and a spring for holding the connecting means in operative position.

3. The combination of a locomotive, a train of cars, a line-shaft on the locomotive, a line-shaft on each car, a transverse shaft on each car, a train of gears connected with each transverse shaft, gears upon the line-shafts engaging with each of said trains of gears, a spring for normally forcing each gear on the line-shafts into engagement with the trains of gears, a link connected with each of the gears on the line-shafts, a bar connected with each of said links, and means for operating said bars and links to disengage the gears on the line-shafts from the trains of gears on each car.

4. The combination of a locomotive, a train of cars, transverse shafts on the locomotive and on each car, a pair of wheels upon each transverse shaft, a train of gears connected with each transverse shaft, means for connecting each line-shaft with one of the trains of gears, a spring for normally forcing each of said connecting means into engagement with its trains of gears, a link connected with each of said means, a bar connected with each of said links, means extending to both ends of each car for operating said bar and link to disengage the connecting means on the line-shaft from the trains of gears, a brake-wheel on the line-shaft, a brake-band, and means for tightening the brake-band upon the brake-wheel.

5. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, said shafts being operatively connected to the wheels and to each other, a hollow thimble and square bar connected to opposite ends of each of said shafts, the square bar of one car being adapted to fit in the hollow thimble of another car or locomotive, transverse shafts on the locomotive and on each car, means for operatively connecting the line-shafts to all of said transverse shafts, and resilient means for holding said first-named means in operative position.

6. The combination of a locomotive, a car, a line-shaft on the locomotive and a line-shaft on the car, means for operatively connecting the line-shaft of the locomotive with the line-shaft of the car, a gear on the line-shaft, transverse shafts on the car and on the locomotive, a gear on each transverse shaft, means for operatively connecting said gears together, a spring for holding the gears in operative position, and means for disengaging the gears from each other.

7. The combination of a locomotive, a train of cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said line-shafts together, means for connecting the cars to each other and to the locomotive, transverse shafts on the locomotive and on each car, a pair of wheels upon each transverse shaft, a train of gears connected to each transverse shaft, gears upon the line-shaft engaging with each of said trains of gears, a spring for normally forcing each gear on the line-shaft into engagement with said trains of gears, a link connected with each of the gears on the line-shaft, a bar connected with each of said links, and means extending to both ends of each car for operating said bar and link to disengage the gears on the line-shaft from the trains of gears connected to the transverse shafts.

8. The combination of a locomotive, a train of cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said line-shafts together, means for connecting the cars to each other and to the locomotive, transverse shafts on the locomotive and on each car, a pair of wheels upon each transverse shaft, a train of gears connected to each transverse shaft, gears upon the line-shaft engaging with each of said trains of gears, a spring for normally forcing each gear on the line-shaft into engagement with said trains of gears,

a link connected with each of the gears on the line-shaft, a bar connected with each of said links, means extending to both ends of each car for operating said bar and link to disengage the gears on the line-shaft from the trains of gears connected to the transverse shafts, a brake-wheel upon the line-shaft, a brake-band, and means for tightening the brake-band upon the brake-wheel.

9. The combination of a locomotive, a car, a line-shaft on the locomotive and a line-shaft on the car, means for operatively connecting the line-shaft of the locomotive with the line-shaft of the car, a gear on the line-shaft, transverse shafts on the car and on the locomotive, a gear on each transverse shaft, means for operatively connecting said gears together, a spring for holding the gears in operative position, means for disengaging the gears from each other, a motor upon the locomotive, a motor-shaft, and means for transmitting motion from the motor-shaft to the line-shaft of the locomotive.

10. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting the ends of said line-shafts together to cause the rotation of one to rotate all of them, a motor upon the locomotive, a motor-shaft, means for transmitting motion from the motor-shaft to the line-shaft of the locomotive, a reversing device between the motor-shaft and the line-shaft, a speed-changing mechanism, and means for operating said mechanism.

11. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor a motor-shaft in two parts, a clutch connecting said two parts, means for throwing the clutch into and out of engagement, means for operatively connecting the motor-shaft with the line-shafts, a reversing device between the motor-shaft and the line-shafts, and a speed-changing device also located between the motor-shaft and the line-shafts.

12. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor a motor-shaft in two parts, a clutch connecting said parts, a slide on one of the parts connected to the clutch, a bell-crank connected with the slide, and means for operating the bell-crank.

13. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor a motor-shaft in two parts, a clutch connecting said parts, a slide on one of the parts connected to the clutch, a bell-crank connected with the slide, a lever for operating the bell-crank, said lever being pivoted on the shaft to turn in two directions, a speed-varying mechanism, and connections from the lever to the speed-varying mechanism for operating it.

14. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor a motor-shaft in two parts, a clutch connecting said parts, a slide on one of the parts connected to the clutch, a bell-crank connected with the slide, a lever for operating the bell-crank, said lever being pivoted on the shaft to turn in two directions, a speed-varying mechanism, and connections from the lever to the speed-varying mechanism for operating it.

15. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor a motor-shaft in two parts, a clutch connecting said parts, a slide on one of the parts connected to the clutch, a bell-crank connected to the slide, gearing connecting said motor-shaft with the line-shafts, a speed-varying mechanism between the motor-shaft and the line-shafts, an operating-lever pivotally mounted upon the motor-shaft to oscillate in a direction transverse thereto and also pivotally mounted to oscillate in a longitudinal direction with respect to the motor-shaft, a link connected with said speed-varying mechanism for operating the latter when the lever is oscillated in a longitudinal direction with respect to the motor-shaft, and a link connecting the lever with said bell-crank for operating the latter when the lever is moved in a direction transverse to the motor-shaft.

16. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor, a motor-shaft in two parts, a clutch connecting said parts, a slide on one of the parts connected to the clutch, a bell-crank connected to the slide, a speed-varying mechanism, a lever pivoted on the shaft, connections from the lever to the bell-crank, connections from the lever to said speed-varying mechanism, a reversing device connected with the motor-shaft, and a lever for operating the reversing device.

17. The combination of a locomotive, cars, a line-shaft on the locomotive, a line-shaft on each car, means for connecting said shafts together, a motor a motor-shaft in two parts, a clutch connecting said parts, a slide on one of the parts connected to the clutch, a bell-crank connected with the slide, a lever for operating the bell-crank, said lever being pivoted on the shaft to turn in two directions, a speed-varying mechanism and connections from the lever to the speed-varying mechanism for operating it, connections from the speed-varying mechanism to the line-shaft on the locomotive, a brake upon the line-shaft, and a hand-wheel for operating said brake.

18. In a locomotive, the combination of a cab, a motor, a motor-shaft in a plurality of parts, means for causing said parts to be engaged with and disengaged from each other, a brake, a frame in the cab provided with openings or slots, a lever for operating said means passing through one of said openings or slots, and a rod for operating said brake passing through another of said openings in the frame.

19. In a locomotive, the combination of a cab, a motor, a motor-shaft in a plurality of parts, means for causing said parts to be engaged with or disengaged from each other, a speed-varying mechanism, means for operating said speed-varying mechanism, a frame in the cab provided with openings or slots, a lever for operating said first-mentioned means passing through one of said openings, and a lever for operating said second means passing through another of said openings into the cab.

20. In a locomotive, the combination of a cab, a motor, a motor-shaft in two parts, means for causing said two parts to be engaged with or disengaged from each other, a speed-varying mechanism, means for operating said speed-varying mechanism, a brake, a frame in the cab provided with openings or slots, a lever for operating said means for engaging and disengaging the two parts of the motor-shaft, passing through one of said openings, a lever for operating the speed-varying mechanism passing through another of said openings, and a rod for operating said brake passing through another opening in said frame.

21. In a locomotive, the combination of a cab having a slot in the lower portion thereof, said slot being provided with three slots extending at right angles thereto, a lever pivoted to swing in two directions at a point below said slot and passing through said slot, a motor, means for causing the motor to be disconnected from the running-gear of the locomotive when the lever is in any portion of said first-mentioned slot, means for causing the motor to be engaged with the running-gear of the locomotive when the lever is in the extreme end of any one of the three last-mentioned slots, and means for causing the speed at which motion is transmitted from the motor to the running-gear to be varied according to the one of the last-mentioned slots in which the lever is placed.

22. In a locomotive, the combination of a cab having a slot in the lower portion thereof, said slot being provided with three slots extending at right angles thereto, a lever pivoted to swing in two directions at a point below said slot and passing through said slot, a motor, means for causing the motor to be disconnected from the running-gear of the locomotive when the lever is in any portion of said first-mentioned slot, means for causing the motor to be engaged with the running-gear of the locomotive when the lever is in the extreme end of any one of the three last-mentioned slots, means for causing the speed at which motion is transmitted from the motor to the running-gear to be varied according to the one of the last-mentioned slots in which the lever is placed, an additional slot in the lower part of said cab and a slot extending at right angles thereto and connected therewith, a lever passing through said slot, said lever being pivoted to swing in two directions, a reversing mechanism connected with said last-mentioned lever, and means whereby the motion of the motor is transmitted to the running-gear of the locomotive in one direction when the lever is in said additional slot, and in the other direction when it is in the slot connected therewith.

23. In a locomotive, the combination of a cab having a slot in the lower portion thereof, said slot being provided with three extensions at right angles thereto, a lever pivoted to swing in two directions at a point below said slot and passing through it, a motor, means for connecting the motor with and disconnecting it from the running-gear of the locomotive, and means for connecting said means with the lever.

24. In a locomotive, the combination of a cab having a slot in the lower portion thereof, said slot being provided with three extensions at an angle thereto, a lever pivoted at a point below the slot to swing in two directions and passing through the slot, a motor, means for causing the motor to be disconnected from the running-gear of the locomotive when the lever is in any portion of the main slot, and means for causing the motor to be engaged with the running-gear of the locomotive when the lever is in one of said extensions.

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

JESSE JEREMIAH TROEGER.

Witnesses:

W. T. HAYDEN,

GEORGE E. TROEGER.